3.3.2 Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during last five years.

3.3.2.1. Total number of books and chapters in edited volumes/ books published and papers in national/ international conference proceedings year wise during last five years

Details	Academic Year				
Number	2022-23	2021-22	2020-21	2019-20	2018-19
	12	70	30	03	17
Total = 132					

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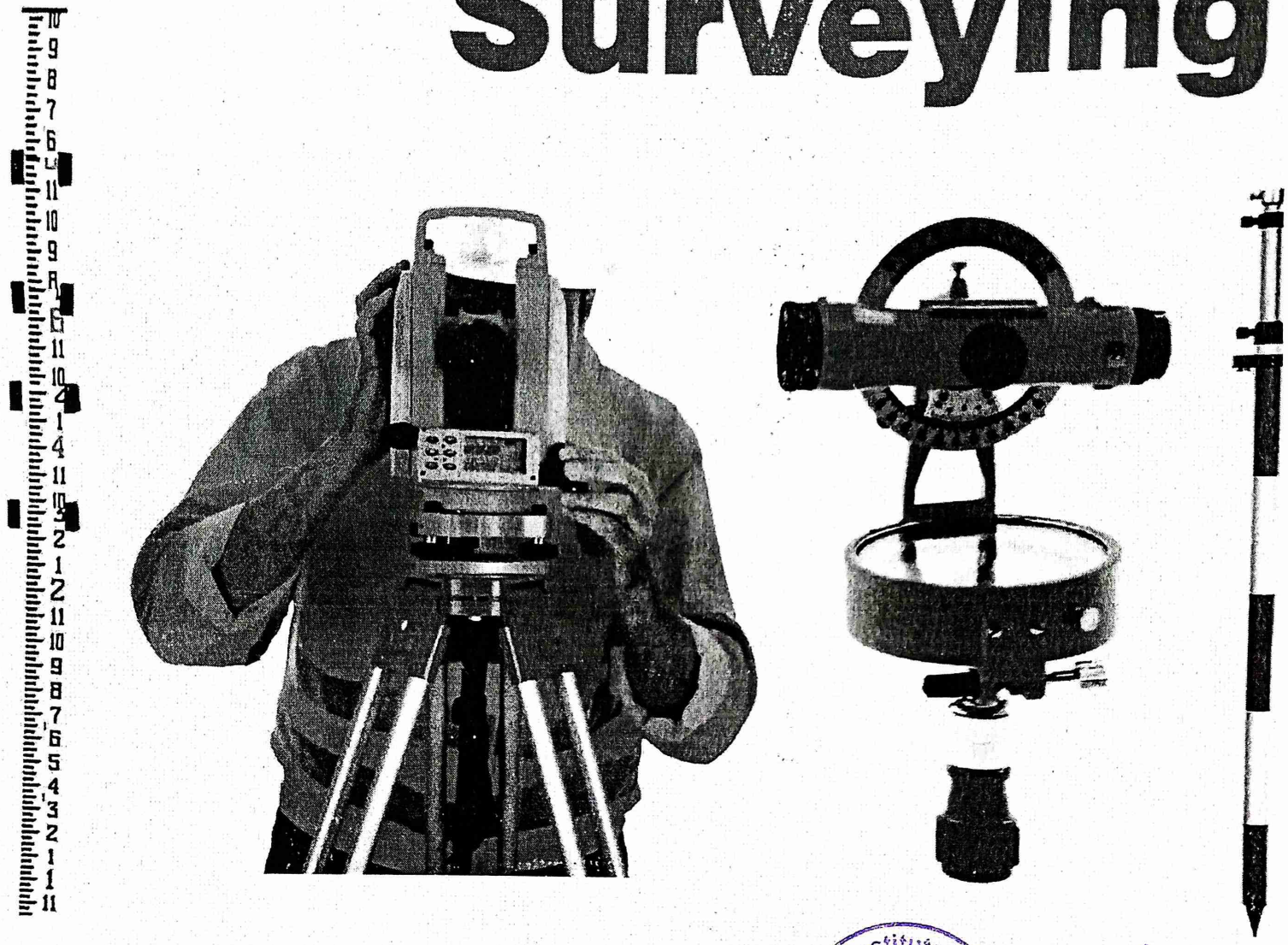

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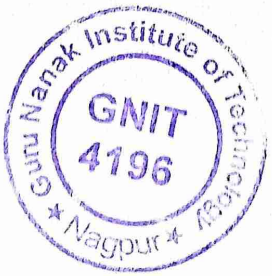

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A Text Book

Basics of Surveying

ABOUT THE BOOK

This textbook provides a comprehensive introduction to the principles & techniques of surveying. It covers the basics of surveying, including measurement & practical applications, making it's suitable for students, professionals, and any-one looking to gain a solid understanding of surveying principles.

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BRAIN TUMOR DETECTION: SURVEY & RESEARCH PAPER

Yash Anil Raikwar*1, Sanketraj Dinesh Kanoje*2, Shubham Santosh Prasad*3, Shashank Pandhari Ramteke*4 Anup Shalik Belurkar *5, Prof. Pawan H. Raut*6

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ABSTRACT

Out of many diseases in medical science one of the rigorous problems, the World is facing today is Brain Tumor. Brain Tumor is an uncontrollable cell proliferation in the brain. Tumor can be detected using medical imaging techniques like Magnetic Resonance Imaging (MRI). But the drawback is it cannot detect below 3 mm size. Hence for accurate analysis of Brain tumor, Segmentation is one of the tools that are extensively used in Medical Science.

Segmentation is one of the methods to partition an image into regions. Segmentation discriminates healthy tissues from affected tissues. This makes easier for quantitative analysis, accurate disease diagnosis, detection and classification of Brain tumor. As already lot of tumor segmentation methods are available, still more research should take place in this area. The reason is this MRI image display complex characteristics like high diversity in the appearance of tumor and unclear tumor boundaries. Hence judicious disease diagnosis with scientific proof is essential. So that early planning can be done to save the life of the patient. To facilitate the researchers working in this field, a review on various Brain Tumor segmentation is presented. The study emphasises the greater confrontation we come across while tumor Segmentation on various methods in the literature, as well. It is trusted that the methodologies and experiments put forth in this study will be of great use for researchers working in this field.

Keywords: Healthcare, Brain Tumor Detection, MRI.

I. INTRODUCTION

Brain tumor is commonly occurring disease among human beings, so study of brain tumor isimportant. It is the major cause for the increase in mortality among children and adults. Tumor is defined as the abnormal growth of the tissues. Brain tumor is generally classified into two type Benign and Malignant tumors. MRI (Magnetic Resonance Imaging) Images plays an important role in brain tumor for analysis, diagnosis and treatment planning. It is helpful to doctor for determining the previous steps of brain tumor. The detection of brain tumor using MRI images is challenging tasks because of the complex structure of the brain. MRI Images provide better result than CT scan, Ultrasound and X-ray because it is an advanced medical imaging technique and it uses powerful magnet to provide high resonanceimages of all part of body. This MRI Image can processed and one can detect the brain tumor using image processing techniques by forming an automatic detection process using various algorithms because the manual detection of tumor from MRI Image may give human error. In this project our focus will be mainly to improve the existing approaches of image processing or to design a better approach for the detection of the tumor.

II. LITERATURE SURVEY

1. Natarajan et al. proposed method using Median filter for the preprocessing of the Brain MRI image, for segmentation applied threshold segmentation and morphological operations and then the image subtraction technique is used to get the region of interest in the brain MRI image. Research in the brain tumor detection in MRI images can be categorized in the following methods Thresholding based methods Region growing based methods Neural network methods Fuzzy methods MRI image segmentation using thresholding is thought to be a very straightforward and influential method to section the image that has dark backgrounds and it helps to compensate uneven brightening in. P. Natarajan et al [10] have proposed a method for proficient recognition of a brain tumor in MRI images using Thresholding based method, this technique comprises steps like preprocessing by using filters, for contrast adjustment histogram equalization, to perform the division of image thresholding is done.

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SKIN LESION ANALYSIS TOWARDS MELANOMA DETECTION USING IMAGE PROCESSING: SURVEY & RESEARCH PAPER

Aboli D. Sukhdeve*1, Achal Y. Jaiswal*2, Kiran D. Shahare*3, Sonu R. Gaikwad*4, Prof. Pawan H. Raut*5

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ABSTRACT

Skin cancer is one of the most dangerous diseases in the world. Correctly classifying skin lesions at an early stage could aid clinical decision-making by providing an accurate disease diagnosis, potentially increasing the chances of a cure before cancer spreads. However, achieving automatic skin cancer classification is difficult because the majority of skin disease images used for training are imbalanced and in short supply; meanwhile, the model's cross-domain adaptability and robustness are also critical challenges. Recently, many deep learning-based methods have been widely used in skin cancer classification to solve the above issues and achieve satisfactory results. Nonetheless, reviews that include the abovementioned frontier problems in skin cancer classification are still scarce. Therefore, in this article, we provide a comprehensive overview of the latest deep learning-based algorithms for skin cancer classification. We begin with an overview of three types of dermatological images, followed by a list of publicly available datasets relating to skin cancers. After that, we review the successful applications of typical convolutional neural networks for skin cancer classification. As a highlight of this paper, we next summarize several frontier problems, including data imbalance, data limitation, domain adaptation, model robustness, and model efficiency, followed by corresponding solutions in the skin cancer classification task. Finally, by summarizing different deep learning-based methods to solve the frontier challenges in skin cancer classification, we can conclude that the general development direction of these approaches is structured, lightweight, and multimodal. Besides, for readers' convenience, we have summarized our findings in figures and tables. Considering the growing popularity of deep learning, there are still many issues to overcome as well as chances to pursue in the future.

Deep learning is a new research area within modern technology using microservices with big data, virtual reality and also augmented reality. Due to the development of huge computing capacity, technologies such as deep learning application using MobileNet (CNN) has revolutionized image classification. Deep learning can be used to classify the different types of skin cancer types. This learning technique uses different algorithms such as MobileNet CNN algorithms. MobileNet algorithms are suitable ways to recognize the images from the input and give accurate results. In this current work, MobileNet CNN is used in our data set to classify skin disease types according to our input.

Keywords: Dermoscopy Image, Melanoma Recognition, Residual Network, Fisher Vector, Deep Learning.

I. INTRODUCTION

According to the WHO's statistics, the number of people will affected by the skin cancer will rise up to almost 13.1 millions by 2030. Skin cancer is a condition in which there is an abnormal growth of melanocytic cells in the skin. Malignant melanoma class of skin cancer is generally caused from the pigment-containing cells known as melanocytes. Melanoma is found among non-Hispanic white males and females, and results in approximately 75% of deaths associated with skin cancer [1]. According to the world cancer report, the primitive reason of melanoma is ultra-violate light exposure in those people who have low level of skin pigment. The UV ray can be from the sun or any other sources and approximately 25% of malignant can be from moles [2]. Considering the limited availability of the resources, early detection of skin cancer is highly important. Accurate diagnosis and feasibility of detection are vital in general for skin cancer prevention policy. Skin cancer detection in early phases is a challenge for even the dermatologist. In recent times, we have witnessed extensive use of deep learning in both supervised and unsupervised learning problems. One of these models is Convolution Neural Networks (CNN) which has outperformed all others for object recognition and object classification tasks. CNNs eliminate the obligation of manually handcrafting features by learning highly discriminative features while

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Web Automation Testing using Selenium

Prof. Namita Gahukar[1], Monali Kharbikar[2], Dolly Asare[3], Sakshi Bokde[4], Sanjana Kashimkar[5]

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ABSTRACT

The quality of Web operations is a matter of great concern to current inventors, testers and designers. Some being automated testing styles for Web operations have the problems as low effectiveness, cannot be deal with stoutly loaded operations, cannot manage with frequent testing conditions, and so on. This paper designs and tools a Selenium- grounded Web operation robotization testing frame to break the requirements of automated testing of complex dynamic Web runners. In the trial, the proposed frame is estimated from multiple perspectives similar as Quality of Product A (BDD) with customer conditions and comparison with other fabrics. The results show that this frame (Selenium BDD) has high test effectiveness and can stably and snappily support automated testing of Web operations.

Keywords: Software Testing, Agile in Software Testing, Test Case Design, Automation in Selenium

INTRODUCTION

1.What is Test Automation?

- Automation Testing means using an automation tool to execute your test case suite
- The automation software can also enter test data into the System Under Test, compare expected and actual results and generate detailed test reports. Test Automation demands considerable investments of money and resources
- Successive development cycles will require execution of same test suite repeatedly Using a test automation tool, it is possible to record this test suite and re-play it as required. Once the test suite is automated, no human intervention is required. This improved ROI of Test Automation. The goal of Automation is to reduce the number of test cases to be run manually and not to eliminate Manual Testing altogether

2. Why Automation Testing?

- Automated software testing is important due to the following reasons:
- Manual Testing of all work flows, all fields, all negative scenarios is time and money consuming. It is difficult to test for multilingual sites manually
- Automation does not require Human intervention. You can run automated test unattended (overnight). Automation increases the speed of test execution
- Automation helps increase Test Coverage
- Manual Testing can become boring and hence error prone

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"It may take ages": understanding human-centred lateral phishing attack detection in organisations

Neeranjan Chitare
Lynne Coventry
James Nicholson

"It may take ages": Understanding Human-Centred Lateral Phishing Attack Detection in Organisations

Neeranjan Chitare*

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Lateral phishing attacks can be devastating for users and organisational IT teams as these originate from legitimate, but compromised, email accounts that benefit from the implicit trust between sender and recipients. In this paper, we begin to explore the human-centred space of lateral phishing attacks through interviews with 5 security practitioners and 17 employees from the UK and India. We report how security practitioners predominantly rely on employees to alert them to compromised accounts, and how this can create a delay during which the attack can continue. Our interviews with employees, on the other hand, found that individuals may not be reliable; they struggled to detect slight changes to messages, and over-relied on markers that cannot identify lateral attacks. We discuss the symbiotic relationship between security practitioners and employees for combatting lateral phishing attacks within organisations, and present recommendations for improving resistance to these attacks.

CCS CONCEPTS • Security and privacy ~ Human and societal aspects of security and privacy ~ Social aspects of security and privacy

Additional Keywords and Phrases: Phishing, Lateral Phishing, Cybersecurity Practitioners, Organisations, Reporting

1 INTRODUCTION

Phishing emails are regularly used by cybercriminals to steal personal information or circulate harmful links and files that can entice humans to undertake a range of unwanted tasks [1]. This is effective as individuals and businesses continue to rely on email communication [2]. In contrast to general bulk phishing, spear phishing [1] is a tailored approach to social engineering where an attacker uses carefully designed materials (typically emails that appear to have come from persons the victims already know) to increase the odds that the receiver will be deceived into acting on the message [3]. Due to its high sophistication, spear phishing is particularly challenging for individuals to detect, compounded by a lack of markers [4] and regular markers not always being effective in this context [5].

More recently, we have seen increased reports of sophisticated attacks called ***lateral phishing*** [6]. In this attack, the bad actors send phishing emails to unsuspecting recipients, such as other employees within the company as well as partners in external organisations using recently stolen or compromised email accounts. While a lateral phishing attack shares some similarities with an insider attack (the use of a real internal email account), it differs in that an external actor controls this account and therefore may have less knowledge of the organisational policies and systems. Lateral phishing attacks have two components: the compromise of a legitimate email account, and the use of phishing emails from that account to other internal or external parties. It is believed that one in seven businesses worldwide has been a victim of a lateral phishing attack and that over 60% of firms that experienced lateral phishing had multiple accounts compromised [7] and that approximately 13% of malicious emails originated from an internally compromised corporate account [7]. While academic

Exploring Computing Students' Post-Pandemic Learning Preferences with Workshops: A UK Institutional Case Study

Authors: Tom Crick, Tom Prickett, Christina Vasiliou, Neeranjan Chitare, Ian Watson Authors Info & Claims

ITiCSE 2023: Proceedings of the 2023 Conference on Innovation and Technology in Computer Science Education V. 1 • June 2023 • Pages 173–179 • https://doi.org/10.1145/3587102.3588807

Published: 30 June 2023 Publication History

ABSTRACT

The COVID-19 pandemic has caused both significant disruption and catalysed extensive experimentation in how education has been and may be delivered worldwide. The discipline of computing has been part of this experimentation, and significant innovations have been implemented and disseminated. Furthermore, educational provision and learner expectations may

ABSTRACT

Disruptors in Educational Technology: A Futurespective Case Study of UK Computing Academics

Authors: Tom Crick, Tom Prickett, Emma Anderson, Ian Watson, Neeranjan Chitare, Christina Vasiliou

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ABSTRACT

The COVID-19 pandemic forced extensive experimentation in how education has been – and may be – delivered worldwide. The increasing use of and dependency on educational technology for

Nature Inspired Design for Waste Management System

Mr. Rahul Sahni[1], Dr. Rakesh K Vidhate[2] and Dr. Shabaridharan[3]

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Abstract:

Bins in public spaces often accumulate dirt, leading to unpleasant odors from open lids or flimsy foot pedals on closed lids. Places like eateries or theaters, significant generators of wet waste, require open-lid bins for temporary convenience, but these also contribute to lingering unpleasant smells. The swift filling of public waste bins frequently results in overflow before collection, causing cluttered streets, unpleasant smells, and negative health and environmental impacts. This research focuses on addressing these issues by proposing a contactless hygienic waste disposal system.

The proposed system will allow people to maintain their hygiene and provide a clean, pleasant environment and able to dispose of their waste in a civilized manner. The system will be at a public spaces like parks, outside eateries, work places, schools, recreational centers etc., to improve the general cleanliness of the surroundings. Anyone and everyone who uses dustbins/waste disposal systems are to benefit by this initiative.

To validate the effectiveness of the waste disposal system, comprehensive assessments and user feedback sessions are conducted. The results demonstrate significant improvements in hygiene and provide a clean, pleasant environment. Moreover, enhanced comfort leads to improved focus and productivity, positively impacting the quality and quantity of their output.

Keyword: Dustbin, Biological Strategy, Bioplastic Film,

Background:

The government always has the best interest for the well-being of their city and promoting cleanliness and safe disposal of waste through Swachh Bharat Mission and other initiatives. Cause of the problem is urbanization, consumerism, non-biodegradable material, less awareness, and carelessness.

Dustbins in public spaces are often ridden with grime and dirt, either with open lids, spreading odor or closed lids with flimsy foot pedals. Areas like eateries or theaters, where most of the wet waste is produced, require dustbins with open lids- which are momentarily convenient but hold unpleasant odor.

Public waste bins are filling up faster than ever and inevitably many of the bins end up overflowing before being collected, causing not only cluttered streets and bad odors but also negative health and environmental impacts.

An Investigation on Two-Stage Grid-Tied PV Inverter with Reduced DC-Link Capacitance

Publisher: IEEE

Nayan Mishra ; Praful Pandurang Kumbhare ; Sanjay Tolani All Authors

Abstract:

Grid-connected single-phase photovoltaic (PV) inverters typically employ bulky aluminum electrolytic capacitors (AECs) at the dc bus to avoid the interaction of double line frequency ripple power at the PV side. Attempts have been made to replace the AECs with small and more reliable AC film capacitors, but reducing the dc bus capacitance leads to increased dc-link voltage ripples and reflects the double line frequency power on the PV side. This consequently leads to inaccurate tracking of maximum power point (MPP), and the overall efficiency of the PV system reduces. The existing literature has not analytically identified the effectiveness of different MPP tracking algorithms when a small capacitor is employed at the dc-bus of PV fed single-phase inverter. The present paper comprehensively examines the performance of different MPP tracking algorithms with reduced dc-bus capacitance. Finally, all the analytical conclusions are validated through simulation results.

Published in: 2022 IEEE 10th Power India International Conference (PIICON)

Struggles, Potential, and Research Angles in the Amalgamation of Blockchain Technology With 6G Networks

Firdous Sadaf Mohammad Ismail, Sadaf Gauhar Mohammad Mushtaque, Dattatraya Adane

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Abstract

The world is experiencing a dramatic transformation as a result of the emergence of intellectual information technology among the main industries where high-end user engagement is anticipated to boost service qualities in all fields. Blockchain is one of the most brilliant technology enablers to overcome most of the current limitations and provide the functional needs of 6G. This chapter examines the importance of blockchain in tackling pressing 6G concerns as well as potential future applications and new research fields like artificial intelligence, data storage and analytics, and internet of everything. In addition to offering a solitary answer for application security and privacy, blockchain also has its own unique set of security and privacy flaws. This chapter examines the advantages, drawbacks, and possible routes for getting through the obstacles associated with using blockchain in 6G.

Chapter Preview

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Comprehensive Evolution of Pharmaceutical Industries by Pioneering Blockchain Technology with 6G Wireless Networks Amalgamation

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Firdous Sadaf M. Ismail & Sadaf Gauhar M. Mushtaque

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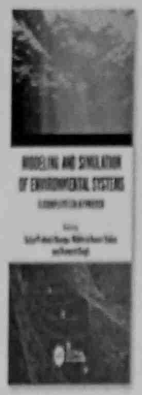

Chapter

Tools in Decision-Making of Allocation of Non-Traditional Resources for Sustainable Water Development

By Sahajpreet Kaur Goraya, Avinash D. Vasudeo

Book Modeling and Simulation of Environmental Systems

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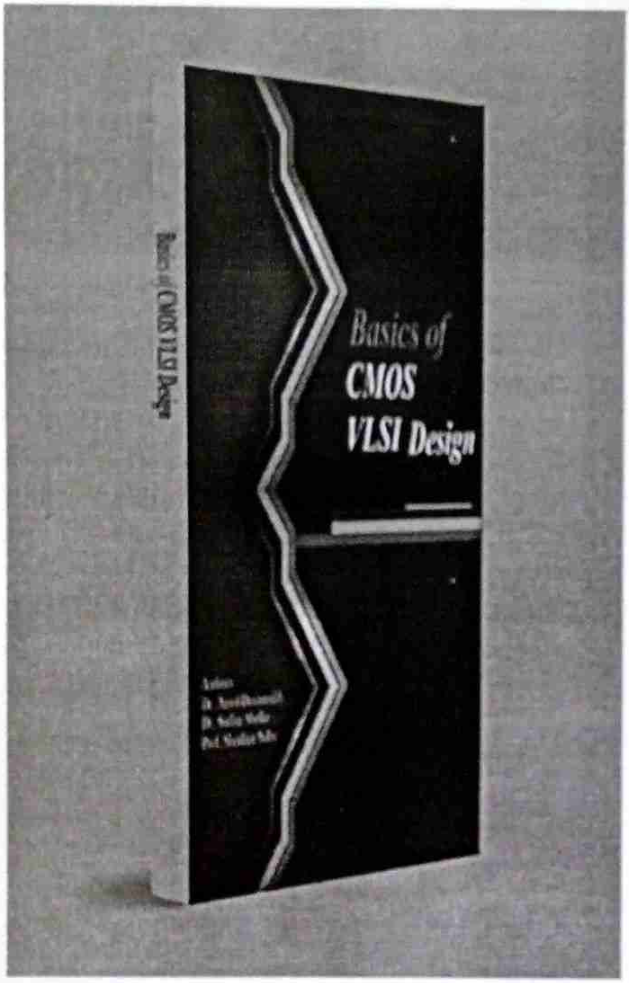

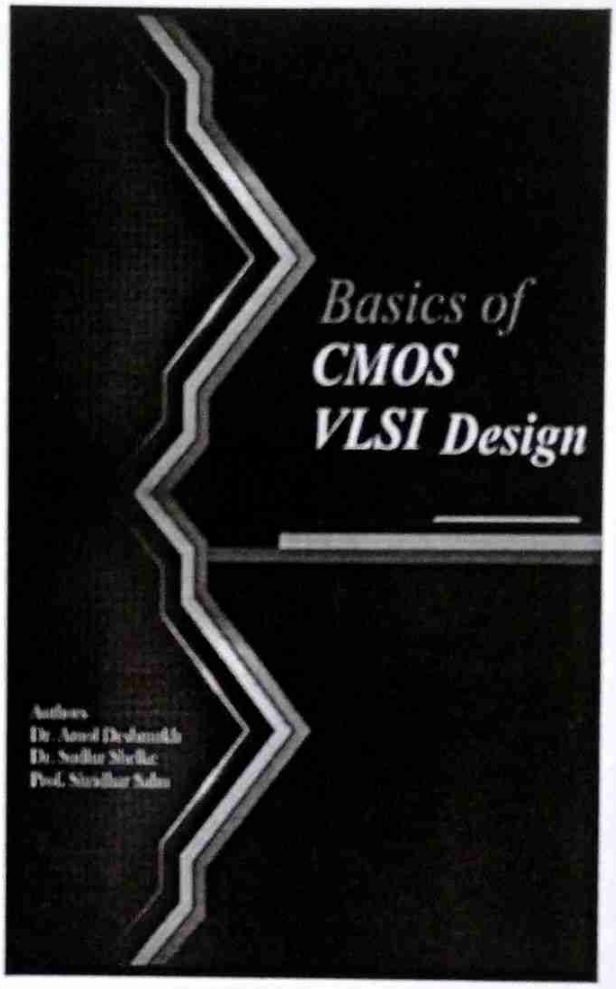

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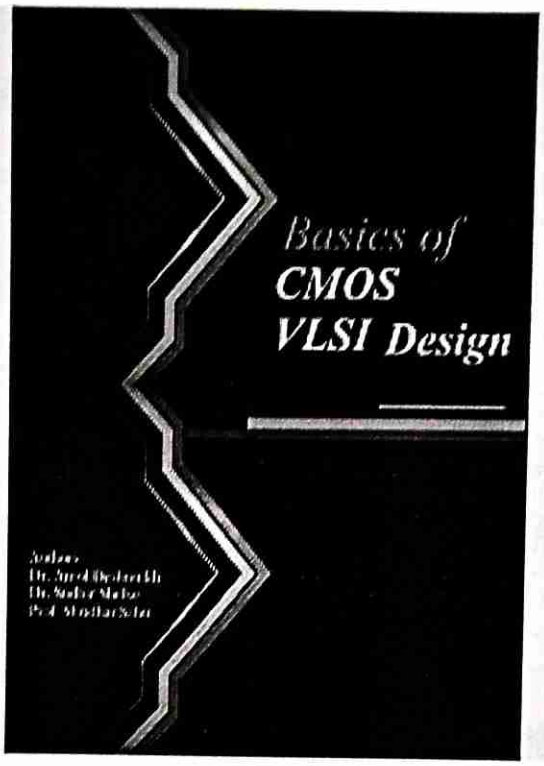

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CE23_ICSCI 2022_1154 DEVELOPINGPRACTICALFRAMEWORKFORSUSTAINABLEDEVELOPMENT

Dr.N.S.Raman[1], Dr.H.V.Hajare[2]
Dean(Research&Development),GuruNanakInstitutions(GNI),Nagpur
Principal,Guru Nanak Iinstitute of Engineering and Technology,Nagpur

ABSTRACT

A systematic framework of indicators for sustainability is presented in this paper. Inapproach, there is an emphasis on societal activities that affect nature and on theinternal societal resource use. In this way the indicators gives a warning signal to anunsustainable use of resources early in the chain from causes in societal activities toenvironmental effects. The aim is that socio-ecological indicators shall serve as a tool in planning and decision-making processes at various levels in society. The formulation of the indicators takes into account four principles of sustainability, which lead to four complementary sets of indicators.

Keywords: Indicators; Sustainability, socio-ecological

1.0 INTRODUCTION

The publication of the Brundtland report 'Our Common Future' (WCED, 1987) and the Rio Declaration (United Nations, 1992a) lies the challenge of sustainable development on the agenda for planners, decision makers and politicians at all administrative and institutional levels of the global society. Since then, much effort has been made to define and operationalise the concept of sustainability.

There are two aspects that are important in the construction of indicators:

i. There are, in many cases, long time delays between a specific activity and the corresponding environmental damage. This means that indicators based on the environmental state may give a warning too late, and in many cases only indicate whether past societal activities were sustainable or not.

ii. The complexity of the ecosystems makes it impossible to predict all possible effects of a certain societal activity. Some damages are well-known, but others have not yet been identified. Most of the sustainability indicators suggested so far is formulated with respect to known effects in the environment. We suggest that indicators of sustainability should be formulated with respect to general principles or conditions of sustainability.

2.0 INDICATORS FOR SUSTAINABILITY

There are both monetary and physical approaches lo indicating sustainability. In this paper we focus on physical indicators. Such indicators can be divided into three (main) groups:

i. societal activity indicators (that indicate activities occurring within society-the use of extracted minerals, the production of toxic chemicals, recycling of material),

ii. environmental pressure indicators (that indicate human activities that will directly influence the state of the environment-e.g., emission rates of toxic substances) and

iii. Indicators of the state of the environment or environmental quality indicators (that indicate the state of the environment-e.g., the concentration of heavy metals in soils and pH levels in lakes).

It should be noted that most indicators for sustainability developed and used so far belong either to the group of environmental pressure indicators or to me state of the environment indicators, this is shown in Table 1

3.0 PRINCIPLES OF SUSTAINABILITY

In our formulation of indicators for sustainability we use a framework of principles that should be fulfilled in a sustainable society (17). The principles are presented below.

Table 1: The Focus Indicators for Sustainability

Reference	Indicated Area	Societal Activities	Environmental Pressure	State of the Environment
Adriaanse (1993)	The Netherlands	X	X	
Alfsen and Saebo (1993)	Norway			X
Ayres (1995)	Mainly USA	X	X	

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A REVIEW ON ANALYSIS OF DYNAMIC & ASSESSMENT OF MULTISPAN BRIDGE

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ABSTRACT

India is a developing country and transportation systems are considered as the backbone of the nation's economy and the key to the economic growth.During the life cycle of bridges, varied amplitude of stress ranges on structural details are induced by the random traffic. In the mean time, highway bridges are subjected to various aggressive environmental conditions leading to serious corrosion problems. Corrosion problem, faced by millions of reinforced concrete structures worldwide, can cause deterioration of the reinforcing steel bars, cracks and spalling on the bridge deck surface. As the bridge deck surface deteriorates over time, the road surface roughness profile will vary accordingly. The varying surface roughness profiles over time will generate increased dynamic loads on the bridge decks through dynamic interaction between surface roughness, vehicles of stochastic traffic and bridge structures. The increased dynamic loads, coupled by the reinforcement deterioration of bridge deck due to corrosion, may further cause accelerated response and fatigue accumulations on the bridge deck. Such a nonlinear time-progressive process continues over time throughout the lifespan of the bridge deck, which has not been systematically characterized or studied.

Keywords: DOF, FEM

INTRODUCTION

Purpose of Research

The infrastructure and transportation systems importance has been described as following

"the infrastructure supporting human activities includes complex and interrelated physical, social, ecological, economic, and technological systems such as transportation, energy production and distribution; water resources management; waste management; facilities supporting urban and rural communities; communications; sustainable resources development; and environmental protection."

The quality of the transportation system not only influences the quality of life due to delay and congestion, but also affects the safety of thousands of drivers every day. Highway bridges become the critical component of any transportation systems by providing vital connection to roadways, across valleys or other natural barriers.

A major challenge for modern bridges, especially the concrete bridges, is the demand of frequent repair and maintenance to keep necessary serviceability due to constant condition deterioration, material degradation and growing traffic. The increase of heavy traffic over recent years, especially those overweight trucks, further worsens the situation. According to High Capacity Manual, the heavy trucks contribute more than 50% of overall pavement damage with less than 20% of the total traffic volume (HCM 2010). The repairs of bridge decks are usually costly, not only due to the direct cost of repair, but also due to the indirect cost from the traffic disruption during the repair action. In the last few years, significant concerns arise about the combined deterioration from both fatigue and corrosion. This is especially true for many existing bridges, which have been designed with the old specification.

LITERATURE

REVIEW

A Brief Review of the Work Already Done in the Field

Yehla 1998, Highway Bridges are exposed to various aggressive environmental conditions. One of the most common aggressive conditions is the aggressive attack from Chloride Ions which causes steel bars corrosion, leading to concrete deterioration, e.g. concrete spalling (see Figure 1.2). This kind of corrosion usually occurs in highway bridges located in the coastal areas, where the air is full of chloride ions. The Federal Highway Administration (FHWA) has reported that around 15% of the bridges in the United States are in need of some sort of repair, because of steel and reinforcement steel corrosion (FHWA 2002). The report also estimated that the corrosion of bridges costs the nation

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STATIC AND DYANMIC ANALYSIS OF GRID AND FLAT SLAB IN RCC STRUCTURE BY USING STAAD.PRO.

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ABSTRACT

Structural Engineering is a branch of Civil Engineering where the study is done to know how the structure behave when building is constructed at real environment and to identify the various forces like axial force and shear force, bending moment and displacement etc. acting on the structure. The need for beam-less and column-free space structures has been increasing globally in recent years; to meet such an increasing demand Flat and Grid slabs could be used. In this study analysis and design of Flat, Grid and their different combinations for several parameters have been carried out; such as for seismic behavior, summation of total moment, dead loads, base shear, storey drift, displacement Vs. height of the structure, design specification and their comparisons. STAAD.Pro software is used to carry out the static and dynamic analysis

Keywords: *Flat slab, Grid slab, STAAD.Pro, Seismic analysis, Base shear, Storey drift, Displacement, Design of Slabs.*

INTRODUCTION

In this study flat and grid slabs in RC frame are discussed, both grid and flat structures are being analyzed seismically in zone 4, base shear, storey drift, total applied load, displacement vs storey height, drift vs storey height are compared. The flat slab arrangement of structure is one in which the beam is used in the conventional procedures of construction through away with the directly rests on column as well as the load from the slabs is directly conveyed to the columns and then to the footing. Drops or columns are generally provided using column heads or capitals. Floor systems consisting of flat slabs are very famous in countries where cast-in place building is prime form of construction because of numerous advantages in terms of architectural flexibility, use of space, easier formwork, and shorter creation time. Flat slabs are being used chiefly in office buildings due to reduced formwork cost, fast excavation, and easy establishment. That's why it's crucial to think what you're getting into (or under) so you can maximize the comeback on your investment. Grid floor systems comprising of beams move apart at regular intervals in perpendicular directions, monolithic with slab. GRID SLAB Interconnected grid systems are being commonly used or supporting building floors bridge decks and overhead water tanks slabs. A grid is a planar structural system composed of continuous members that either intersect or cross each other. Grids are used to cover large column free areas and have been constructed in number of areas in India and abroad. Is subjected to loads applied normally to its plane, the structure is referred as Grid. It is composed of continuous member that either intersect or cross each other. Grids in addition to their aesthetically pleasing appearance provide a number of advantages over the other types of roofing systems

LITERATURE

Bhatia. N.K et al. (2016).studies the response of flat slabs and gird slabs in conventional RCC buildings, These buildings were given square, hexagon and octagon geometries each. Then each of them was analyzed using response spectrum method for earthquake zone II of India. Their result was that the performance and structural characteristics of flat slab and grid floors are more superior to conventional slabs, it is seen in term of material coast and deflection.

B.Anjaneyulu et al. (2016) . This work includes the design and estimate for flat slabs of various spans, ranging from 6.0 m to 12.0 m, by reinforced concrete. And pre stressed concrete techniques. They studied about the performance of flat and conventional slab structures subjected to different loads and conditions, they studied the behavior of flat slab structures and conventional slab structure for different parameters, Flat plate/slab can be designed and built either by conventional reinforced concrete. Or posttensioning. However, due to issues mentioned above with post- tensioning construction in India

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A REVIEW ON STUDY & ANALYSIS OF SELF SUPPORTED STEEL CHIMENY ACCORDING TO INDIAN STANDARD

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ABSTRACT

Most of the industrial steel chimneys are tall structures with circular cross-sections. Such slender, lightly damped structures are prone to wind-exited vibration. Geometry of a self supporting steel chimney plays an important role in its structural behaviour under lateral dynamic loading. This is because geometry is primarily responsible for the stiffness parameters of the chimney. However, basic dimensions of industrial self supporting steel chimney, such as height, diameter at exit, etc., are generally derived from the associated environmental conditions. To ensure a desired failure mode design code (IS-6533: 1989 Part 2) imposes several criteria on the geometry (top-to-base diameter ratio and height-to base diameter ratio) of steel chimneys. The objective of the present study is to justify the code criteria with regard to basic dimensions of industrial steel chimney.A total of 66 numbers self supporting steel flared unlined chimneys with different top-to-base diameter ratio and height-to-base diameter ratio were considered for this study. The thickness of the chimney was kept constant for all the cases. Maximum bending moment and stress for all the chimneys were calculated for dynamic wind load as per the procedure given in IS 6533: 1989 (Part 2) using MathCAD software. Also the results were verified with the finite element analysis using commercial software ANSYS. Basic wind speed of 210 km/h which corresponds to costal Orissa area is considered for these calculations. Maximum base moments and associated steel stresses were plotted as a function of top-to-base diameter ratio and height-to-base diameter ratio. The results obtained from this analysis do not agree with the code criteria.

Keywords:ACI, DIN

INTRODUCTION

Chimneys or stacks are very important industrial structures for emission of poisonous gases to a higher elevation such that the gases do not contaminate surrounding atmosphere. These structures are tall, slender and generally with circular cross-sections. Different construction materials, such as concrete, steel or masonry, are used to build chimneys. Steel chimneys are ideally suited for process work where a short heat-up period and low thermal capacity are required. Also, steel chimneys are economical for height up to 45m. Geometry of a self supporting steel chimney plays an important role in its structural behaviour under lateral dynamic loading. This is because geometry is primarily responsible for the stiffness parameters of the chimney. However, the basic geometrical parameters of the steel chimney (*e.g.*, overall height, diameter at exit, etc.) are associated with the corresponding environmental conditions. On top of that design code (IS-6533: 1989 Part 2) imposes several criteria on the geometry of steel chimneys to ensure a desired failure mode. Two important IS-6533: 1989 recommended geometry limitations for designingself supporting steel chimneys are as follows:Minimum outside diameter of the unlined chimney at the top should be one twentieth of the height of the cylindrical portion of the chimney.Minimum outside diameter of the unlined flared chimney at the base should be 1.6 times the outside diameter of the chimney at top.Present study attempts to justify these limitations imposed by the deign codes through finite element analyses of steel chimneys with various geometrical configurations.

LITERATURE REVIEW

1. **Ciesielski, *et. al.* (1996)** observed cross vibration on a steel chimney arising out of erodynamic phenomenon. This paper shows that specially designed turbulizers, mechanical dampers can reduce this cross vibrations considerably.

2. **Ciesielski, *et. al.* (1992)** gives information on vortex excitation response of towers and steel chimney due to cross wind. A model is proposed to calculate maximum displacement of the chimney at top due to cross wind and the results are reported to match closely with the observed maximum top displacement.

3. **Gaczek and Kawecki (1996),** explained about the cross-wind response of steel chimneys with spoilers. 3-start helical strake system with strakes of pitch 5D is explained in this paper. Also, it is reported that the top displacement of a chimney depends on the parameter of excitation.

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AN EXPERIMENTAL STUDY ON EFFECTIVE UTILIZATION OF GLASS POWDER IN CONCRETE

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ABSTRACT

Glass powder is commonly used to supplement of Portland cement in concrete production, where it can bring both technological and economic benefits.The difference between glass powder and Portland cement becomes apparent under a microscope. Glass powder particles are almost totally spherical in shape, allowing them to flow and blend freely in mixtures. That capability is one of the properties making glass powder a desirable replacement for cement in concrete.The aim of the present work was to use glass powder as a replacement of cement to assess the pozzolanic activity of fine glass powder in concrete. In this project we replace Cement by glass powder in the range 5% to 30% increment of 5% is studied. Itis then tested for compressive strength at the age of 7, 14 and 28 days and compared with those of conventional concrete. Results are then studied for which proportion it gives higher strength.

Keywords: glass powder, compressive strength, cement, water

INTRODUCTION

Due to various factories and industries large volume of waste produced daily. The disposal of the waste generated from industries has become serious issue solid waste management is one of the major environmental concerns in the world.The recycling and reuse of the waste has become the best alternatives as their disposal problem of waste. Glass is an amorphous material with high silica content (SiO2) i.e.72%waste glass when grounded to very fine powder (600 micron) reacts with alkali in cement (Pozzolana reaction) &cementations product that help to contribute to the strength development ,when glass powder is added as a pozzolana ,it provides a large volume of hydration products & uniform distribution. The added glass provider in concrete changes the cement paste structure. The resulting paste contains more of the strong calcium silicate hydrate(C-S-H) & less of the weak & easily hydroxides (CaOH) 2 than ordinary cement paste. The micro filler effect of glass powder will reduce the permeability of concrete and impact the better paste to aggregate bond of concrete as compared to normal conventional concrete.

MATERIAL USED

Under this experimental investigation, following materials are using which are given as below:-

- Cement ,Sand ,Aggregate ,Glass Powder

A.Cement

Grade: 43

Type: Ordinary Portland cement.

B. Aggregate

Aggregates are those chemically inert materials which when bonded by cement paste form concrete. Aggregates constitute the bulk of the total volume of concrete and hence they influence the strength of concrete to great extent.

1) *Fine Aggregates:*The material which passed through I.S. Sieve No. 480 (4.75mm) is termed as fine aggregates. The source for fine aggregate used is from natural river bed. The fine aggregate used which have fineness modulus of 3.1, specific gravity of 2.62. 2) *Coarse Aggregates:*The material whose particles are of such size as are retained on I.S. Sieve No. 480 (4.75mm) is used as coarse aggregates.

3) *Glass Powder:*

RESULT AND DISCUSSION

1.M25 GRADE COMPRESSIVE STRENGTH:

TEST RESULT FOR 7 DAYS

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LITERATURE REVIEW ON ANALYSIS OF THE EFFECT OF DIFFERENT MATERIAL USED IN FOOT BRIDGE BY USING Ansys

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ABSTRACT

The forecast of the unique reaction of passerby spans under human-incited excitation is a test in the plan of walker spans, brought about by the wide scope of factors and the perplexing communication impacts. The utilization of new, lightweight materials, as FRP, and the pattern to configuration long range and slim developments lead to structures more touchy to dynamical effect, which caused some vibrational issues at recently fabricated scaffolds in the new past. This carried expanded regard for this point. The current postulation plans to dissect the unique properties of the new material fiber built up polymer (FRP), to assess the progressions they cause in the powerful reaction of separate developments and to approve the current rules. The initial segment of the exploration incorporates a writing audit as far as common stacking, their association with the construction, the qualities of FRP and the detail of the current rules. To examine the unique properties and the consequences for the powerful reaction, the subsequent part presents a parametric examination of worked on span structures and their dynamic reaction to various burdens instigated by people on foot. To group the new composite material, the assessed mechanical properties and dynamic attributes are contrasted with the customary material steel.

Keywords: CSI bridge, footbridge, Fiber reinforced polymer

INTRODUCTION

The powerful conduct of walker spans under human-incited excitation pulled in extensive interest, brought about by a few occurrences, where the invigorated motions of recently assembled spans surpassed the degree of functionality and jeopardized the security of the design. The collected appearance of these dynamical issues is identified with the new improvements in the development of walker spans. The pattern for longer ranges and more prominent slimness in blend with the utilization of new, light materials decreases the regular frequencies of the designs and builds their affectability to dynamic burdens in the scope of strolling frequencies. The announced swaying issues from everywhere the world demonstrate that the current rules and configuration codes in regards to the plan of walker spans are unsuitable as far as human-prompted excitations of light and slim developments. The point of this review is to dissect the dynamical conduct of walker spans worked out of fiber built up polymer (FRP), an agent for the recently utilized materials in the development of scaffolds, and to call attention to their determinations and their disparities to customary development materials.

LITERATURE REVIEW

- **S.P. Carroll, M.F.M. Hussein (2011)** worked on "Crowd-bridge interaction by combining biomechanical and discrete element models". The utilization of a discrete group model to recreate swarm conduct offers a few benefits over past hydrodynamic group models; low thickness traffic is reproduced with practically no deficiency of precision, between subject inconstancy is effortlessly demonstrated and a predefined speed thickness relationship for the group isn't needed. The rise of group conduct dependent on individual associations permits one to reproduce changes in the footbridge climate and thus explore what the modified group conduct means for the powerful reaction of the extension.The coupling between different IP models and a straightforward SDOF model of scaffold reaction has exhibited that sidelong shakiness can be set off by the modification of step width as opposed to any change of pacing recurrence. Anyway the varieties in pacing recurrence and position presented by the group model hamper the improvement of this insecurity. Oneself energizing nature of the coupled unique framework results from the aloof idea of the IP model. Put together both with respect to straightforward rationale and ongoing exploratory outcomes, the creators propose this might be excessively oversimplified to completely depict the humanstructure collaboration wonder. Progressing work looks to test this theory.
- **Prakash Kumar, Anil Kumar (2014)** worked on "HUMAN INDUCED VIBRATION IN STRUCTURES .Human-structure connection is a significant part of human-instigated vibrations. Human instigated vibration in structure has functionality issue instead of security. Vibration instigated in structure assume a critical part in solace of human present on it, It is tracked down that the entire issue is exceptionally complicated and under-explored. Be that as it may, these days when managing

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TO IMPROVE THE CONCRETE PROPERTIES BY USING EPOXY MATERIALWITHDIFFERENT WATER CEMENT CEMENT RATIO

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ABSTRACT

The current assessment for repair is not accurate and lack of accumulative research data. Moreover, most of the repair methods forconcrete is done based on deemed to-satisfy method based on readily available proprietary repair systems. The research work presented providesadditional information on the assessment and repair of cracks for concrete from various water cement ratios. Upon 28 days of curing, the cubesundergoesthecompressiontest,however,thecompressiontestwillbetimedandmonitoredonly untilobviouscracksappearsfromtheauthor'snakedeyes.AtthisjuncturetheUniversalTestingMachine's(UTM)powerwillbekilledimmediatelyandthesampleremovedthereafter.Thesampleswillbe repaired by applying epoxy at cracks and will be left for drying at ambient temperature in the laboratory. The repaired sample will be once againtested under compression using UTM, however, at this point the sample will be tested until failure and the strength recorded. The Expected outcomeistherepair methodusing epoxywasable to sustainat least80%to 85%of totalstrengthachievedwhen cracks appearedduringtesting.

KeyWords:CompressionTest,Epoxy,UniversalTestingMachine

INTRODUCTION

Concrete does not need too much water inside the mixture. Nowadays, the concrete used in site has too much water added in themixture.Themorewateraddedinside,thehighertheshrinkagehappen.Whentheconcretedriedandharden,theshrinkagewillhappendue to the evaporation of the excess water and can cause the early age of crack on the concrete. The excess of water can reduce theconcrete strength. Secondly, concrete cracks due to improper strength concrete mixture. Concrete has much different strength, makesure the concrete strength that we required is poured. Concrete also cracks due to sun. The heat makes the concrete to expend and atthe end of the day, the concrete contracts and back to its normal state. These can cause the cracks happen. Cracks can be divided intotwotypeswhicharenon-structuralcracksandstructuralcracks.Astructuralcrackmeansitcrackduetotheincorrectdesignandfaultyinconstructionoroverloading.Thistypeofcrackmayendangeredthesafetyofthebuildingitself.Whileanon-structuralcrackmeanscrack dueto inducedstressesinside theconcrete butit isgenerally donotaffecttheweaknessofthe building.

Thus, the attempt has been made to repair the initiated crack using epoxies as a composite material and to determine strength of therepaired concrete after applyingepoxy.

LITERATURE REVIEW

Moetaz M El-Hawary, Ali Abdul-Jaleel (2010/8/1) The main objective of this presented work is to investigate the corrosionresistance of reinforced epoxy modified concrete in the hot marine environment and the possibility of introducing epoxy in concretetoimproveitsdurability.Differentpercentagesofcementwerereplacedbyepoxy.Specimenswereputin thetestingtanksofaspeciallymanufactured accelerated marine durability system, where they were exposed to cycles of sea water wetting and hot air drying. Theintroduction of epoxy in the concrete mix was found to increase the corrosion resistance, reduce permeability, reduce chloridepenetration and increasestrength.The improvementswerefound toincreasewith theincrease in epoxypercentage.

MoetazMEl-Hawary,HishamAbdel-Fattah(2000/9/1) Theinvestigationofthemechanicalbehaviorofresinconcreteisbecomingimportant, as the types of resins are increasing and the use of resin concrete is no longer limited to repair work. The structural use ofresin concrete requires accurate design that can be achieved through the utilization of the Finite Element method which requires acomplete constitutive model and full understanding of the mechanical behavior of resin concrete. The investigation of stress–strainrelations under repeated loading for resin concrete cylinders, prepared using different types of resins and different ratios of resins

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ENVIRONMENTAL AUDIT: A PARADIGM SHIFT TOWARDS SUSTAINABLE DEVELOPMENT

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ABSTRACT

Environmental auditing is fast emerging as a key practice among industries in India. This article highlights some of the environmental and cost-saving benefits that organizations can realize from a well-conducted environmental audit.

This article begins with some background on environmental issues in India. We then review the history of environmental auditing and describe some of the practice's key benefits. Our discussion next outlines the steps involved in environmental auditing.

We present a case study of an environmental audit conducted at a wood pulp plant in India. This case history illustrates how auditors in India assess companies' environmental management systems and pollution control equipment with respect to government regulatory requirements. It also highlights how material, energy, water use, environmental quality, and worker health and safety audits can identify avenues for cost savings in the production process.

PROLOGUE

A paradox of modern technological society is that efforts to enhance economic prosperity and improve living standards can often be detrimental to the overall quality of life, especially when natural systems are pushed beyond sustainable limits and when the quantity of pollutants released exceeds the environment's assimilative capability.

In India, efforts at environmental protection have often relied on strict regulatory measures, with little regard given to industrial productivity. Companies interested in increasing production have thus assumed that they have little to gain from improving environmental management and pollution control.

For a developing country like India, pollution is not the only source of environmental degradation. Lack of industrial development, and the consequent failure to mitigate poverty, can also cause significant damage. If we wish to protect the country's environment without seriously blocking technological progress, we must develop and adopt environmentally benign strategies and technologies.

The environmental audit provides an effective management tool that can improve environmental performance while enhancing industrial productivity at the same time. In the context of safeguarding the environment in India, it is thus not surprising that few topics have attracted as much attention as auditing.

Evolution of Environmental Auditing in India

Increasing industrial activity in India has led to excessive consumption of resources and the release of deleterious effluents, emissions, and residues into the environment. Efforts to prevent abate, and control pollution has relied on a range of laws, regulations, and standards, along with financial incentives and practices such as the labeling of environmentally friendly products.

There are some 250 regulatory enactments that have a bearing on the environment in India. Pollution control boards require polluting industrial units to comply with prescribed emission standards and can bring legal action in cases where businesses fail to do so.

Interest in auditing environmental, health, and safety performance has grown in response to the environmental damage caused by industrial activities. In the global context, the United Nations has issued a set of recommendations for industry information disclosure, but these have yet to be implemented, even in the developed world. This may be an area in which India can take a lead in the future. The Government of India recognizes the importance of environmental auditing and has issued a number of notifications dealing with the subject. Procedures addressing environmental auditing were first enacted under the 1986 Environment (Protection) Act, by the Ministry of Environment and Forests in Notification No. GSR 329(E), dated March 13, 1992. This notification required that industrial units furnish environmental audit reports. By an amendment, Notification No. GSR 386(E), dated April 22,

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Analysis of Acceleration Behaviour of Light Motor Vehicles

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ABSTRACT

Emerging as well as developed countries, traffic is characterized by a wide range of physical dimensions, weights, dynamic characteristics with vehicles driving on any accessible area of the road space without regard for lane discipline. Dynamic traffic generates a variety of stress on road infrastructure, as well as affects road conditions (both structural and surface), which contributes to an increase in road accidents. Due to excessive traffic, jam density at intersection points, travel time (Time & Distance Headway) for the driver increases, which affects the overall cost of the journey because vehicles always start in place during jams that occur at Junctions. For better traffic flow, traffic simulation should be used to distribute traffic per lane.

The study and modeling of dynamic traffic having a multi-agent framework is the topic of this essay. Different keywords have been considered for the study, which can be valuable for improving traffic conditions and reducing accidents at intersections or crossings. For the distribution and analysis of traffic a vehicle characteristics and geometric design is considered. The researcher employed various types of modal such as single regime linear and dual, polynomial, and exponential modal. Intelligent transportation can be used to enhance traffic conditions by employing multi-agent systems that can be maintained or employed according to traffic conditions.

Key words: Speed, Acceleration, Deceleration, Driver Behaviour, Geometric Design, Vehicle characteristics

INTRODUCTION

The basic aspect which a person is used to in his daily life is traffic. There seem to be different types of trip such as (Residence, Workplace, Enjoying, Job etc.) the person use in his journey. It is crucial for him to achieve their aim. Several types of vehicles are used for transportation, depending on the driver's safety and comfort. As per to their traffic intensity and movement capacity, heterogeneous and inconsistent traffic situations are frequent. These vehicles reach speeds varying from 30 to 100 kilometer per hour. Several types of vehicles possess different acceleration and deceleration attributes. Vehicles do not follow lane discipline and travel freely from across entire width of the route due to drastically varied physical dimensions, speeds, and acceleration and deceleration behaviour. Furthermore, these varied types of vehicles transiting on the same road network may become at various levels of service. Due to their capacity to use smaller gaps with in stream, a major fraction of motor two wheelers and bicycles can go at speeds closer to their free speeds in larger traffic levels, while increased vehicles are prone to significant speed reductions.

For realistic simulation and modelling of traffic streams, the study of regulatory systems, intersections, single intersections, and the intensity of traffic behaviours of different types of vehicles is required, as their acceleration and deceleration behaviour varies greatly depending on their power to weight ratios. Moreover, a driver's acceleration-deceleration patterns may be influenced by factors such as age, driving experience, qualifications, and financial status. The impact of driver behaviour on speed, acceleration, and deceleration has created a better knowledge of driver

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"Analysis & Modeling of Deceleration Behaviour of Light Motor Vehicles"

Sushant M. Gajbhiye, Prof. Arun Patel

Abstract

Traffic in both developing and established countries is associated with a wide variety of different types of vehicles (HMV & LMV) having properties like physical dimensions and weights, as well as dynamic characteristics, with vehicles moving on any available section of the road capacity with respect to lane discipline. Dynamic traffic leaves a range of marks on road network and has an impact on road conditions (both morphological and structural), resulting in a rise in road traffic accidents. Even though vehicles invariably start alongside during jams which take place at Junctions, travel time (Duration & Distance Headway) for the driver increases as a result of increased traffic intensity at points of intersection. This has an impact on overall cost of the journey even though automobiles always start ahead during jams that occur at Intersections. Traffic simulator should be used to allocate traffic per channel for improved traffic flow. Vehicle deceleration characteristics are crucial for junction design, lane width design, traffic simulation system and vehicular capacity, pollution control and fuel consumption modeling. Vehicles in a homogeneous and heterogeneous traffic stream have a broad variety of physical characteristics like weight, size, hauling capacity and dynamic characteristics, all of which impact their deceleration characteristics by affecting the road characteristics and its behaviour. Previous research has focused on the deceleration behaviour of LMV vehicles (Auto & Bike) in uniform traffic. The goal of this study is to look at how different vehicle (Auto & Bike) decelerate on the Nagpur Katol Naka Highway on the outskirts of Kalmeshwar Town, India. The driver was asked to slow their vehicles from top speed to low velocity in the shortest possible time and the speed patterns were monitored using a GPS. Modeling of dynamic traffic having a multi-agent framework by considering different keywords used for the study, which can be valuable for improving traffic conditions and reducing accidents at intersections point or junctions. Modal such as single and dual regime modal developed to describe the deceleration behaviour by considering overall speed trajectories. Intelligent transportation can be used to enhance traffic conditions by employing multi-agent systems that can be maintained or employed according to traffic conditions.

Keywords

Single & dual regime model, Speed, Deceleration, Vehicle characteristics.

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SIMULATION MODEL FOR HIGH MOTOR VEHICLES FOR HETEROGENEOUS TRAFFIC

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ABSTRACT

Traffic in both developing and established nations is characterized by a wide variety of physical dimensions and weights, as well as dynamic characteristics, with vehicles moving on any available section of the road space without respect for lane discipline. Dynamic traffic leaves a range of stains on road infrastructure and has an impact on road conditions (both structural and surface), resulting in a rise in road accidents. Because vehicles always start in place during jams that occur at Junctions, travel time (Time & Distance Headway) for the driver increases as a result of increased traffic density at intersection points. This has an impact on the overall cost of the journey because vehicles always start in place during jams that occur at Junctions. Traffic simulation should be used to allocate traffic per lane for improved traffic flow. This article is about the research and modelling of dynamic traffic using a multi-agent framework. For the study, many keywords were investigated, which might be useful for improving traffic conditions and minimizing accidents at crossroads or crossings. Vehicle characteristics and geometric design are taken into account while distributing and analyzing traffic. The study used a variety of modal types, including single regime linear and dual, polynomial, and exponential modal. Multi-agent systems that can be maintained or used according to traffic circumstances can be used in intelligent transportation to improve traffic situations.

Keywords: ***Vehicular Characteristics, Vehicular Speed, Vehicular Acceleration, Driver Characteristics.***

INTRODUCTION

The most fundamental component of a person's everyday existence is traffic. There appear to be several forms of trips that the individual uses in his routing, such as (Residence, Workplace, Enjoying, Job, etc.). It is critical for him to accomplish their goal. Transportation is provided by a variety of vehicles, depending on the driver's safety and comfort. Heterogeneous and homogeneous traffic scenarios are common, depending on their traffic intensity and movement capacity. These vehicles go at speeds ranging from 30 to 100 km/h. Distinct vehicles have different acceleration and deceleration characteristics. Due to dramatically different physical dimensions, speeds, and acceleration and deceleration, vehicles do not obey lane discipline and pass freely throughout the whole width of the path. Moreover, these various types of vehicles may experience variable degrees of service while travelling on the same road network. Motor two-wheelers and bicycles may travel at rates closer to their free speeds in higher traffic levels due to their ability to utilize smaller gaps within the stream, whereas bigger vehicles are subject to considerable speed decreases.

The study of regulatory systems, intersections, single intersections, and the intensity of traffic behaviour of different types of vehicles is required for realistic simulation and modeling of traffic streams, as their acceleration and deceleration behaviour varies greatly depending on their power to weight ratios. Furthermore, characteristics such as age, driving experience, credentials, and financial standing may influence a driver's acceleration/deceleration behaviour. A greater understanding of driver attitudes and beliefs regarding speeding was required to understand the influence of driving behaviour on speed, acceleration, and deceleration. Road factors such as lane width, number of lanes, horizontal and vertical alignment bends, and pavement performance impact driver behaviour in terms of speeding, acceleration, and deceleration. Higher performance also affects driver speeding and acceleration/deceleration behaviour.

A study of the multi-agent framework and its behaviour in the context of vehicles has been undertaken on High motor vehicles (like trucks). The effect of driver characteristics (such as education, age, and driving experience) on acceleration behaviour was also studied.

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A REVIEW ON COMPARATIVE ANALYSIS OFDIFFERENT STEEL TRUSS TYPE RAILWAY BRIDGECONSIDERINGRAILWAY LOADINGS

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ABSTRACT

Beam bridges are the simplest and oldest type of bridge in use today, and are a popular type. A truss bridge is a bridge whose load-bearing superstructure is composed of a truss. Various types of different design of truss structure are constructed in bridges depending upon the type of bridge and volume of vehicles passing through it. This research work comprises of design and analysis of different types of bridge structure for railway systems. The different trusses are made from the steel material and a comparative study is done based on the results. For the study four type of truss design is taken in to consideration such as rectangular truss, X-type, V-type, and K-type truss. The results are compared based on support reaction, displacement, shear force and torsion. Both maximum and minimum values for all the respective cases have been depicted in the work including cost analysis.

Keywords–Truss Bridge, Railway Bridge, Indian Railway Code, Truss.

INTRODUCTION

In India, Economic progress mainly depends on the railway and is considered as the Life line of the Nation. India has the second largest rail network in the world, transporting over four billion people annually and the total figure of existing railway bridges are approx. 1,20,000. Out of these, 731 are long span open girders, 19014 are rolled steel joist or plate girders. So it can be seen that more than 20% are Steel girder bridges. Due to continuous movement trains, the members and their connections are subjected to repeated loadings due to which the stiffness of the joint gets reduced, which are more prone to fatigue damage. The conventional static, dynamic or stability analysis of Steel Trusses bridges assumes that their members are connected at rigid or hinged joints. However in reality Steel Trusses are reinforced at their joints by Gusset plates, which possess rotational flexibility. The presence of this gusset plates has an appreciable effect on the stiffness of the members of the Bridge and consequently on its behavior to Static and Dynamic loading. However, the behavior of connections is neither rigid nor pinned. Structures having such flexible Joints in which Joint flexibility becomes important are called as semi rigid frame members. In fatigue assessment of the bridge components the joints are assumed to be rigid as per RDSO, where joint flexibility is neglected which may affect the dynamic behavior of the bridge component, consequently its fatigue life. Therefore it is necessary to evaluate the bridge components for semi rigid connections.

LITERATURE REVIEW

Rajesh F. Kale, N.G.Gore, P.J.Salunke (January 2014) Studied the cost efficient approach of reinforce cement concrete T-beam girder. His main objective function was to reduce the total cost in the design process of the bridge system considering the cost of materials. The cost of each structural component such as material, manpower, cost for reinforcement, concrete and formwork. For each and every bridge its girder length, width of bridge, decks lab depth, width of web of girder and girder depth are considered for the cost minimization of the bridge system, the structure is modeled and analyzed using the direct design methods. Cost efficient problem is formulated in NLPP (non-linear programming problem) by Sequential Unconstrained Minimization Technique. The model is analyzed and designed for an optimization purpose by using Mathematical lab(Matlab) Software with SUMT, and it is capable of indicating precisely with high probability of minimum design variables. Optimization for reinforced cement concrete T-beam girder system is illustrated and the results of the optimum and conventional design procedures are compared. Observed that Significant savings in cost over the normal design can be achieved by the optimization.

CE46_ICSCI 2022_7023
LITERATURE REVIEW ONSEISMIC DESIGN OFCOMBINED MIDDLE HEADAND OVERHEAD WATERTANK

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ABSTRACT

Watercapacityisfundamentalforsatisfyingeveryoneoftheprerequisites of the homegrown, modern and chimney requests of most openwaterstructures.Therearethreeuniquesituationstobeconsiderfortheexamination i.e., underground, over the ground and upward water tank. The sortand capability of water stockpiling expected in an appropriation frameworkfluctuate with the reach and the size of the framework, geography of the area.Underground water tanks are utilized for underground capacity of consumablewater, wastewater and water assortment. Furthermore it is a water stockpilingstructure worked beneath the ground.An upward water tank is a proficientwater appropriation framework. For Overhead Water Tank, we generally planagainst toppling so for this a Ground Water Tank gave to limit the impact ofsame and this will implied (preceded) as divider. Over the ground water tankcovers an adequate region for giving water to the purchaser. The adjustment ofwater tank in various soil conditions is to be broke down by utilizing ETABS-18programming.

Keywords: Etabs-18, Water tank, Combination of Rectangular tank-Overheadand middle head, Design, Analysis, Deflected shapes, Hydrostatic Pressure,Results.

INTRODUCTION

Water is essential need of human for day to day existence. Adequatewater circulation relies upon plan of a water tank in specific region. Araised water tank is an enormous water stockpiling holder developed toholdwateratspecifictallnesstocompressthewaterdisseminationframework.Watertanks are predominantly usedto give capacity tonumerous applications, for example, drinking water, squander water,downpourwaterassortment,horticulturecultivating,compoundbusinesses and so forth So water tanks are fundamental for the workingof Residential, Commercial, Social or modern advancement structures.Raised water tanks comprise of enormous water mass at the top withslim arranging which is mostbasic thought forthe disappointmentofthetankduringtremors.Raisedwatertanksarebasicandkeyconstructions which are harm during seismic tremors might imperil todrinkingwatersupply,neglecttoforestallingfiresandsignificantfinancial misfortune. Underground tanks are situated at underneath thegroundlevelandtheirdividersandrooftopiscoveredwithsoil.Likewise these tanks are entirely appropriate for heat trade. Incooldistricts, underground tanks ought to be utilized to forestall freezing ofwater. For the given water tank Design and Analysis is to be ready withassistanceofETABSSoftware.Additionallythedivertedshapes,Pressure applied are to be portrayed as result. Quake harms the gravelydevelopedstructure.Thusitiscriticaltoexaminethedesignappropriately for seismic tremor impacts. The water supply request hasnowexpandedwhencontrastedwithearlieryearinformation.Because the water interest for drinking, homegrown, modern and business use.The water tank has now turned into the fundamental part of each designinlightofthefactthatsatisfythewaterneeds.

LITERATUREREVIEW

IssarKapadia,PuravPatel,NileshDholiyaandNikunjPatel, In this exploration, considered Combined Rectangular WaterTank in which mix of Rectangular Surface Water tank and RectangularOverhead Water Tank are taken as together. For the given water tankDesignandAnalysisis to be ready with assistance of STAADProprogramming. Likewise, the avoided shapes, Pressure applied are to bedepicted as result. Considering the plan of dividers by ApproximateMethod is comprehensively arranged into two classes Tanks havingproportionL/B<2andTankshavingproportionL/B>2.Itwasexpressed in paper that, the joined rectangular upward water tank andgroundwatertankcanlimitthedeficiencyofdisappointmentofconstruction. Likewise, it can accomplish that no more risk for watertank from toppling. wind load, tremor load. Also as it can store greateramount of water according to populace required. The

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LITERATURE REVIEW ONANALYSIS OF SEISMICLOADING BY USINGRESPONSE SPECTRUMMETHOD AND ANALYSIS OFWIND LOADING ON G+11BUILDING

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ABSTRACT

Presently a day the tall designs like high rises are generally taken onin significant urban areas in India. Many significant urban communities areextremely nearer to the beach front region and practically every one of themgoes under the live seismic zone which is large issue for skyscraper multistoreystructures. The manual examination of such a perplexing design is excessivelychaotic and tedious. It is exceptionally important to find the arrangement on thisissue quickly. So the breeze and seismic examination of the constructions doneby the development programming Stadd-pro. In this proposed concentrate onfour distinct states of same region multistorey model is produced and tried bytheStadd-proundertheruleofIS-875-Part3andIS1893-2002-Part1.Theconduct of 15, 30 and 45 story building has been considered.

Keywords: Seismic analysis, Wind analysis, Response spectrum method,Stadd-pro

INTRODUCTION

Many investigates and studies have been done to relieve excitations andwork on the exhibition of tall working against wind loads and quakeloads. An critical and powerful plan approach among these strategies isstreamlinedchanges,including,alterationsofstructurescornercalculation and its cross-sectional shape. Tall structures are monstroustasks requesting mind blowing planned operations and the executives,and requires gigantic monetary speculation. A cautious coordination ofthe underlying components and the state of a structure which limit thesidelong relocation, may offer significant investment funds. These days,the test of planning a productive tall structure has significant changed.The ordinary way to deal with tall structure plan in the past was torestrictthetypesofthestructuretoarectangularshapeforthemostpart,yettoday,substantiallymoreconfoundedbuildingcalculationscouldbe used

LITERATUREREVIEW

1) **SanhikKarMajumder,Prof.PriyabrataGuhaet.al.(2014)**DissectedandplannedDifferentTypesofBuildingStructures[G+7]utilizing planprogrammingSTAAD.ProV8i.In this study the both seismic and wind impacts were thought of alsocontrasted concurring with the Code IS: 875(PART - 3) and IS: - 1893-2002(PART-1) and IS:875(PART-1 AND PART-2) A product programwas created to dissected the various kinds of constructions under windtension and tremorimpactthinkingaboutallelementsfrom thecodes.Finished up 1. Wind powers influence any structure are as well as thepower of wind characterized by the code as indicated by it's the area. 2.For any structure, quake powers as well as the force of earth shuddercharacterized by the zone factor through its area, the significance of thestructure, the underlying component, the period coefficient which reliesupon the aspects and weight of the structure and the dirt coefficient. 3.Whenever essential breeze speed and zone factor in any area of Indiawill be changed, which designs will be more economy for those cases thatwillbeadditionallyexamined.

2) **AnupamRajmani, Prof. PriyabrataGuhaet. al. (2015)**Talkedaboutascientificreviewwhichwasdoneonamultistorystructureof15,30and45storiesforfourdistinctmoldedstructuresareforth e mostpartconcentratedontobespecificroundabout,rectangular.squareandthree-sided.Then,atthatpoint,theoutcomesweredecipheredforvariousformedstructuresandofvariousstoriesinthiswayclosingwithrespecttowhic hmoldedtallbuildingisgenerallysteady forvariouscircumstances.

3) **PardeshiSameer, Prof.N.G.Goreet.al.(2016)**Discussed a study on 3D scientific model of G+15 celebrated structureswereproducedforsymmetricandunbalancedbuildingmodelsandbrokedownutilizingprimaryinvestigationapparatusETABSprog ramming.Thispaperisworriedabouttheimpactsofdifferentvertical inconsistencies on the seismic reaction of a construction. Theobjective of this review to do Response range investigation (RSA) ofcustomaryandsporadicRCbuildingoutlinesalsoTimehistoryAnalysis(THA)ofcustomaryRCbuildingedgesandcompletethemalleability based plan utilizing IS 13920 comparing to reaction rangeinvestigation.

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FLYASHCENOSPHERESAS REINFORCEMENTIN DIFFERENTPOLYMERCOMPOSITES- ACOMPARATIVE STUDYOFPHYSICALANDMECHANICALPROPERTIES

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ABSTRACT

The work reports the preparation of fly ash cenospheres bearing polymer composites, using various polymer matrixmaterials namely, low density polyethylene, high density polyethylene, polystyrene and polymethylmethacrylate followedby evaluation of properties. The composites are synthesized by including about 18% by weight fly ash cenospheres, intovariouspolymer matricesusingbrabenderfacilityinthetemperaturerange120-160°Candatamixingpressureof50 MPa.Subsequently, they are cast into sheets through compression moulding. The test samples, made from the sheets, arecharacterized for physical as well as mechanical properties such as density, hardness, compression strength,impactresponse, wear and friction. The investigation reveals that the addition of fly ash cenospheres to various polymer matricesresultsinreductionofdensity.Further,improvementsintheslidewearresistanceanddecreaseintheco-efficientoffrictionvalues are noticed. As for interpreting the slide wear data, recourse to examination under scanning electron microscope ismade in this paper. As regards the mechanical properties, hardness increases while the compression strength and impactenergydecreaseswithinclusionofcenospheresin allthefourtypesofsamplesinvestigated.

Keywords: Thermoplastics,Flyashcenospheres,Compressionstrength,Impactenergy,Hardness,Slidewear,Friction

INTRODUCTION

Theuseofpolymerbasedcompositematerialsformanyengineeringapplicationsisontheincreaseduetotheirdisplayingattractiveproperties .Hence,astudy of the various properties in polymers has gainedimportance.Theonepropertythathasreceivedattention is the tribological response of glass fiber orfiller reinforced polymer systems. Fiber re-inforceddisplay highstrengthandstiffnesstypically neededforaeronautical andaerospaceapplications.

Withtheinclusionofappropriatefillers,thepolymersarefoundtoexhibitbetterpropertiesrequiredforspecificend-useapplications.Thus,references to compression strength parameter[12] and astudy ofimpact responseowing to presence ofrubberasadditionalfillermaterial[13]arefoundintheliterature.Theinclusionoffillerscanalsopromotelowerfrictionvaluesasreportedelse where.In one instance, graphite inclusion has been lookedintofromthepointofstrengthvariationunlikethefriction properties normally associated with this filler.The work takes into account the moisture effect in thegraphite-bearingsystemsoncompressionstrength.

EXPERIMENTALPROCEDURE

Materialsandprocesses

Thecompositeswerepreparedasstatedabove,usingflyashcenospheres,havingdensity ofabout400 kg/m^3 and 100 μm as the average particle size. ThematricesusedwereLDPE,HDPE,PSandPMMAsuppliedbyM/sShahPolymer,Bangalore,India.

Thepolymercompositewaspreparedusingaplasticordermachine(brabendermakeNo,/Country/Type)forblendingofthermoplasticpolymerswithfillermaterial.Itconsistsofasmallinternalmixerwithinterchangeablerotors.Themixingchamberisjacketedforoperationatconstanttemperatureandprovidedwitharotorassembly coupledto a torquemeter to record the force during the mixing cycle. Thetwo blades are made to rotate inside the chamber forproperand uniform mixingofpolymermatrixwiththefiller material.Subsequently,acalculated amountof filler is incorporated to the matrix material. In thepresent case, fly ash cenospheres filler to the tune ofabout 18% by weight, has been used. The plasticorderhasafreevolumeof100mLinwhichtwosigmablades rotate against each other in opposite directionswith variable speed in the range 0 to 100 rpm undermolten conditions of the polymer at a temperature ofabout 240°C. The blending was optimized with lowermixing times toreduce the possibility of breaking offlyashcenospheresinthematrix.

Mechanicalproperties

Hardness

The hardness data are shown in Fig. 2.(a-d). It isobservedthatthehardnessvalues,generallystated,increases by a marginal level with the addition of flyashcenospheres.LDPE-basedonesshow lowestsetof valuesforthehardness.

Thecompressionstrengthresults are recordedinFig.3(a-d),and theyshowadecrease,forLDPE,HDPE, PS and PMMA of about 33%, 43%, 43% and42%, respectively,owing to the presence of fly ashfillers.Likeintherecordingofhardnessvalues,thecompressionstrengthoftheunfilledLDPEistheleastwhereasit ishighestforthePMMA.

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AN EXPERIMENTAL STUDY OF THE CONCRETE USING POLYMER ANDMETAKAOLINAS ADDITIVES

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ABSTRACT

Environmental friendly and high performance concrete is very import for the applications in sewage andwater treatment industry. Using mineral additives such as fly ash and silica fume has been proven aneffective approach to improve concrete properties. This paper reports a study of the effect of using bothpolymerandmetakaolinadditivestogetheronthe mechanicalanddurability propertiesofconcrete.Different proportion of the combination using two different polymers, metakaolin and recycled fiberreinforcement have been studied. The effects of water to cement ratio and the curing methods have alsobeencompared. Atlast anoptimized mixtureandcuringmethod hasbeensuggested.

INTRODUCTION

Using mineral additives such as fly ash and silica fume has been proven an effective approach to improveconcrete properties. With the increasing of the environmental concern, in recent years [Srinivasu, et.al.2014], the use of Metakaolin (MK) as an optional additive has also raised more and more interests[Aiswarya et al 2013]. As a supplementary cementitious material MK has the expected pozzolanic natureactivated by tri-calcium silicate (C3S) and tri-calcium aluminate (C3A) [Jean 1994]. When used as apartial replacement for cement, MK reacts with Portlandite ($Ca(OH)_2$) to generate additional CSH gelwhich results in the increase of strength. Previous work by Khatib et al. [2012] showed that the 20%replacement of cement using MKhad resulted in a substantial 50% increase of the compressive strengthof mortar. However, with over 30% replacement of cement by MK, the compressive strength started todecrease. It has also been shown that the sample containing 10% MK replacement displayed the bestperformance in terms of ultrasonic test. Joy [2005] compared the effects of the use of two different typesof MK on concrete workability and setting time. It was found that MK caused a considerable reduction inworkability, and reduced the setting time of cement paste by 35-50%. The study also showed that the useof MK had increased the compressive strength, splitting tensile strength, flexural strength, and the elasticmodulusofconcretesamples.Erhanetal.[2012]comparedtheeffectsoftheuseofsilicafumeandMK on the water sorptivity of concrete. It was observed that the water sorptivity decrease more using MKadditivethanusingsilicafume.

LITERATUREREVIEW

M. Narmatha, Dr.T.Felixkala et al., 2017 Cement concrete is the most extensively used constructionmaterial.Maintenanceandrepairofconcretestructuresisagrowingprobleminvolvingsignific antexpenditure. As a result carried out worldwide, it has been made possible to process the material to satisfymorestringentperformancerequirements,especiallylong-termdurability.HPCisthelatestdevelopmentin concrete. It has become very popular and is being used in many prestigious projects such as Nuclearpowerprojects,flyoversmulti-storeyedbuildings.WhenusingHPC,theadditionofsupplementarymaterials in cement has dramatically increased along with the development of concrete industry, due to theconsideration of cost saving, energy saving, environmental concerns both in terms of damage caused by theextractionofrawmaterialsandcarbondioxideemissionduringcementmanufacturehavebroughtpressur es to reduce cement consumption. Metakaolin looks to be a promising supplementary cementitiousmaterialforhighperformanceconcrete.Propertiesofconcretewithmetakaolinismostlyprefer redadditives in high performance concrete. A possible lower cost, due to large availability in our country itselfmaybeadvantagestometakaolinusageinHPC.Thesubstitutionproportionofmetakaolinistobeusedw as 5%, 10%, 15% , 20% by the weight of cement. To make this cubes and cylinders to determine thestrength and durability of concrete of it. The results indicate that the replacing mix upto till last

CE52_ICSCI 2022_6271 "ANALYSISOFWEBOPENINGEFFECTSINTHEI-SECTIONUNDERFLEXURE"

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ABSTRACT

This paper present the analytical study of effect of web opening on flexural response ofsteel beams with various shapes of openings. Hybrid beam is used in structures toenhancetheirbendingaswellasshear strength.Fabricatedbeamsareusedwhenappropriate hot rolled section is not satisfying the design criteria. The beams are said tobe a hybrid beams, when the beams are made up by means of the plates of not the samestrengthinflangesandweb(mostly,*fyf*>*fyw*).Inthepresentstudy,steelofnominalyieldstress of 410MPaand250 MPawasemployed as materialfor flangesandweb,respectively.Theanalyticalinvestigationhasbeencarriedusing ANSYS/ETABSsoftware.The finiteelementmodelholdsboththegeometricaswellasmaterialnonlinearity.Failuremodes,loaddeflection behaviorofsamplesandstressconcentrationwith deviation in size, shape and position of openings has been examined closely. Fromthe parametric study, it has been observed that averagely there is a 40% increase instrength for the castellated hybrid beams over the homogeneous beams. Amongst thevariousshapesofopening,theperformanceofcircularandhexagonalopeningsfoundtobeexcellent.Theobserved failuremodesweresimilarinbothhybridaswellashomogeneous beams and the predominant failure mode observed was the failure by the"VierendeelMechanism".

Keywords:-Analytical study·Webopenings·Flexuralbehavior·Hybridbeam·Finiteelementanalysis·Highstrengthsteel·Vierendeelmechanism.

INTRODUCTION

The analytical study of effect of web opening on flexural response of I - section withvariousshapesofopenings.CivilEngineeringisanareafullyconnectedwiththesearchofefficient and economicsolutionsforstructuralproblems.Theproblemofallowingservicepipes and cables to pass through structural elements without reducing the height of thefloor is one of the problems engineers are faced with Beams with web openings are acommon solution for this type of problem, seeing that cutting an opening through the webis a solution for both mentioned problems. Though it has its advantages, the hole in thewebcausesadecreaseinbothshearandbendingmomentresistanceinthe crosssectioninthat area. Besides this

METHODOLOGY

Loadsandboundaryconditions

The geometric nonlinearities due to the stress deformation and displacement of the steelsections are considered in FEA. Simply supported sections of 1.1m span length with mid-spanconcentratedapplied load are analysedindetail.The resultsobtainedarethencompared to I-beam without web opening as a control specimen. The nodes for the bothsupport is constrained on x, y and z translation direction. Concentrated load is applied atthemiddleofthespan.Theloadfactorequaledto1isadoptedduringanalysis.

CONCLUSIONS

Thehintoftheinvestigationwastoconcludetheeffectofwebopeningsandhighstrengthsteel (HSS) on the bending behavior of steel castellated beam with varying materialproperties. As the earlier research suggests that strength index increases by increasing thestrength of the steel plates as well as shape of openings. The following conclusions weredrawnfromtheinvestigationdoneinthepaper:

1. Hybridbeamsorgirdershavingopeningsinthewebwithflangesof HighStrengthSteelandwebofloweresteelgradearemoreeconomicalthanhomogenousgirders.
2. Usinghybridbeams,thestrengthofbeamswithwebopeningshasbeenincreasedbymorethan40%.
3. Performanceof circularandcastellatedopeningsfoundtobeexcellent amongstalltypes of shapes of openings. (Therefore, it is suggested that preferably use cellular orcastellatedbeams).

CE57_ICSCI 2022_3184

LITERATURE REVIEW ON COMPARATIVE STUDY OF DIRECT DESIGN METHOD AND E- TAB 18 WITH AND WITHOUT INTERIOR BEAM

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ABSTRACT

Slabs are the ground surface frameworks of most constructions including office, business and private structures, spans, sports arenas and different offices building. The principle elements of slabs are by and large to convey gravity powers, like burdens from human weight, products and furniture, vehicles, etc. In present day structure plan especially for elevated structures and cellar structures, sections as floor stomachs help in opposing outer sidelong activities like breeze, seismic tremor and parallel earth load. The piece straightforwardly lays on radiates or the section and burden from the slab is straight forwardly moved to the pillars and segments and afterward to the establishment. To help substantial burdens the thickness of slab close to the help with the segment is expanded and these are called drops, or segments are by and large gave amplified heads called segment heads or capitals. Nonappearance of shaft gives a plain roof, accordingly giving preferred structural appearance over in normal situations where bars are utilized.

INTRODUCTION

A concrete slab is regular primary component of current structures. Flat slab of steel built up concrete, normally somewhere in the range of (100 and 500 millimeters) thick are regularly used to develop floors and roofs. On the specialized drawings, supported solid slabs are frequently contracted to " R.C.C. slab" or essentially " R.C.". A built up concrete slab is abroad level plate normally with almost equal top and base surfaces and may upheld by supported solid beam or straightforwardly by slabs or stone work block facade or built up solid dividers (Shear dividers).

Slab on Beam can build at all levels. It moves burden to radiate and afterward on to the segments. This can guarantee differential settlement dependent upon one point. The underlying development cost is higher than slab on grade in light of the fact that formwork at the slab underside and the support to join shaft and slab is required.

LITERATURE

Mohd Rizwan Bhina, Arnab Banerjee, D.K.Paul 07 October (2014) This paper concern with Different aspect of flat slab building over a conventional building . in this paper we consider the three storey building with flat or conventional slab by performing static analysis on the 3 storey building by using Indian is 456 and euro code we conclude that Indian code suggest more reinforcement and stiffness as compare to euro code. by performing response spectrum analysis we get that building with flat slab is more flexible as compare to building with conventional slab.

B.Anjaneyulu, K Jaya Prakash vol. o4. issue 02 feb(2016) flat slab has more advantage than the conventional slab it provide more structural stability to the building and give the aesthetic view to the building. For designing purpose of flat slab we can use post tensioning as well as conventional reinforce concrete. The cost of post tensioning for designing flat slab is higher than the reinforced concrete design. Design of conventional reinforced concrete. flat plate/slab in India, utilizing Indian codes, has many shortcomings. which have to be addressed and revised soon.

S. N. Utane. H. B. Dahake Volume 5, Issue 2, March (2016) when we compare a industrial structure constructed by using waffle system and flat slab system in a square and rectangular layout the displacement is more in case flat slab than the waffle system. As we increase the height of structure displacement is also increases. Storey shear of the industrial structure is also more in flat slab system than waffle system.

CE26_ICSCI 2022_2976

Use of Plastic Waste Material in Flexible Pavements

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ABSTRACT

Use of plastic along with the bitumen in construction of roads not only increases its life and smoothness but also makes it economically sound and environment friendly. Plastic waste is used as modifier of bitumen to improve some of bitumen properties Roads that are constructed using plastic waste are known as Plastic Roads and are found to perform better compared to those constructed with conventional bitumen. Further it has been found that such roads were not subjected to stripping when come in contact with water. In this paper the use of higher percentage of plastic waste reduces the need of bitumen by 10%. It also increases the strength and performance of the road. Plastic increases the melting point of bitumen and hence mixing can be done in more better and easier way. Plastic waste replaces 10% to 15% of bitumen, and thereby saves approximately Rs. 35000 to Rs. 45000 per kilometer of a road stretch. Inclusion of plastic waste in road construction eliminates the plastic shrinkage cracking of road surface and reduces the drying shrinkage to some extent.

Keywords: Plastic Waste Material, Flexible Pavements, Plastic Roads, stripping.

INTRODUCTION

A material that contains one or more organic polymers of large molecular weight, solid in its finished state and at some state while manufacturing or processing into finished articles, can be shaped by its flow, is called as 'Plastic'. Plastics are durable and degrade very slowly; the chemical bonds that make plastic so durable make it equally resistant to natural processes of degradation. Plastics can be divided in to two major categories: thermoses and thermoplastics. A thermoset solidifies or "sets" irreversibly when heated. They are useful for their durability and strength, and are therefore used primarily in automobiles and construction applications. These plastics are polyethylene, polypropylene, polyamide, polyoxymethylene, polytetrafluorethylene, and polyethyleneterephthalate. A thermoplastic softens when exposed to heat and returns to original condition at room temperature. Thermoplastics can easily be shaped and moulded into products such as milk jugs, floor coverings, credit cards, and carpet fibres. These plastic types are known as phenolic, melamine, unsaturated polyester, epoxy resin, silicone, and polyurethane.

The objective of study is

- To coat the aggregates with the waste plastic materials
- To check the properties of bituminous mix specimen
- To check the properties of bituminous mix specimen due to coating of waste plastic materials.

MATERIALS AND METHODS

A. Test for Aggregate

Sieve Analysis of Aggregates: By passing the sample downward through a series of standard sieves, each of decreasing size openings, the aggregates are separated into several groups, each of which contains aggregates in a particular size range. This test is done to determine the particle size distribution of fine and coarse aggregates.

Aggregate Impact Value Test : The property of the material to resists impact is known as toughness. Due to movement of vehicles on the road the aggregate are subjected to impact resulting in their breaking down into smaller pieces. The aggregate should therefore have sufficient toughness to resists their disintegration due to impact. This characteristic is measured by impact value test. The aggregate impact value is a measure of resistance to sudden impact or shock, which may differ from its resistance to gradually applied compressive load. The Aggregate Impact Tester is equipped with a circular base with two vertical guides. This test accesses the suitability of aggregates in road construction on the basis of impact value.

CE54_ICSCI 2022_2701

LITERATURE REVIEW ONCOMPARE ESTIMATION OFPRE-ENGINEERINGBUILDING (PEB) WITHNORMALSTEELBUILDING

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ABSTRACT

Pre-designed structures have become very well-known over the mostrecent couple of years. The primary benefits are speed of development and greatcommand over quality. Anyway there isn't a lot of data on its economy. Thereare a few boundaries like the tendency of the peak, ranges, inlet dividing, whichcontrol the expense of the construction. In the current undertaking the aboveboundaries are shiftedmethodically andfor eachsituation the peak outlineplanned for the normal burdens DL, LL, EQ, and WL. The amount for eachsituation is gotten lastly the construction which manages the least amount ofsteelissuggested.Thepre-designedsteelbuildingframeworkdevelopmentenjoys incredible benefits to the single story structures, pragmatic and proficientoption to ordinary structures, the System addressing one focal model insidedifferentdisciplines.Pre-designedbuildingmakesandkeepsupwithcontinuously multi-layered, information rich perspectives through a task supportis right now being carried out by ETABS-18 Software bundles for plan anddesigning.

Keywords: PEB,Stadd-pro,windanalysis.

INTRODUCTION

Steel industry is filling quickly in practically every one of the areas ofthe planet. The utilization of steel structures isn't as it were conservativeyetadditionallyEco-accommodatingwhenthereisadangerofaworldwidetemperaturealteration.Here,"conservative"wordisexpressed thinking about time and cost. Time being the main viewpoint,steel structures (Pre-created) is inherent exceptionally brief period andonesuchmodelisPreEngineeredBuildings(PEB).Pre-designedstructures areonly steelstructures inwhich abundancesteel is keptaway from by tightening the areas according to the twisting second'snecessity. One might contemplate its chance, however it's a reality manyindividuals don't know regarding Pre Designed Buildings. Assuming wegoforcustomarysteelstructures,timeperiodwillbemore,andfurthermore cost will be more, what's more both together for exampletime and cost, makes it uneconomical. Hence in pre-designed structures,theall-outplanisdoneintheprocessingplant,andaccordingtotheplan, individuals are pre-created and afterward shipped to the site wheretheyareraisedina period under 6to abouttwomonths.

LITERATUREREVIEW

J.Jayavelmurugan et.al concentrated on that Buildings and houses areone of the most established development exercises of human creatures.The development innovation has progressed since the start from crudedevelopmentinnovationtothecurrentideaofpresentdayhousestructures. The current development philosophy for structures calls forthebeststylishlook,topnotchandquickdevelopment,financiallysavvyandimaginative touch.

ApurvRajendraThoratet.alconcentratedonthatinthecurrentreview Pre-designed Buildings are planned and considered as per KirbyTechnical Specification which depends on ASCE-07.Two models havebeen takenforthereview.Correlation of PreEngineeredBuildings(PEB)withbracingsandPreEngineeredBuildings(PEB)withoutbracings is done in twomodels. Later Pre Engineered Buildings (PEB)isbrokedownforDynamicburdensutilizingEl-Centrodeterminedgroundmovement.

SagarWankhedeet.al;(2014)hasgivenanauditpaperonexaminationsofConventionalSteelBuildingfurthermorePre-Engineered Building. The paper begins with conversation of differentcomponent of modern structure for example, Purlins, list bar, PrincipalRafters,RoofTruss,GantryGirders,Brackets,ColumnandColumnBase, Girt Rods, Bracing.

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DESIGN & ANALYSIS OF EARTHQUAKE RESISTANT G+13 STOREY BUILDING USING STAADPRO

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ABSTRACT

The main objective of my present research is to evaluate the structural stability with appropriate techniques by taking standard configuration, the correct cross-section for column and beam, etc. Developing preferred requirements and different types for conditions of support, load types, and amalgamation of loads. It has been said that "Many buildings have been damaged or demolished by earthquakes in India, not killing people, but losing precious lives". The ability of structures to resist a major earthquake is significantly enhanced by observing how buildings acknowledge to the earthquake and utilizing the expertise obtained by engineers. During the design of a perfect structure many challenging areas need to be addressed and when the structures are to be constructed in earthquake-prone areas, those difficulties are compounded. The main intension and purpose of this paper is to design an earthquake resistant structure by undertaking seismic study of the structure by static equivalent method of analysis and execute the design of structure using STAAD.pro software. For this present research work, a G + 13 residential building is considered. Seismic calculations are executed for all the earthquake zones.

Key Words: seismic analysis, seismic spectrum

INTRODUCTION

Disasters are unexpected events which have adversely affected humans since the dawn of our existence. In response to such events, there have been attempts to mitigate devastating effects of these disasters. Results of such attempts are very encouraging in developed countries but unfortunately and miserably poor in developing countries including ours. Earthquakes are one of the nature's greatest hazards on our planet which have taken heavy toll on human life and property since ancient times .

LITERATURE

Taruna R Kamble , Dr.G.D. Awchat Seismic Analysis and Design of Multi Storied RC Building Using STAAD Pro Project involves dynamic analysis of G+8 storied building with shear wall. Seismic response is investigated under earthquake excitation expressed in the form of joint displacement.

DR. S. G. MAKARANDE , VIKAS AGRAWAL , PROF. G. D. DHAWALE Analysis and Design of Multi Storeyed Building Using Staad Pro and Manually for Two Seismic Zones. This paper concerned on seismic analysis of G+8 multi-storeyed building which is subjected to dead load, live load and seismic load as per codes. The response is investigated for G+10 building structures by using STAAD. Pro designing software.

V.ABHINAV Seismic Analysis of Multi Story RC Building with Shear Wall Using STAAD PRO Shear walls have high in plane stiffness and strength that you can use to concurrently resist large horizontal loads and support gravity loads which makes them quite beneficial in lots of engineering programs. The shear wall is going to be introduced within the presented structure and also the analysis is done for static loads caused

because of earthquakes. An RCC building of 11 floors placed exposed to earthquake loading in Zone -V is considered in this case

Supraja Duppati, R. Gopi, K. Murali Earthquake resistant design of G + 5 multistorey residential building using STAAD.pro The ability of structures to resist a major earthquake is significantly enhanced by observing how buildings acknowledge to the earthquake. During the design of a perfect structure many challenging areas need to be addressed and when the structures are to be constructed in earthquake-prone areas, those difficulties are compounded. The main intension and purpose of this paper sis to design an earthquake resistant structure by undertaking seismic study of the structure by static equivalent method of analysis and design of structure using STAAD Pro software.

CE56_ICSCI 2022_7273

LITERATURE REVIEW ON DESTRUCTION OF STRUCTURE& REUSES OF DEMOLISHEDMATERIAL

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ABSTRACT

Construction and demolition waste are not new term in construction industry as fo years ,construction industry has been producing enormous amount of waste.Growing rate of waste generation has let to varios environmental problems. The Paper tells us the various sources and the impact of c&d waste generated.Growing concerns for the environment,measures are being adopt world wide to reduce,reuses and recycle the construction and demolition waste in building and infrastructure construction.As an architect we must know the measures and the processes involved in waste treatment so that we contribute in sunstainable development.Developed contries have already incorporated policies to treat waste but why are we lacing? The paper discusses why we need to utilized construction and demolition waste and how it can be used in building practices.The procedure would initially define the problems and the causes associated with it.Further,ways and methods of treating waste would be discussed to find solution for the problem.This would be supported by case studies ,which are futher critically analyzed ,Finally leading to construction.

Keywords: Cement, Sand, Coarse Aggregates, Fine Aggregates etc.

INTRODUCTION

Construction industry is one of the largest consumers of energr resources in term of natural resources,man power,energy and economy.Currently, costruction sector contribute to 10% Indias GDP. This percenrage is growing by 10% over the last 10 year against the world average of 5.5% per annum.However it is also the largest production per year is from construction industry.In case of demolition or renovation,the amount of waste generated by new construction.Additionally,when any disaster ocuurs,the total amount of construction waste exceeds the amount of solid waste collected in 100years even though we have a huge contribution from construction industry,we are short of way to treat enormous amount of waste that is generated from this sector.

India is one of the fastest developing countries.Infrastructure is one of the pillar of the development model.An investigation revealed that total waste from Indias construction industry could reach 12-14 metric ton per year.It is important to know about construction and demolition waste and how it can be properly 1068 disposed.They may have more regorious requirements.C&D waste is defined as waste the results from land clearing the demolition of buildings,roads,or other structures,or construction projects. C&D waste includes;

LITERATURE REVIEW

Mansi Jain et al. [2012] Focussed on the economical aspect of waste minimization of construdtion waste materials in terms of cost saving of construction project of India.And found that due to lack of site waste management system ,lack awareness of waste minimization in indian construction industry cause of generation of large quantities of materials waste.This effect not only at aenvironment but also in terms of economically as waste materials handelling cost.And found various causes for the waste generation like lack of awareness among owners and contractors,lack knowledge of labour,lack of proper training and education towards waste minimization system.

Job Thomas et al. [2013] Enlightened the waste minimization 3R system of reduces, reuses and recycle for the construction waste management in India.and the resources from construction and demolition C&D waste generated taking proper construction and demolition methods.

Sadhan K Ghosla et al. [2015] Proposed a model for transportation rates and resale value of recyclable materials which makes use of easily available data that can provide intuitive and simple optimization model for the basic principles of Reduce, Reuses and Recycle into action. Identified the most common causes of waste on site. And identified the advantages of construction waste

CE58_ICSCI 2022_0808

COMPARATIVE STUDY ON FLEXURAL BEHAVIOUR OF LIGHTWEIGHT AGGREGATERC BEAMS

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ABSTRACT

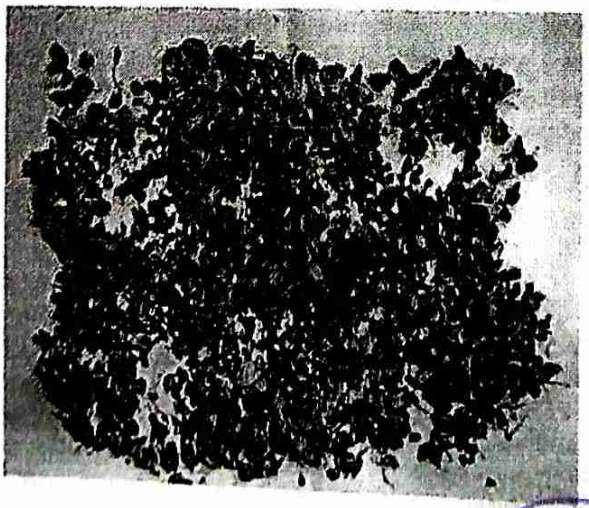
In this developing environment, the increasing cost of construction tools are raising day by day is the factor of great concern. In concrete production, aggregate is the less costly material as compared to cement and maximum economy is obtained by using as much aggregate as possible. The coarse aggregates are the foundation of concrete. In this paper, the performance of lightweight aggregate concrete (LWAC) beam under two-point bending system is discussed and comparative studies were made with normal weight concrete (NWC) beam. The light weight aggregates (pumice and palm oil shell) are incorporated into the concrete, separately as a direct replacement for coarse aggregate at 10% and 50% replacement level. The properties such as compressive strength, flexural strength, crack pattern, ductility index and rebound hammer test load are studied by casting and testing around 40 samples consisting of 30 numbers of plain cube specimens of size 150×150×150 mm and 10 numbers of RC beams of sizes 150×150×1000 mm and 150×300×1000 mm for testing after 28 days of wet concrete curing. From the experimental results, it was observed that POS concrete has sufficient strength than Pumice aggregate, therefore POS is to be known as structural lightweight concrete and that the movement of behavior of LWAC and NWC is very similar.

Keywords: Lightweight aggregates (LWA), two point loads, Flexural behavior, Beam

INTRODUCTION

Since the days of Roman LWC is used as structural material [1]. The changes in LWC developments taking place from the twentieth century. During the World Wars LWC was used in the advancement of water crafts and canal boats. Nowadays, LWC are normally used as a part of precast and pre-stressed components [2]. Particularly, NWC compiles lower costs compared to LWC, structures might have lower costs due to the reductions in foundation sizes, dead weight, cost and consumed reinforcing bars. LWC may be either cast-in-place or precast. In the production of LWC utilizing of LWA is the most popular technique. Natural LWAs include diatomite, pumice, scoria, volcanic clinkers and tuff [3]. Palm oil shell is the most famous LWA in an agriculture field. also the aggregate properties influence the properties of concrete. Consistency of particle size distribution is very important to the properties of fresh concrete. Hardened concrete has a more minor effect on the properties of concrete.

Figure 1 Palm oil shell (POS) aggregate



CE60_ICSCI 2022_0937
STUDY OF BEHAVIOR OF RCC BUILDING WITH AND WITHOUT BRACING BY USING STAAD. PRO

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ABSTRACT

In tall RC [reinforced concrete] building bracing system is provide for stiffness, strength and energy dissipation to resist the lateral load. The study about the different bracing system (diagonal type, V type, inverted and X type) and arrangement of bracing system. To build the Seismically safe structure with adequate lateral resistance .

INTRODUCTION

The primary purpose of all kinds of structural systems used in the building type of structures is to transfer gravity loads effectively. The most common loads resulting from the effect of gravity are dead load, live load. Besides these vertical loads, buildings are also subjected to lateral loads caused by wind, blasting or earthquake.

METHODOLOGY

The steps undertaken in the present study to achieve the above-mentioned objectives are as follows:

- Carry out extensive literature review, to establish the objectives of the research work.
- Select an exhaustive set of R.C.C. with and without bracing system building models

CONCLUSION

Concrete bracing system is an efficient and effective lateral load resisting system. Concrete braced RC frame as the lateral load resistance system for reinforced concrete structure is a effective technique. Structure with different types of bracing system reduce the storey drift and displacement of the structure .Out of various arrangements of bracing X bracing system is more effective in increasing lateral load capacity of structure. Bracing system reduces bending moment and shear force in the column. Concrete bracing transfers the lateral load through axial action. The performance of the Concrete cross bracing is better than other bracing system. From analysis of 10 storied RC building with provision of Bracing for different types, following conclusions are also drawn.

REFERENCES

1. Review Paper on Seismic Behavior of RC Frame Structure With Different Types of Bracing System, 1 Kartik Prashar, 2 Jagdeep Singh Gahir International Journal of Engineering and Techniques (IJET), ISSN: 2395-1303, Page 1035-41, Volume 4 Issue 2, Mar-Apr 2018

2. Comparison study of RC structure with different arrangement of rcc bracing system , Mr. Mehul M. Kanthariya 1 Haresh P. Vaghasiya 2 , Harsh C. Vagadiya 3 Chirag R. Akoliya 4, Mitesh H. Patel 5, International Journal of Advance Engineering and Research Development (IJAERD)Volume 3, Issue 2, February -2016, e-ISSN: 2348 - 4470, print-ISSN: 2348-6406

3. Analysis of Reinforced Concrete Building with Different Arrangement of Concrete and Steel Bracing system Prof. Bhosle Ashwini Tanaji, Prof. Shaikh A. N. IOSR Journal of Mechanical and Civil Engineering (IOSR-JMCE) e-ISSN: 2278-1684,p-ISSN: 2320-334X, Volume 12, Issue 5 Ver. V (Sep. - Oct. 2015), PP 08-12

4. Behavior of moment resisting reinforced concrete concentric braced frames (rc-mrcbfs) in

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CE28_ICSCI 2022_3445 DETERIORATION OF REINFORCED CONCRETE SEWERS CAUSED BY SULPHIDE ATTACK

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ABSTRACT

The burning of gas oil with excessive sulphur content material in numerous business areas, effects withinside the technology of oxidized sulphur compounds (SOx). These emissions, at once or indirectly, result in the deterioration of air first-rate with outcomes consisting of the improvement of lung illnesses withinside the surrounding population, the technology of acid rain and harm to civil constructions, inclusive of public buildings, public squares, anciental monuments, bridges, etc. Deterioration is as a result of acid excretion which etches the surface, mainly in sewer systems. This article describes the mechanisms of corrosion that arise in bolstered concrete deterioration discovered in an business plant through the movement of direct emissions of sulphur dioxide. SO2 in this example look at is from the burning of gas oil excessive sulphur content material from chimney of an business boiler. The deterioration of concrete changed into evaluated withinside the laboratory displaying the formation of calcium sulphate and calcium sulphate hydrate related to aluminium oxide (Al2O3) and calcium oxide (CaO).

KEYWORDS: Corrosion, Sulphur Compounds, Contamination, Mechanisms of Corrosion, Reinforced Concrete

INTRODUCTION

Nowadays, concrete is the cloth this is getting used for pipelines for sewage waste disposal. The corrosion of concrete in sewers poses a first-rate trouble within side the cutting-edge world. Corrosion is a phenomenon which can arise spontaneously or not, commonly described because the deterioration of a cloth or its residences as a feature of chemical, electrolytic or electrochemical manner intrinsically related to a corrosive medium. Millions of bucks are being spent at the restore and renovation of sewer pipelines and wastewater remedy plants. The presence of diverse micro organism—which include the sulphur-decreasing and the proteolytic micro organism within side the sewer—collectively with animal and plant wastes is the primary motive for the corrosion of concrete.

There are two major causes of internal corrosion in a sanitary sewer. The first is conventional acid attack caused by low pH industrial waste discharged directly into the sewer system. The second cause is grouped together as sulphide corrosion, hydrogen sulphide (H_2S) corrosion or sulphide attack. These types are easy to identify. Sulphide corrosion occurs above the sewage surface while low pH sewage will cause corrosion below the waterline. Sulphate attack, sometimes confused with sulphide corrosion, occurs when soils with high sulphate levels contact the concrete pipe structure and the deterioration is external. Sulphate attack does not occur inside the sewer structure or pipe. Sulphide corrosion starts when sulphate in the sewage is converted to sulphur. The most corrosive agent that leads to the rapid deterioration of concrete pipelines in sewers is (H_2S), which also attacks concrete floors in barn buildings housing animals. H_2S also attacks the concrete in sewer and wastewater treatment plants. The aerobic bacteria present oxidise the H_2S dissolved in the moisture to sulphuric acid (H_2SO_4).

DETERIORATION OF CONCRETE: CAUSES AND DETERMINATION

A well known consensus has been that H2S is the maximum corrosive agent that ends in the speedy deterioration of concrete pipelines in sewers. The cardio micro organism gift oxidise the H2S, that is dissolved within side the moisture, to supply H2SO4.2 At regular home sewage pH levels, from one-sector to one-0.33 of the dissolved sulphide exists as molecular H2S, that is launched to the air and deposited at the wet shape wall. Bacteria at the wall convert the H2S to H2SO4, which reduces wall moisture pH values to the 1–2 range, and the acid corrodes the shape wall above the go with the drift line. A pretty corrosive surroundings is created via way of means of the presence of risky hydrocarbons and H2S. Few researchers have mentioned the method for sporting out experimental paintings to decide the corrosion rate, alongside their predominant corrosion mechanism and the elements controlling the corrosion rate, and therefore there may be a paucity of posted papers on this area.

Jahani et al. studied the degradation of a mortar specimen exposed to an acidic sulphate solution, using iron pins set within the sample with their ends close to the surface. The corrosion behaviour was monitored

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REVIEW ON GENERATION OF PYROLYSED OIL

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ABSTRACT

The rate of profitable growth is unsustainable without use of reactionary energy like raw canvas, feasts, or coal. There are numerous druthers natural energy similar as biomass, hydro-power, and air energy. Waste operation strategy is another important point. Development have increases the product of all kinds of investments, which laterally induce waste. Plastic is a material which is extensively use due to rigidity and fairly low cost. Some 450 million tons of plastic were produced in 2016, representing a 8 percent increase over 2014.

Key words- Waste plastic, Pyrolysed Oil.

INTRODUCTION

Due to the reactionary energy extremity in once decade, humanity has to concentrate on developing the alternate energy sources similar as biomass, hydropower, geothermal energy, wind energy, solar energy, and nuclear energy. The developing of indispensable- energy technologies are delved to deliver the relief of reactionary energy. The focused technologies are bio-ethanol, bio-diesel lipid deduced biofuel, waste canvas recycling, pyrolysis, gasification, dimethyl ether, and biogas. On the other hand, applicable waste operation strategy is another important aspect of sustainable development since waste problem is concerned in every megacity. The waste to energy technology is delved to reuse the implicit accoutrements in waste which are plastic, biomass and rubber tire to be canvas. Waste plastic and waste tire are delved in this exploration as they're the available technology.

The main objectives of this project are:

- To establish the base for the development and perpetration of waste plastics recovering with the operation of environmentally sound technologies (EST) to promote resource conservation and green house feasts (GHG).
- • To raise mindfulness in developing countries like INDIA on plastic waste and its possible exercise for conversion into diesel or energy, this could be generated and retailed at cheaper rates compared to that of the available diesel or canvas in the request.
- • To reduce the reliance on gulf countries for fossil energies, thereby contributing to the Profitable growth of the country.

METHODOLOGY

1. Identification of waste plastics like PE/ PP/ PS/ LDPE/ HDPE
2. Subjugating the waste plastic for pyrolysis process.
3. Condensation of the gas to gain raw energy.
4. Conversion of raw energy into its pure form (diesel etc) by the process of distillation.

Collection & Identification Of Waste Plastic:

Assessment of Quality of Water Bodies Surrounding Bhandewadi Landfill Site, Nagpur city

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Abstract - *Explosive populction growth and steady pursuit of economic development and development over the past decades Municipal solid waste generation in Nagpur. Backfilling is the most popular method Export of municipal solid waste. Landfill leachate is a major threat Due to high concentrations of toxic substances it enters local aquifers. This study was directed assessing the quality of groundwater resources serving nearby communities from the dump of Bhandewadi in the city of Nagpur. Taking and analyzing groundwater samples Characteristic. The results of the analysis showed measurable impacts of landfills on groundwater qualitative. Increased Na+ and NO3 levels, Cl and heavy metals such as Mn and Fe have been found Measurable levels in groundwater. Ion Ratio Plot Shows Silicate Weathering And anthropogenic activity is the dominant factor determining the main ionic composition in the study area. Na-Cl types of water are associated with high levels of nitrate contamination. Most of The sample is not suitable for domestic use and is significantly increased compared to drinking water standard. For effective study Impact of landfills on the environment and human health. Adequate buffer zone between the landfill and adjacent property lines must be preserved prior to the placement of the new site polygon.*

Key words- *water quality index, landfill impact, pollution, leachate effect.*

1. INTRODUCTION

Rapid population growth, uncontrollable urbanization and industrialization, inadequate hygiene scenarios, and runaway waste disposal are responsible for the major world-class degradation of the arena's surface groundwater, especially in emerging economies. .. Urbanization India prices are fast. It increased from 30.93% in 2010 to 34.93% in 2022. Unregulated Growth For the past years, mainly in urban areas, there was no major infrastructure service for professional collection, transportation, disposal and disposal of household waste Pollution risk and suitability gain.

Most cities in India use urban waste treatment technology. It's fragmented and unscientific.

Site selection is usually primarily geographic as an alternative geological and hydrogeological consideration. The logistics phrase of is high near the site that provides waste. Therefore, it is not uncommon for waste disposal sites to be located internally. It is a common obstacle and is surrounded by residential areas. Groundwater chemistry around landfills is controlled by both natural geochemical processes such as silicate weathering and anthropogenic activities (Deepali marghade et al 2010) [1]. Surface water quality near landfills contains more ions and cations than groundwater samples. During the rainy season, putrefactive waste mixes with rainfall and flows into runoff, contaminating nearby surface waters (Otwoghere asuma et al 2013) [2]. The LWPI can be used to assess water quality variability around landfills. LWPI is a very reliable and useful and effective way to evaluate and evaluate and communicate information about water quality. This is used to estimate the degree of water pollution near landfill and to assess the volatility of different results and compares the results of different places and periods (Isabela A. Talala et al. 2014) [3]. Solid Waste Management The incorrect method and leaching collection system and inappropriate effect of depression or disposition have a great impact on the quality of surface and groundwater. The groundwater cannotaccept for drinking water practices and build a sanitary dump properly designed to limit groundwater contamination (ThaAYalnayaki D et al 2019) [4]. The lack of appropriate solid waste management system can be considered a major cause of water quality (Neeli vasavi et al 2020) [5]. The distance from the water source to the landfill does not significantly affect the level of other physicochemical properties (Kofi owusu ansah amano et al 2021) [6].

1.1 Location and Climate

The Bhandewadi landfill (range 21°08` and 21°09` N and longitudes 79°07` and 79°08` E), this is the point of interest of the modern-day observe is located in south east nook of the metropolis. Nagpur metropolis generates approximately 900-1000 MT of waste in line with day; 350-four hundred grams in line with capita in line with day. About 30% of this waste is natural compostable material. The closing 70% includes paper (11.9%); rubber,- leather-based and synthetics (3.02%); glass (0.98%); metals (0.33%) and different inert materials (53%). The landfill accepts officially, non-unsafe strong wastes of domestic, commercial, industrial and institutional origins, however in exercise all

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Low Cost Filtration For Grey water With Constructed Wetland

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Abstract - *Filthy water emerging from the washbasin, restrooms, shower, and clothes washer with the exception of a latrine known as "dim water." This treated dark water can be utilized in lawn gardens. Developed wetlands are progressively used to treat wastewater. This study was directed with the point of tracking down an answer for the treatment of dim water. The treatment process is minimal expense, straight forward and comprehensive. Dim water was sanitized by developed wetlands. The developed wetlands address one more area of disinfection since they are similarly powerful in eliminating contamination. The developed wetland has a filtration cycle to eliminate contaminations from wastewater. In this program we will oversee dim water for example from the wash bowl, restroom and so forth.*

Key Words: Greywater, Constructed wetlands, low cost filtration.

1. INTRODUCTION

In this specific venture we are learning about the Low expense Filtration for Grey water with Constructed Wetland. The Natural wastewater treatment frameworks are straightforward, minimal expense strategies that use the physical, compound and organic cycles that happen in the regular habitat between water, soil, plants, microorganisms and the environment. Normal for dark water is that it frequently contains high convergences of effectively degradable natural material, for example fat, oil and other natural substances from cooking, build-ups from cleanser and cleansers. The persistent decrease in disinfection inclusion could be ascribed to the roaring populace development, quick urbanization and absence of interest in the area. Present day, wastewater treatment innovations have become progressively perplexing with the prerequisite of generally complex and costly plants.

Vegetation place and significant job in squander water treatment wetland. Plants give a substrate to microorganisms, which are the main processers of waste water impurities. Plants likewise gives microorganisms a wellspring of carbon. Plants have extra site-explicit worth by giving living space to natural life and making waste water treatment framework tastefully satisfying. Wetland types of all development structures have been utilized in treatment wetlands. Built wetland are an endorsed squander water treatment framework and have been utilized effectively overall to treat different sorts of waste water including storm water, modern, home-grown, agrarian, mine seepage and landfill leachate Groundwater is generally utilized as savouring reason country region Squander water treatment is a huge universe, and is produce in various condition with various extent. The issue of dim water the executives which is characterize as all wellsprings of home-grown waste water barring latrine squander water-is acquiring and more significance, particularly in non-industrial nations where ill-advised administration is one of most significant reasons for natural contamination and deadly sicknesses. Appropriate dim water the board, containing assortment, treatment and reuse or removal, forestalls person in touch with it and cut off points microorganism move. A sound treatment likewise emphatically affects the close by water bodies, since it restricts the contribution of supplements and in this way eutrophication. Dim water the executives isn't just a free condition for spotless and sound day to day environments, it likewise has an extraordinary potential for reuse. Treated dark water in a decentralized manner is reused for an entire scope of use all over the planet; in emerging nations, the reuse of treated dim water for water system designs is generally normal. The point of this work was to give an outline on the writing in the field of dim water, treatment on family level in emerging nations. This research paper conducted a detailed study of grey water and where grey water is produced. Grey water comes from the trees of the bathroom sinks and kitchen sinks, Narges Shamabadi, Mahamood Farahani.et. al. (2015) [1]. The university has recommended the use of a drip filter with suspended plastic media. In this flow filter the waste particles are removed from the system with a 1cm mesh screen and water is evaporated into a sealed septic tank and the result is pumped into a flow filter consisting of plastic and mud, Hazart-e-masoumeh [2]. In this research paper they concluded that the construction of wetlands is an effective treatment for gray water, K. Soundaranayaki (2017) [3]. In this research paper first purification of water is carried out, in this paper the gray water is treated using a root system with a fixed root in the wetlands column, Mr. Sarang K. Dighe, Prof. S.R. Korke (2018) [4]. This paper discusses the need for gray water, the features and technologies of gray

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CONGREGATION OF TRASH FOR A CITY BY USING CRITICAL PATH METHOD

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ABSTRACT

Trash has become a serious complication in our country. Due to industrial enterprise and Urbanization the generation of Trash is growing gradually. However, the most arduous and main bit of Trash is proper congregation. If it is not draft appositely, then it has its drub jolt on labour transportation and general expenses and has the gloomy effect on environment. Municipal management cost is spent on the congregation and transportation of the trash. Hence the moderate development in the congregation method can result into the remarkable saving of budget. After carrying out detail study about the trash management collection in the city, we found that the trash is not being collected totally from the domain and also they required near about 6 hours to collect trash from each sector. Hence to improve the present circumstances we study the road maps, quantity of trash generation, congregation methods, etc. Then with the method of Critical Path Method (CPM) we have find the shortest path for the congregation of trash, and after maculation, we get the final result that, by following this shortest path for the congregation, the vehicle can collect maximum amount of waste within 3 hours only, which has reduced the overall congregation time as well as cost required for the transportation.

Keywords: Trash, Critical Path Method, Congregation

INTRODUCTION

Waste management is a global phenomenon. Improper disposal of solid waste poses a danger to the inhabitants. It is also a big challenge in our country. This problem is also widespread in our city of Wardha, which is an environmental threat. If not done properly, it will cause environmental problems in the city. Solid waste management is defined as the management performed to manage the production, storage, collection, transportation and ultimately proper disposal of solid waste in the city. In general, solid waste includes household waste, commercial waste, industrial waste, clinical waste, and electronic waste.Solid waste management can be divided into key components: 1. Generation, 2. Storage, 3. Collection, 4. Transportation.

Current Trash Management Scenario of the city: Wardha is now an important trading centre. Cities enter the process of urbanization every day, causing serious problems in drinking water supply, clean air and waste disposal. Therefore, it is important to be aware of the impact of urbanization on the environment and urban communities. One of the important effects is solid waste. Over the last decade, Wardha's trash production has increased significantly. This is mainly due to rapid population growth and infrastructure development. Wardha's urban solid waste generation has increased from 23 tonnes / day to 30 tonnes / day over the last decade. Therefore, you need a proper management system. ICritical Path Method: In many places, these methods have been improved by developing software that mathematically calculates the detection path based on IoT algorithms. The critical path method was developed by Morgan Walker in 1950. In this method, events and activities are considered to form the network flow. This is an action-oriented method. The time it takes to complete an event is called an activity. By analysing the time required to complete an event, you can find the critical path to complete the various activities contained in your network flow in a minimum amount of time. You can use the critical path method to estimate the time required to complete different activities for each type of work

METHODOLOGY

Study Area : The city Wardha is near the central city of India, Nagpur. It is governed by the city council. The city is named after the Walda River, which runs along the north, west and south borders of the district. The total area of the city is 70 km².

Population & MSW generation: In 2011, Wardha had a population of 1,03,898. The city is divided into 5 zones according to the population as well as the inclusion of residential area, commercial area. and industrial area into the zones. And all the 5 zones are again divided into 19 sections.

Sr. No.	Zone	Population	Quantity of waste generation
1	1	29706	11882.2

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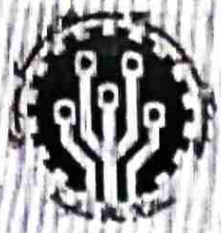

Research Article ISSN: 2394 - 658X

Home Made Water Purifier Using Natural and Waste Materials

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ABSTRACT

In this project we had tried to develop a "Water Purification Technique in low cost" according to principal of Slow Sand Filter, some locally available filter material like cotton, charcoal, sand, sugar-cane husk, pebble, etc. and try to improve the methodology using the UV Filter, RO Filter, and Activated Carbon Filter mechanism. Main focus was removal of iron from surface water by adsorption and oxidation followed by precipitation technique.

Primary intentions under waste water to eliminate the pollutants that can influence the human being as well as existing healthiness. Beneath an area heat to ejected the particles, various types of poison's gas as like nitric, phosphoric and ammonium-ions, stench. In the primary study of economical water purifier construct waste and natural materials that are charcoal, zeolite, coconut shell / fibre, alum, Sea shells with or without crushing, stones and corn cob. Using various test for water quality for suitable of human being bodies as well as living things and also check the ph value and turbidity of the best quality of water.

Key words: Home made Watcer Purifier

INTRODUCTION

In some of the rural areas of India, women use cotton cloth layers for water filtration. This method is very cheap, cost effective in removal of sediments or any suspended solids, but may be not completely suitable for drinking purpose. Some places people are using simple plastic bottles with open end, inside which a layer of bone char followed by a layer of sand and a layer of pebble on both sides of the bone char layer is being used through which water will be passed for filtration. This kind of filtration process is capable of removing sediment and microbes effectively from water.

India ranks 2nd in population and year later it ranks first the drinking water need of the people dramatically increased but the water in India for drinking will be very poor quality and not have any proper purification in villages and small town areas. In most of area and villages used ground water for drinking purpose by excavating boring well or traditional wells [illegible] contain very harmful bacteria,

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COMPARISON OF CLAY BRICK & COW DUNG BRICK

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ABSTRACT

India is a developing country, where construction play very important role for development. In constructionindustriesvariousmaterialarerequiredforconstruction,brickisaveryimportantmaterialinbuildingconstruction and play very vital role. Cow dung is rich in minerals like Potassium, Magnesium, Sodium andManganese and is comprised of organic matters. Cow dung has been used in India for thousands of years in thefields of agriculture or farming. The method of producing traditional bricks from kiln is costly and causespollution.Cowdungcanbeusedtomanufacturebrickswhichareeco-friendlyandmuchcheaper.

This study was conducted to investigate the effect of cow dung, clay and lime in strengthening of claybricks for the construction of environment friendly buildings. There is a need to explore sustainable approachestobuildingconstructionwiththe increasingdemandforlow costhousingandthe highcostofbuildingmaterials. Bricks which are the core material in building construction are made from clay, which is processedeitherbysundriedorburnt, Limepreventsshrinkageofrawbricks.

A localearth was stabilized chemically by Cow dung. A bettercompressive strength atthe dry stateand after 15minutes of immersion in water was obtained with cow dung stabilization at content of 15 to 30% byweight of earth. Bricks stabilized with 15 to 30% Cow dung content by weight of earth have a dry and wetcompressivestrengthof6.51and2.25MParespectively.Thereisanincreaseofabout25%inthedrycompressive strength of bricks stabilized with 30% cow dung content over that of the plain earth brick withoutstabilizerthe30%cowdungcontentresultedinlowermigrationofwaterintothebrick(i.e.lowerpermeability). Also the abrasive resistance increased with increase in the cow dung content up to 30%. Thehighly decreased in compressive strength after 15 minutes of immersion in water, even with optimum Cow dungcontent, indicated that appropriate building design that would prevent stabilized earth bricks from coming intodirect contact with rainwater is important. The study recommends that appropriate construction specification isnecessary to prevent cow dung stabilized earth bricks from coming into any prolonged direct contact withrainwater.

Keywords: Brick,Strength,Construction,Cowdung,Compression,etc.

INTRODUCTION

General:-

Brick by cow dung is play very important role to control temperature and pollution. It is well known with theincreasing demand for low cost housing and high cost of building material, there is a need to explore sustainableapproaches to the needs of the building industry. Bricks as the core material in building construction can beproduced by clay which is processed either through sundried or burned. The latter however is expensive andtechnically exhausting whereas sundried bricks can be produced by the layman. In order to ensure the durabilityandoptimalstrengthoutputwithsundriedclaybricks,fibrousmaterialsisbelievedtoenhancesuchcharacteristics.Thisstudyintendstoexplorehowcowdungcanbeusedtoenhancethequalityofclaybricksthatcanbeusedforlowcostbuildingconstructioninvarious communities aroundNagpur.

Day by day Increase in population poses serious threats not only to forests but also to the overallenvironment due to fuel and wood consumption used for various purposes.However, use of cow dung intobricks could be a useful step towards alternative energy sources. Clay bricks have been used since 4300BC andare still widely used today (Krakowiak et al., 2011). Next to concrete and steel, masonry is the most usedconstruction material on Earth. Clay has the property of forming a coherent sticky mass when mixed with water,being readily mouldable when wet but if dried retains its shape (Okolode, et al, 2012). The brick makingtechnology is driven by using the soil onsite or near to site, and then a certain amount of fibre is mixed into thesoil, depending on the characteristics of the soil, and then stabilized by compaction, so as to improve theengineeringpropertiesoftheproducedbricks (Makunza,2006).

Objectives:

Cow dung has been used in India for thousands of years in the fields of agriculture or farming. The method ofproducing traditional bricks from kiln is costly and causes pollution. Cow dung can be used to manufacturebricks whichareeco-friendlyandmuchcheaper.

Aimofourprojecttousedungformakingbricksandstudystrengthpropertiesofbrick

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Research Article **ISSN: 2394 - 658X**

Comparative Study of Lightweight and Normal Weight Concrete in Flexure

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ABSTRACT

This investigation represents a comparative study of the flexural behavior of lightweight and normal weight concrete. Both theoretical and experimental characteristics of the tested specimens were used to study the flexural behavior. Lightweight concrete can be defined as a type of concrete which includes an expanding agent in that it increases the volume of the mixture while giving additional qualities such as liability and lessened the dead weight. It is lighter than the conventional concrete. The main specialties of lightweight concrete are its low density and thermal conductivity. Its advantages are that there is a reduction of dead load, faster building rates in construction and lower haulage and handling costs. Lightweight concrete maintains its large voids and not forming laitance layers or cement films when placed on the wall. This research was based on the performance of aerated lightweight concrete. However, sufficient water cement ratio is vital to produce adequate cohesion between cement and water. Insufficient water can cause lack of cohesion between particles, thus loss in strength of concrete. Likewise, too much water can cause cement to run off aggregate to form laitance layers, subsequently weakens in strength. Therefore, this fundamental research report is prepared to show activities and progress of the lightweight concrete. Focused were on the performance of aerated lightweight concrete such as compressive strength tests, water absorption and density and supplementary tests and comparisons made with other types of lightweight concrete.

Key words: Lightweight concrete, normal weight concrete, flexural behavior, compressive strength.

INTRODUCTION

Concrete plays a vital role in building construction and industry. The preeminent properties of strength, durability, workability and the ability of concrete to be formed in various structural shapes make it the material of choice for various uses in the construction industry. It is used more than all other construction materials put together and interests in many applications, including buildings, roads, concrete bridges, tunnels, tanks, infrastructures and sewerage systems.

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WORKABILITY OF THE SELF-COMPACTING CONCRETE WITH HYBRID FIBRES

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ABSTRACT

This Research studies, In recent years, Self-compacting concrete (SCC) can be considered asa concrete which has little resistance to flow so that it can be placed and compacted under its own weight with little or no vibration effort, yet possesses enough viscosity to be handled without segregation or bleeding. Several tests such as slump flow, V-funnel, L-box has carried out to determine optimum parameters for the self-compatibility of mixtures. In this article SCC plain and SCC hybrid fibres has compared. The current study includes a practical program considers the effect of adding Nylon e-300 fibre and Nylon tuff fibre to structural behavior of self-compacting concrete such as compressive strength and flexural strength behavior represent by mix proportion-strength curves.

Keywords: Compressive Strength, Flexural Strength, Hybrid Fibers, Self-Compacting Concrete,Slump Flow.

INTRODUCTION

Self-compacting concrete (SCC), requiring no consolidation work at site or concrete plants, has been developed in Japan to improve the reliability and uniformity of concrete in 1988. However, to design a proper SCC mixture is not a simple task. Various investigations has been carried out in order to obtain rational SCC mix-design methods. [3] Recently, SCC concrete has gained wide use in many countries for different applications and structural configurations. SCC can also provide a better

working environment by eliminating the vibration noise. There have many advantages of using SCC,especially when the material cost has minimized. These include:

- Reducing the construction time and labor cost;
- Eliminating the need for vibration;
- Reducing the noise pollution;
- Improving the filling capacity of highly congested structural members;
- Facilitating constructability and ensuring good structural performance.[1]

Many researchers have presented use of fibers into SCC mixed designed to have a high workability that allows the concrete to flow in the congested reinforcement areas and fill complicated formwork without segregation. The performance of fiber reinforced concrete (FRC) depending on [5] many parameters such as maximum aggregate size, fiber volume, fiber type, fiber geometry, and fiber aspect ratio, fiber inclusion to concrete reduces the workability of concrete.[2]

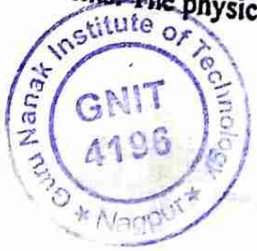
EXPERIMENTAL WORK

Material

The properties of material used in concrete mixtures are given below.

Cement

Ultratech Ordinary Portland cement (43 grades) type is used. It is tested as per Indianstandard Specifications and matches all the requirements. The physical and chemical properties of this cement are given in Table 1.



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The Use of Recycled Concrete Aggregate in Structural Concrete

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Abstract - *Properties Of The Reused Totals And The Appropriateness Of The Equivalent In Primary Cement Were Contemplated And Contrasted Them And Normal Totals. The Outcomes Showed That The Molecule Size Appropriation Of Reused Totals Is Viable With Those Of Normal Totals. The Reused Totals Had Rough And Effect Upsides Of 48.7% And 27.10%, Separately While Those Of The Normal Totals Were 29.5% And 11.45, Individually. Mass Thickness Of Reused Totals Was 1065 Kg/M3 With Contrasted With 1296 Kg/M3 Of Natural Totals And The Water Assimilation Was 2.82% With Contrasted With 1.22 Of Natural Totals. The Blend Configuration Proposed For Concrete Was Grade 30. Properties Of Cement Made Under Three Blending Situations Of Regular Total To Reuse Total Extents, For Example, Half - Half, 25%-75%, And 0%-100 Percent Were Contrasted And Those Of 100 Percent Normal Totals. With Expanding Level Of Reused Total Substance, Compressive Strength, Flexural Strength, Pliable Parting Strength And Usefulness Were Fundamentally Diminished. As Per The Outcomes, Grade 30 Substantial Properties Could Be Accomplished With Blend Extents Of Half Normal Total And Half Reused Total, Without Essentially Influencing The Substantial Properties, Demonstrating A Half Saving Of Regular Totals Hence Lessening Ecological Effects And Improving Supportability.*

Key Words - Mix design, Compressive strength, Tensile parting strength, Flexural strength

1. INTRODUCTION

The advancement of concrete, which was basic for the structure utilization of bonds, made a speedy and finally durable interest for improvement aims. Improvement aggregates, or basically known as "sums", in a wide extent of unique particulate material used being developed. The M. Etxeberria Æ A. R. Mari' Æ E. Va'zquez (2007). Substantial rubble could be changed into valuable reused total utilized in substantial creation with properties reasonable for most primary substantial applications in Egypt. Hardly any properties of RCA, for example, ingestion and scraped area opposition were lower than those expected by Egyptian substantial code of training despite the fact that it agrees with other global codes. RAC with substitution proportion up to 100 percent of NA and 400 kg/m3 concrete substance delivered underlying cement with 33 MPa trademark strength which is reasonable for most primary substantial applications in Egypt, Ashraf M. Wagih et al. (2013).

The impacts of RCA use on substantial material properties, and the enormous scope effect of RCA on primary individuals. Total properties are most impacted by the leftover stuck mortar on RCA. Along these lines, RCA is less thick, more permeable, and has a higher water ingestion limit than NA. While RCA and NA have comparable degree, RCA particles are more adjusted in shape and have more fines severed in LA. scraped spot and squashing tests. Supplanting NA in concrete with RCA diminishes the compressive strength, however yields same or unrivaled parting elasticity. Katrina McNeil et al. (2013). Appropriately different substantial waste might be utilized in the development of primary cement. Their size and content can have various results on short and long haul mechanical properties, but an incorporated examination really to consider microstructure boundaries, too as perceptible elements, can be a helpful device for planning improved blends in with exhibitions comparable to those generally displayed when regular totals are utilized. Also, the current examination demonstrated the plausibility of presenting fine and coarse reused totals together inside another substantial without adversely influencing the mechanical exhibitions, both in the short and long haul S.

CSE28_ICSCI2022/7465

STRUGGLES, POTENTIALS AND RESEARCH ANGLES FOR BLOCKCHAIN IN 6G

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Abstract. With the rise of such cognitive information technology era, the globe is undergoing a profound shift. Healthcare, transportation, entertainment, and smart cities are among the primary categories where high-end user involvement is projected to improve service quality. As a result, for major promising studies which including holographic communications, Virtual Reality, and enormous Machine Type Communications, the telecommunication infrastructure must fulfill unparalleled identified needs example ultra high data speeds and traffic volume. There are considerable issues in the communication setting that must be addressed in order to meet the anticipated demand rise. Among the most ingenious technological boosters to solve most of the present restrictions and assist the functional requirements of 6G is blockchain and distributed ledger technology. The significance of blockchain in addressing severe issues in 6G, future application options, and new research areas are all explored in this paper. Blockchain and other distributed ledger technologies provide a single solution for this paper. application security and privacy, but also come with their own set of security and privacy vulnerabilities. The benefits and limitations of blockchain use in 6G are examined in this paper, as well as various paths for overcoming the hurdles.

Keywords: 6G Networks, Blockchain, Distributed Ledger Technology, massive Machine Type Communications (mMTC), Industrial Internet.

INTRODUCTION

6G mobile networks are expected to encourage the development of a widely connected data-intensive educated society in the next years [1], fuelled by total automation via the co-ordination of all forms of wireless networks distributed across land, air, space and sea [2]. Further to that, 6G is predicted to keep up with the massive increase in mobile traffic, which is supposed to hit 607 exabytes per month by 2025 and 5016 exabytes per month by 2030 [3], allowing developers to build apps like [4]–[7]. A future era of cellular networks is expected to be softwarized, virtualized, and cloudified [1], [8], with the target of flawlessly interconnecting a staggering number of heterogeneous systems, along with massive IoT/IoE devices, trying to cater anticipated exponential growth in data traffic at ultra-high data rates with ultra-low latency [2], generating an incredible range of new vertical network services [9], [8], and going to support the formation of effective vertical network services. Distributed ledger technology, notably blockchain, can boost superior IoE applications for 6G. By creating trust between networked programmes, blockchain removes necessity of trusted middlemen. Blockchain does this by establishing a distributed database, or ledger, in which all members' state changes are stored as data blocks. By their hash values, these blocks form a chronological chain, with each block b_{x+1} linked to the one before it in chronological order. To stay in order, the chain of blocks – or blockchain – must be immutable, visible, and traceable [5]. Transparency, in particular, mandates that everyone in the network be able to see all of the participants' state changes. As a result, blockchain gives up privacy in exchange for trust. Furthermore, because to the sophisticated protocols that protect the integrity of distributed blocks, blockchain exposes new attack surfaces for an enemy. 6G exacerbates these security and privacy issues, since rapid connectivity and high throughput increase the prospect of quick and sophisticated assaults.

GENERAL DIFFICULTIES IN 6G

Behnaam et al. discuss some of the perceptible issues in 6G [1]. Furthermore, Biral et-al. [14] address issues related to M2M interactions.

CSE36_ICSCI 2022/3255

"Covid – 19 Tracker"

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Abstract
Everyone knows COVID-19. One of the most important moments for people and countries fighting this corona virus. So, this is our little show awareness program verified / effective / recovering / death cases of all countries in the world through our PWA (Angular support) app where data is updated every 15-30 minutes. So, this is our Little TRACKER for the COVID-19 Program

Introduction:

Today, this epidemic has made everyone's life miserable. Everyone is trying to earn a living and to keep living. In this regard, we are trying to develop a tracker using technology where Angular 10 becomes a useful tool. with this we can track active, recovering, deaths worldwide.

Here is an application used to track patient information geographically. Using this app, we will track geographically intelligent patient information on a specific day at a specific time. In addition, we will try to show a graph, where the user can click on any country and get the patient details of that country. We will also provide a list with all the countries' names as a drop-down here. Additionally, any user can select any location and easily access location information.

Conclusions:

Thus, the above information explains how to design a simple Covid-19 tracker using Angular 10. It makes sense of how the disease has spread worldwide. The data provides a summary of data available in parts of the world. To learn more about technological advances in tracking the disease.

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CSE44_ICSCI 2022/2294

HEALTH HIS

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Abstract:-

Suppose one persons fell from bike because of wet slippery road and Bike hits him very hardly so he need treatment as fast as possible. Then people drops him at nearest hospital to treat that patient by doctor. Doctors always need to check their diabetes, Blood Pressure and many things like this. And this things take more time to treat the patient. So "Health His" website provides patient history details about his Blood Pressure/ Sugar level and many things. So doctors can proceed to main stepdirectly without waste time. So patient's life can be save.Taking a comprehensive health history is a core competency of the advanced nursing role. The purpose of the health history is to source important and intimate knowledge about the patient and allow the nurse and patient to establish a therapeutic relationship. Reflective practice, a core value of nursing in Ireland, means learning from experience. This recorded comprehensive health history simulation, coupled with reflection, provided insight into an advanced nurse practitioner's history-taking skills, thereby enhancing clinical practice

Keywords:- HTML, CSS AND BOOTSTRAP for front end And SQL , PHP for backend, Health (Health Records), Health, History, Health Backup.

Introduction

Health is an important factor for human's life. Humans always worried about their health. "Health is real wealth" we all know that .our group is introducing "The great evolution about Health industry". A patient's medical history can identify the chances of their probability of having lifestyle diseases like diabetes, heart attacks etc. Which are the main cause of serious health conditions. It helps doctors and care giver's to minutely assess and give the best of medical facilities to the patient.

Your medical history includes both your personal health history and your family health history[4]. Your personal health history has details about any health problems you've ever had. A family health history has details about health problems your blood relatives have had during their lifetimes[4]. This information gives your doctor all kinds of important clues about what's going on with your health, because many diseases run in families[4]. The history also tells your doctor what health issues you may be at risk for in the future. If your doctor learns, for example, that both of your parents have heart disease, they may focus on your heart health when you're much younger than other patients who don't have a family history of heart disease

CSE_ICSCI 2022/1686

IMPROVING QUALITY OF VIDEO IN MULTICLIENT NETWORK

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Abstract— From Server to Client the data is deliver, is defined as Streaming. The data is in form of packets so Packet would delay and lost in heterogeneous client environment. Multiclients finds its application in wide range of domains which includes 3G cellular networks and ISM band connect to multiradio clients where clients get confidentiality of connecting with server. This compromise detecting the connection of different clients in the network. In multiclient network packet delay while streaming of video, aims to distort video which effects on quality. When server and client communicate with each other between the nodes and work then there is a chances of packet loss and packet delay. The proposed system aims to expose to view the distortion of anonymous frames in a WLAN network so, Heuristic Algorithm is used for packet loss and packet delay detection. For analyzing the video the proposed work will find out where is a packet delay and packet loss of a frame. The results can get in windows form where each server windows associated with delivery and clients represents connection and packet delay or loss is reduced. When access network connection in static manner and analyzing video when it is completely deliver to client then the work will be completed.

Keywords— Anonymous frames, heuristic algorithm, WLAN network, video analysis, packet delay detection and packet loss detection.

Introduction

Streaming is referred to as delivery, downloading work. Fig. 1 illustrates the basic structure of video streaming in multiclient network. These properties allow the structure to be widely used in radios and industries. Video quality is the prime concern in streaming, especially in industries. Due to lack of any Wi-Fi and shared wireless medium makes streaming vulnerable to distortion.

Packet analysis is one of the important work for streaming. This analysis is required in industrial environment. The main motives of employers are to analyze the communication path of the clients with their knowledge. Packet delay and packet loss are the main reason of distortion. One of the major issues of multiclient network is communication at same time. A communication system can be requires the one by one client for communication. Multiclient network [1] consists of two aspects: Clients and Network.

- Clients: There are different clients and they give identification by requesting the server
- Network: There is WLAN network for end-to-end communication relation.

Earlier, Server-Client communication has been proposed by LAN routing protocols. These include Wired LAN and Cellular wireless network, now instead of this the Adhoc network is used in WLAN. These can reduce the work by connecting with router. However, router and WLAN were used to improve the video quality. The following are the nature of multiclient network due to which analysis becomes issue:

- Heterogeneity: Point-to-Point transmission is applied to only one client in network. While in wireless network message is broadcasted to multiple client.
- Access networks: Network serve connection to client with server to provide with desired videos.
- Interdependency: Video analysis consider the mobility of packet. The interdependency among video packets makes the communication among mobile frames more complex.

In order to curb above characteristics there is requirement of an algorithm and operation. The primary objective of this proposed system is to show that statistical video analysis can be performed with the knowledge of number of clients.

The remaining paper is organized as follows: Section II describes the related work. Section III presents

ME25_ICSCI2022_3401

DESIGN AND DEVELOPMENT OF SOLAR OPERATED SPRAYING MACHINE USING SOLAR ENERGY

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Abstract- Energy demand is one of the major threads for our country. Finding solution to meet the energy demandis great challenge for Scientist, Engineers. Now a day pesticide sprayer is operated based on fuel engine. This paper represents the development and performance analysis of Solar operated Spraying system. Generally in the agricultural field, traditional conventional techniques like hand operated and fuel operated sprayer system for spraying pesticides have been used which is not eco-friendly, less labour productivity and low In this context, we have proposed an innovative sprayer model for optimized spray applications with minimum losses and cost. The proposed working model of automated pesticide sprayer was designed, fabricated and analyzed for performance tests. This sprayer operates on electrical power supplied by solar panel with battery of designed capacity. An added advantage of this automated pesticidesprayer is that it does not have any impact as far as farmers health is concerned and also it is free from green house gas emissions. It has also been proven itself to be an efficient, reliable and economical one to spray pesticides for agriculture applications. Hence the system can be easily operated there is no need of labors which increases the efficiency of farmers.

Keywords– solar panel, Pesticides sprayers, nozzle, battery and booster pump.

Introduction

The basic principle of pesticide sprayer is to appropriately target the required place which enhances the effective usage of agricultural chemicals. To favor so certain factors which matters a lot are size of the droplet, type of sprayer nozzle, target timing, drift, proper use of sprayers, evaporation of droplet, weathercondition, volatilization, distance and height of spraying. This will result in proper uniformity of droplet distribution. Pesticide sprayers are of different types such as manually carried type and mechanically power driven type

This conventional sprayer causes user fatigue due to excessive bulky and heavy construction. This motivated us to design and fabricate a model that is basically trolley based solar sprayer. In our design,we can eliminate the back mounting of sprayer. Ergonomically, it is not good for farmers' health point of view. There will be elimination of engine of fuel operated spray pump by which there will be reduction invibrations and noise. The elimination of fuel will make our spraying system eco-friendly. So, with this background, we are trying to design and construct a solar powered spray pump system. Nowa-days, there are non-conventional energy sources which are widely used i.e. the energy which is available from thesun is in nature at free of cost. In India Solar Energy is available around 8 months in year. So, it can be used in spraying operation. Solar pesticide sprayer can give less tariff or price in effective spraying. Solar energy is absorbed by the solar panel which contains photovoltaic cells. The conversion of the solar energy into electrical energy is done by these cells. This converted energy utilizes to store the voltage in the DC battery and that battery further used for driving the

A photovoltaic system typically includes a panel or an array of solar modules, an inverter, and sometimes a battery and / or solar tracker and interconnection wiring. Spray heads and Sprinklers are devices that spray in a fixed pattern: Sprays are not usually designed to work at 30psi "Pounds per square inch" pressures or above.

As in agricultures there are no such machines which condition the soil, for that purpose we need a machine this machine can perform the same. While cleaning the roads the problem of dust arises so as to decrease this problem a water spray can be applied first before cleaning. In agriculture the farmer has to work more while operating the manual spraying machine which causes many health issues

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EXPERIMENTAL ANALYSIS OF AUTOMATIC MULTIPURPOSE SPRAYING MACHINE USINGSOLAR ENERGY

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Abstract- Pesticide application is the practical way in which pesticides, (including fungicides, insecticides, herbicides or nematode control agents) are sprayed to their biological targets (eg. crop, pest, organism or other plant). Public distress about the use of pesticides has shown the need to make this process as efficient as possible, in order to minimize their release into the ecosystem and human exposure. One of the most common forms of pesticide application, considering conventional agriculture, is the use of mechanical sprayers. Hydraulic sprayers comprise of a tank, a lance (for single nozzles) or boom, a pump and a nozzle (single or multiple). Sprayers changes a pesticide formulation, generally containing a mixture of water (or another liquid chemical carrier, such as fertilizer) and chemical, into droplets, which can be tiny almost-invisible particles or large rain-type drops. This transformation is carried on by forcing the spray mixture through a spray nozzle with pressure. The size of droplets can be changed, by changing the pressure of nozzle under which it is forced, or by using differentsize of nozzle or a combination of both. Large droplets have thebenefit of being less susceptible to spray drift, but they need more water per unit of land covered. By virtue of static electricity, small droplets are able to increase contact with a target organism, given that very still wind conditions exist.

Keywords – solar panel, sprayers, nozzle, battery, booster pump

Introduction

Today's world is of new technology and developments. Hence rapid working machine and equipment's are going to be manufactured. An Engineer is constantly facing the challenges in bringing ideas and design into reality. New machines and techniques are being developed continuously to manufacture various products at cheaper rate and higher quality. The Automatic Multipurpose Spraying Machine Using Solar Energy and its analysis is an innovative idea. It is a working project having a guaranteeof success. This project can be made in less time hence we haveselected this project. This machine is manually operated. A solar panel is a group of solar photovoltaic modules which are electrically connected and placed on a supporting structure. A photovoltaic module is a packed, connected group of solar cells. The solar panel can be used as a part of a larger photovoltaic system which can generate and supply electricity in residential and commercial applications. Each module is graded by its DC output power considering standard test conditions (STC), and generally having range from 100 to 320 watts. The efficiency ofa module decides the area of a module considering the same graded output - an 8% efficient and 230 watts module will have double the area of a 16% efficient and 230 watts module. A single solar module will only deliver a limited amount of power; therefore, most installations comprise of multiple modules. A photovoltaic system typically includes a panel or an array of solar modules, an inverter, and sometimes a battery and / or solar tracker and interconnection wiring. Spray heads and Sprinklers are devices that spray in a fixed pattern, Sprays are not usually designed to work at 30psi "Pounds per square inch" pressures or above.

Material and Method

In India, farming is done by traditional way, even after large development of industrial and service sector. The spraying is done manually by labor wearing backpack type sprayer which consumes more human energy. The weeding done with the help of Bulls which is costly for small farmers with small farming land, so to overcome these above-mentioned issues, we designed the equipment which will be useful to the farmer for spraying operations.

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PERFORMANCE CHARACTERISTICS OF SAL (SHOREA ROBUSTA) OIL METHYL ESTER AND ITS RESPECTIVE BLENDS WITH DIESEL FUEL TESTED IN VCR DIESEL ENGINE

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Abstract. The optimization of transesterification process parameters for the pro- duction of Sal oil methyl ester (SOME) has been studied. Molar ratio of methanol to oil, time of reaction, temperature of reaction, & concentration of catalyst were the four parameters considered in the study. The physicochemical properties were exper- imentally analyzed. The experimental study revealed that 60 °C temperature of reac- tion, 75 minutes of time of reaction, 8:1 molar ratio of methanol to oil and 0.01 wt%of concentration of catalyst are the optimal process parameters. Methanol to oil molar ratio is most effective in controlling the optimal biodiesel production. The fuel property of SOME has been characterized and it shows that SOME meets the properties ofbiodiesel as stated in standard method of ASTM D6751 and EN 14214.The SOME yield was obtained 96.39% and achieved kinematic viscosity 2.779 cSt. In the present research work, performance characteristics of 10%, 20%, and 30% SOME blended with diesel in single cylinder, 4 stroke, 1500 rpm water cooled VCR Diesel engine varying different compression ratios (14:1, 16:1 & 18:1) at different loading condi- tions namely 0-10 kg were analyzed and performance parameters like Brake power, Brake thermal efficiency, Specific fuel consumption and Exhaust gas temperature were studied. From experimental results for all blends, it was found that SOMEblends showed higher BTE, slightly increase SFC, no significant change in BP. It showed increase in EGT and also indicates maximum mechanical efficiency. Among all tested blends, SOME 30 could be considered as suitable substitute for future alter- native fuel.

Keywords: Biodiesel, Transesterification, SOME, VCR Engine, Performance char-acteristics.

Nomenclature:

SO: Sal oil, SOME: Sal oil methyl ester, BP: Brake Power, BTE: Brake Thermal Efficiency, EGT: Exhaust Gas Temperature, VCR: Variable Compression Ratio, SB10: 10% SOME + 90% Diesel, SB20:20% SOME + 80% Diesel,SB30:30% SOME + 70% Diesel

1. Introduction

Now a day, depleting fossil fuel resources and environmental protections are the major challenges for the researchers. To conquer the above challenges, many re- searchers focused on the production of biofuel and its application in energy producing devices [1-3]. India, as a developing country, has experienced a multifold increase in energy requirements in the past decade due to its growing economy. India's per capitaenergy consumption is one-third of the world's average with self-reliance of crude oil only 18%. Large scale schemes in renewable energy and alternative fuels, particularly biofuels, have been taken up by India in last two decades. Sal seed is one of such largely grown crops, with over 10 million hectares of natural forest across the coun- try. Interestingly, sal seed is cheaply available during such lean periods, when J.Curcas and P. Pinnata are relatively scarce. As far as engine application is con- cerned, higher cetane rating oxidation stability and c v of sal seed biodiesel have posi-tive effect on the engine performance [4]. Diesel fuels have an essential function in the industrial economy of a country with applications in heavy trucks, city transport buses, locomotive, electric generators, farm equipment, earthmoving and underground mining equipment. From point of view of protecting, the global environment and business organization for long term supplies of conventional diesel fuels.It becomes necessary to build up alternative fuels which are corresponding to conventional fuels. The

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METHYL ESTER OF JOJOBAOIL (SIMMONDSIA CHINENSIS) AND ITS SELECTED BLENDS AS DIESEL SUBSTITUTE: A STUDY ON PERFORMANCE AND EXHAUST EMISSIONS IN VCR DIESEL ENGINE

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Abstract. This paper describes an experimental effort for fueling single cylinder water cooled VCR Diesel engine with different blends of Jojoba oil methyl ester (JOME)-diesel to evaluate their effects on engine performance and exhaust emissions. The main objective of this study was to analyze the performance and emission characteristics of JOME blends (JOME 10, JOME 20, JOME 30, JOME 40 & JOME 50) and compared with the results with that of standard diesel to identify suitable alternatives. Experiments were conducted at various compression ratios (16:1, 17:1 & 18:1) at constant speed 1500 rpm. The performance parameters, namely BTE, BSFC & EGT as well as emission parameters, namely NOx, CO, CO_2, HC & Smoke opacity is analyzed and discussed.There is an improvement in BTE by about 3.5 %, JOME 50 blends exhibited lower BSFC.

Keywords: JOME blends, Compression Ratio, Performance characteristics, Emission characteristics, VCR Diesel Engine.

Introduction

Karthickeyan et al. [1] evaluated that the engine characteristics, namely emission and performance of a Jojoba oil biodiesel (JB100) fueled diesel engine with Butylated hydroxyl anisole (BHA) as an antioxidant at distinct mass fractions (50,75, and 1000 rpm). The experimentation was conducted in a single cylinder, water-cooled, direct injection compression (DICI) diesel engine with 1500 rpm at constant speed. Based on experimentation, JB100 was observed as a noticeable substitute for conventional fuel and BHA presence helps to improve the performance and emission parameters. The aim of the present work is to endorse Jojoba oil biodiesel as a promising resource for alternative fuel based on improved engine parameters. Also, diminished emission level with the addition of antioxidants was endeavored without conceding the engine performance parameters.Azad et al. [2] analyzed that the combustion and emission characteristics of Jojoba biodiesel blends (5%, 10%, and 20%) and compare the results that of standard diesel to identify suitable alternatives. Experiments were performed at 50% and 100% loads for the speed range of 1200 rpm and 2400 rpm. The combustion parameters, namely cylinder pressure at various crank angles, heat release rate, ignition delay and the emission parameters, namely NOx, CO, $CO_2$and HC are analyzed and discussed. The results indicated that JB10 is considered as most suitable alternative to diesel.Vishal Singh et al. [3] investigated that the performance and emission characteristics of a twin cylinder diesel engine is fuelled with non-edible vegetable oil such as jatropha, jojoba biodiesel with Di-methyl carbonate as an additive and compared with diesel fuel. Based on the experimental results, Jojoba biodiesel shows better performance and similar results to that of diesel.Saleh et al. [4] described that experimental effort for fueling a single cylinder air-cooled direct injection diesel engine with jojoba methyl ester-diesel-ethanol ternary blends to evaluate their effects on engine performance and exhaust emissions. Jojoba methyl ester-diesel-ethanol ternary blends were prepared, developed, and tested. Using B10 blend, CO, Smoke, and HC emissions decreased by 19%, 33%, and 39% respectively, when compared to diesel fuel while NOx increased by 18%. The 90B10-E10 ternary blend showed 2.8% increase in thermal efficiency and reduction of 2.8%, 2.3%, 23.8%, 39.3% and 50% in bsfc, NOx, CO, HC and smoke emissions were found compared to diesel fuel at high load. The results showed that, the ternary blend of 90B10-E10 (10% of ethanol and 90% of B10 blend) by volume showed the best engine performance and improved exhaust emissions of the diesel

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OPTIMIZATION OF SAL (SHOREA ROBUSTA) OIL METHYL ESTER USING TAGUCHI'S TECHNIQUE

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Abstract. The present work deals with the optimization of Sal oil, a non-renewable source for biodiesel preparation and the parameters that affects the yield. Sal seed has annual productivity of 180,000 t of fruit per hectare per year. The Taguchi method was applied for estimation of factors that affect the biodiesel production in the form of SN ratio (signal to noise ratio). Molar ratio of methanol to oil ratio, reaction time and catalyst concentration were chosen as varying parameters keeping mechanical agitation and reaction temperature constant. In DOE (design of experiments) L9 3X3 orthogonal array was chosen. The study revealed that catalyst concentration was the prime factor that affect Sal biodiesel yield followed by molar ratio and reaction time. ANOVA method also calculated the contribution of each parameter. R -sq. value 0.959 revealed validation of our analysis model up to 95.12%. Final optimized parameters were found to be 8:1 methanol to oil ratio, 1g KOH and reaction time being 75 minutes under constant stirring at 60° C. The yield obtained at optimized conditions was as high as 96.39 % and the physicochemical properties of obtained biodiesel were studied and complied with ASTM D7652 method. Hence, SOME (Sal Oil Methyl Ester) proved to be an excellent source of biodiesel production.

Keywords: Sal oil, Taguchi method, Sal Oil Methyl Ester, Fuel properties.

Introduction

With the onset of industrial revolution, demand for energy has abruptly increased. For the past decade, with the population expansion, pressure has risen over the conventional sources of energy. According to latest report, global energy requirement is met mainly through natural gas and coal.Around 78.6% of global energy demand is met by fossil fuels [6]. It is estimated that India's primary energy demand will roughly doubles in next two decades. Such overdependence on fossil fuels for energy requirement has put pressure on the global environment. Over usage of such resources has results in elevated emission levels that results in increasing global temperature and has resulted in many environment and health issues. According to Indian Nitrogen Assessment report, there has been remarkable rise in NO_x emissions of about 69% from 2001 to 2011. Yearly consumption of around 11 billion tonnes of fossil fuels has left us no choice but to find alternate source of energy. Diesel engine has been in frequent use since its invention by Rudolph Diesel [1-3].

Material and Methods

2.1 Sal (shorearobusta)

Sal oil was procured from Moksha Lifestyle Products, Delhi. It is a pale yellow coloured oil. The main component present in the oil is stearic acid ($C_{18}H_{36}O_2$) and value of FFA is less than 2%. Molecular weight of sal oil is 886.45 g/mol. All other materials were obtained from local vendor and were of analytical grade. Methanol was used as an alcohol because it is cheap and easily available. Moreover small catalyst amount and smaller reaction times are required when methanol is used. The catalyst used KOH because of its good miscibility in methanol

2.2 Transesterification Process

Catalyst is prepared by mixing KOH pallets in methanol. Methanol is preferred over ethanol because is cheap and readily available. Single stage alkaline transesterification is preferred because of low A value of oil and alkaline medium provides activity around 4000 times faster than acidic transesterification. Sal oil of 100 g samples are taken in a batch of four. The methoxide solution prepared is mixed in the oil sample after the sample is subjected to mild heating. It is specifically done to increase the catalyst activity. The samples are then transferred into the water bath shaker whose temperature is maintained at 60° C and stirrer speed is kept constant. After the samples left undisturbed for given amount of time, the reaction mixture was then transferred into a separating funnel and after sometime

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PERFORMANCE AND EMISSION CHARACTERISTICS OF GRAPESEED OIL METHYL ESTER ON VCR DIESEL ENGINE: A COMPREHENSIVE REVIEW

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Abstract. This review paper based on the effect of different blends of Grape Seed oil methyl ester-diesel to determine fuel properties as well as engine performance and emission characteristics. Those countries which are totally dependent on import of crude oil have to go through many crises or intense difficulties. Hence, it becomes very important to develop some alternative fuels, which could be easily obtained from many available resources like non-edible oils etc. Developed countries have embarked focus on renewable energy like wind energy, geothermal, bio-fuel, ocean energy and solar energy. Biodiesel is considered to be one of the most felicitous onekinds of renewable energy with similar properties of diesel fuel. Biodiesel is gaining promi- nence due to the global fossil fuel crisis and emission control challenges. Biodiesel is one of thepromising substitute sources of energy fuel in the transportation sector due to rapid depletion ofpetroleum reserves on one side and increased energy demand as well as environmental pollu- tion hazards on the other side. Biodiesel have good combustion characteristics because of their long chain hydrocarbon structure. In this article, comprehensive review has been conducted to highlights the Grape seed oil methyl ester fuel blends with diesel considered as future transpor- tation fuel. This review paper summarizes the outcome of biodiesel blends on properties, per- formance and emission quality of a diesel engine under different operating conditions. Emis- sions from the diesel powered vehicles mostly damaged the earth's environment and also in- creased the overall earth's temperature. This attracts the need of alternative fuels in the field of transportation sector. Past inventions and research showed that biodiesel can be used as alterna- tive fuel for diesel engine. The emission like CO, HC, and particulate matters are reduced while choosing biodiesel blends. This review, therefore, displays various characteristics like perfor- mance and emission characteristics while using Grape seed oil methyl ester in VCR Diesel engine, this review covers properties of Grape seed oil methyl ester and it reduces various pol- lutants like carbon monoxide (CO), hydrocarbons (HC), Oxides of nitrogen (NOx), etc related to diesel. It also covers that all blends of GSOME shows better emission and performance characteristics. Finally, the review concludes the advantages and future scope of biodiesel as a better competent for diesel fuel.

Keywords : Grape Seed oil methyl ester, Fuel properties, Performance characteristics, Exhaust Emission, VCR Engine

Introduction

The climatic change affects several ecosystems on the earth namely forest ecosystem, marine ecosystem, etc. and the major reason for this climate change is global warm- ing. In the past hundred years, the rate of increase in the temperature of earth's at- mosphere is drastic on comparison with previous centuries. The major reasons behind these changes are burning of fossil fuels for power generation in thermal power plantsand for domestic purposes, increase in use of automobiles and their emissions. More- over, as a non-renewable source, availability of petroleum as fuel is getting depleted day by day due to the increase in their usage for power generation and transportation. Some of the common methods followed for improving the performance of diesel en- gine are engine modification, fuel modification and exhaust gas retreatment. By mak- ing some small modifications in the injection timing, valve timing, compression ratio and providing anti wear coatings on lining for the inner parts etc. the performance of diesel engine can be improved to some extent. By using turbocharger or supercharger,the performance of diesel engine can be increased to a great extent which does not require any additional power supply. Techniques like exhaust gas recirculation, cata- lytic convertors and particulate filters etc., are used to treat and control the harmful exhaust gas emissions from diesel

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EXPERIMENTAL INVESTIGATION OF EXHAUST EMISSION CHAR-ACTERISTICS ON VCR DIESEL ENGINE FUELED WITH SELECTED BLENDS OF SAL (SHOREA ROBUSTA) OIL METHYL ESTER AND DIESEL

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Abstract. Biodiesel has emerged as one of the most important sustainable fuels for reducing air pollution and provide new energy source. Diesel engine plays a significant role in Indian economy. There is an urgent need to look for alternatives to petroleum derived diesel to reduce these harmful emissions. The emission of VCR diesel engine has been investigated when dif- ferent blends of SOME with diesel are used as a fuel. The emissions of carbon monoxide, hy- drocarbons and oxides of nitrogen had been monitored. Variable Compression Ratio (VCR) engine test rig can be used to determine the effect of compression ratio on an emission of en- gine. The objective is to identify the optimum compression ratio for which the best results are obtained. This paper presents transesterification of Sal oil into Sal oil methyl ester (SOME), fuel properties, and its emission in VCR Diesel engine. In the present research work, emission characteristics of 10%, 20% and 30% SOME blended with diesel in a single cylinder, 4 Stroke, 1500 rpm, water cooled Variable Compression Ratio Diesel Engine varying different compres- sion ratio (14:1, 16:1, and 18:1) at different loading conditions namely 0-10 kg were analyzed and emission parameters like HC, CO and NOx were studied with AVL Di-gas analyzer. It observed that SOME 30 showed lower CO emission, SOME 20 revealed comparatively lower HC emission and SOME 30 indicates higher NOx emission for all tested blended fuels. The results showed significant results in emission analysis. IC engine should meet the accepted emission norms before coming on to the road. Henceforth, SOME blends with diesel are more economical.

Keywords: Biodiesel, VCR Diesel Engine, Exhaust Emission, Sal oil methyl ester, Trans-esterification

Nomenclature: SOME: Sal oil methyl ester, SB: Sal Biodiesel, SOME=SB, SOME 10:SB 10, SOME 20: SB 20, SOME 30: SB 30, CO: Carbon Monoxide, HC: Hydrocarbons, NOx: Oxides of nitrogen

Introduction

The global warming and environmental degradation mandates emission reduction strategies, either by improved engine technology or use of environmental friendly fuels. In India, sal tree contributes nearly 5% of total forest area and sal is the source of one of the most important commercial timbers widely used in constructional work where strength and durability are the main criteria. The most important uses of the timber are for railway sleeper, beams, scantlings, floors, piles, bridges, cartiage and wagon building, ladders, carts, spokes, hubs of wheels, tool handles, ploughs, dyeing vats, beer and oil casks. The de-oiled sal meal (sal oilcake) contains 10-12% protein and about 50% starch and is used as cattle and poultry feed. Seeds yield 19-20% of a fatty oil (sal butter), which is contained in the cotyledons (kernels constitute 72% of the weight of the seeds).Sal seed is a large tree up to 50 m tall.

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EVALUATION OF PERFORMANCE OF A CI ENGINE FUELED WITH BIODIESEL PRODUCED FROMUNUSED ALGAE

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Abstract. Abundant availability and easy culture process of algae make it a better resource than other vegetable crops for biodiesel production. The oil (with 21% FFA content) extracted from the unused, mixed culture of algae in this experiment was used to produce biodiesel by an 'acid esterification followed by alkaline esterification' procedure. After confirming the properties of the biodiesel to be within the limit of ASTM standard, three biodiesel blends (B10, B20 and B30) were used in an internal combustion engine (Four stroke single cylinder VCR engine) and the performance of the engine was observed at different engine loads (0%, 20%, 40%, 80%, 100%, 120%). The same performance study was done by petro-diesel to make a comparative study between the efficiency of the petro-diesel and algal biodiesel blends to run an engine. It was observed that the brake thermal efficiency of the engine was higher for biodiesel blends. The little higher brake specific fuel consumption (0.22kg/KWh, 0.25 kg/KWh, 0.26kg/KWh and 0.21kg/KWh respectively for B10, B20, B30 and petro-diesel at overload condition), lower brakepower (3.41 kW, 3.37 kW, 3.25 kW, 3.39 kW for diesel, B10, B20 and B30 respectively for B10, B20, B30 and petro-diesel) and mechanical efficiency (63.34, 51.43%, 52.06% and 51.43% for petro-diesel, B10, B20 and B30 respectively) for biodiesel blends took place which might be the results of lower calorific value (40800 kJ/kg), higher density (875.27kg/m^3) and viscosity (3.14 mm^2/s) of the algal biodiesel than diesel. Significant change of the performance parameters took place with the increase of load from no load condition to overload condition. So, biodiesel blends (with lower percentage of algal biodiesel) can be used in existing IC engines without making any modification to it.

Keywords : Algal biodiesel, engine performance, biodiesel properties, engine load

Introduction

For its high thermal efficiency and lower market price, diesel engine plays very important role inthe energy sector [1]. Petro-diesel is used widely in transport, domestic, commercial and industrial sectors for the generation of mechanical and electrical energy. So, Continuous supply of diesel is a foremost important issue nowadays. But, as the petro-diesel is derived from non- renewable petroleum resource, drastic depletion of it will cause insufficient availability of it in forthcoming times. To overcome that situation, search for the substitutes of the petro-diesel to be used in internal combustion (IC) engine, has been started long before. Biodiesel from different vegetable oils [2-4, 28] and animal fats [5-6] have been found to be the very potential and suitable substitute for IC engines till date [7-10]. But wide use of the biodiesel is still restricted and the main constraints of biodiesels are their high market price and availability of many of their sources as food material. It has been reported by Seo et.al. (2014) that production of biodiesel has significantly caused the increase in the price of regularly used food like sugar and corn [12]. As algae grow hugely in many water-bodies in different parts of India and most of them remain unused, they can become a very useful resource for biodiesel production. These algae are not consumed as food and it can be assumed that the biodiesel from this feedstock would be cheaper as the raw material does not have any price value. Besides that, it has been reported that algae not only can fix 0.6% carbon di-oxide [13, 29-30], but carbon di-oxide can be used to increase the growth of algae and its oil content [14-15] also. So, in this experiment biodiesel was produced from unused algae collected from several pisciculture ponds of Punjab, India.The acceptance of any biodiesel depends very much on its ability to run an engine. It is very obvious that the engine manufacturers and consumers would like to have a high performing

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6204 BEARING FAULTS DETECTION BY TRIBOLOGICAL BEHAVIOUR ANDFFT ANALYSIS

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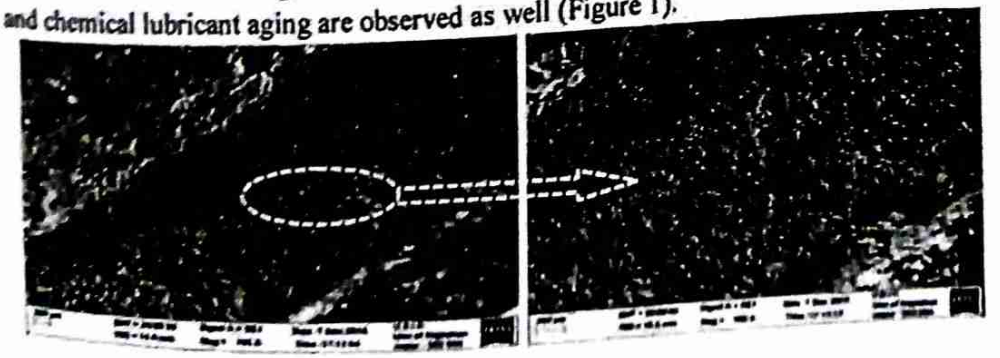
Abstract: The present investigation deals with important aspects of rolling contact tribology in bearing failures [1]. Bearings are referred to as anti-friction bearings due to the low frictionand hence only slight energy loss they cause in service, especially compared to sliding or friction bearings. Sliding wear of bearing grade steel balls (SKF 6204) is systematically investigated in automotive oil lubrication at varying load against NiCr steel[2.3]. The morphologies of the worn surface of outer race, inner race , and cage were characterized by using field emission scanning electron microscopy so as to identify the possible wearmechanism [6].The highest wear rate are noted in oil lubrication at higher load. Adhesion, abrasion, delimitation, vibration and/or oxidation are identified as dominant wear mechanisms in investigated sliding conditions.

Keywords: Triobology, 6204 Anti-Friction bearings, Wear Rate, SEM,FFT

Introduction

Rolling (element) bearings are referred to as *anti-friction* bearings due to the low friction and hence only slight energy loss they cause in service, especially compared to sliding or *friction* bearings. The life prediction is actually based on material fatigue theories[7. 8]The influence of friction on the damage of rolling bearings, at first, is strikingly reflected, for instance, in foreign particle abrasion and smearing adhesion wear under improper running or lubrication conditions. The rolling-sliding nature of the tribological contact into an extended bearing life model Presents[10. 11]Due to its particular importance to the identification of the damage mechanisms, the present paper opens with a general introduction of the subsurface and (near-
) surface failure mode of rolling bearings[13.14] Due to its particular importance to the identification of the Damage mechanisms, the measuring procedure and the evaluation method of the material response analysis, which is based on SEM analysis[16], are described and experimental results of bearing fault (inner race. outer race, ball and cage) diagnosis by FFT analysis[17,18,19] .The combined action of mixed friction and corrosion in the complex loading regime is demonstrated. Mechanical vibrations in bearing service, e.g. from adjacent machines, increase sliding in the contact area. The effect of vibrationally increased sliding friction on near-surface mechanical loading is described by a tribological contact model[20. 21]Temperature rise and chemical lubricant aging are observed as well (Figure 1).



ME06_ICSCI2022_0671

ANALYSIS AND PERFORMANCE EVALUATION OF RECTANGULAR FIN HEAT SINK

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Abstract. Thermoelectric cooling, also called "The Peltier Effect" is a solid-state method of heat transfer through dissimilar semiconductor materials Thermoelectric coolers TEC are solid state heat pumps used in applications where temperature stabilization, temperature cycling, or cooling below ambient are required. The thermoelectric coolers need effective heat sinks in order to dissipate the hot side heat from semiconductor chip to the atmosphere. Normally a fan is used above the sink to enhance the heat dissipation. The paper discusses the development and analysis of a sink with rectangular fins that have a three layers and concentric triangular layout of fins. The surface area enhancement and cross flow heat dissipation is planned though use of through hole in fins in the direction of air flow. The work is to include determination of heat load for application specific, selection of sink, design, and fabrication of sink to surface area and a number of fins, steady-state thermal analysis using workbench 16.0. Test rig will be fabricated and testing will be done by varying flow rate of air. The heat transfer rate, heat transfer coefficient will be determined for individual cases and then later compared. The geometrical layout and thermal analysis of these fins is discussed in the paper.

Keywords : Peltier Effect, Thermo electric cooler, Rectangular fins, Concentric Triangular layout

Introduction

Heat sinks are devices that enhance heat dissipation from a hot surface, usually the case of a heat generating component, to a cooler ambient, usually air. For the following discussions, air is assumed to be the cooling fluid. In most situations, heat transfer across the interface between the solid surface and the coolant air is the lead efficient within the system, and the solid-air interface represents the greatest barrier for heat dissipation. A heat sink lowers this barrier mainly by increasing the surface area that is in direct contact with the coolant. This allows more heat to be dissipated and/or lowers the device operating temperature. The primary purpose of a heat sink is to maintain the device temperature below the maximum allowable temperature specified by the device manufacturer. Thermoelectric cooling, also called "The Peltier Effect" is a solid-state method of heat transfer through dissimilar semiconductor materials Thermoelectric coolers TEC are solid state heat pumps used in applications where temperature stabilization, temperature cycling, or cooling below ambient are required. There are many products using thermoelectric coolers, including CCD cameras (charge coupled device), laser diodes, and a new field of thermoelectric coolers for refrigeration effect.

The present study is to be conducted for application of heat sink in thermoelectric can cooler, where in the device shall be used to cool beverage cans. The size of the device is an constraint due to the fact that the device is to be used as a portable device hence has to be compact. Thus the study is focused on design development and testing of heat sink with rectangular fins that have a three layer a concentric triangular layout of fins.

Overview

Electronic devices like relay circuits generate excess heat during their operation and thus require thermal management to improve reliability and prevent premature failure of the device. The amount of heat generated from electronic devices is almost equal to the amount of power input if there are no

ME08_ICSCI2022_1119

DESIGNING AND FABRICATION NON-CONVENTIONAL ENERGY: A REVIEW ON LITERATURE

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Abstract. Energy is important to the economic process and social development of any country. Indigenous energy resources important to be developed to the optimum level so attenuate dependence on foreign fuels, subject to partitioning economic, environmental and social constraints. This is important to a lift in analysis and development likewise as investment in renewable energy business in search of how to satisfy energy demand and to cut back dependency on fossil fuels. Wind and solar power are getting standard due to abundance, handiness and simple harnessing for electric power generation. Reaching the non electrified rural population is presently unfeasible through the extension of the grid, since the affiliation is neither economically possible. Further, there will be increase in oil costs, and also the intolerable impacts of this energy supply on the users and on the surroundings, square measure slowly removing standard energy solutions, like fuel agents based mostly systems, from the agricultural development agendas, "Hybrid Power Generation" i.e. Solar and wind based energy generation. This paper presents the design of hybrid electricity generation system by utilizing both solar and wind renewable energy to the domestic household in the remote area which is unableto connect to the grid. Hybrid systems have tested to be the most effective choice to deliver, "high quality" power.

Keywords : Solar Panel, Solar Tree, Wind Turbine.

Introduction

Heat sinks are devices that enhance heat dissipation from a hot surface, usually the case of a heat generating Solar Energy is accepted as a key resource for the future of theworld. The utilization of solar energy could cover a significantpart ofthe energy demand in the countries. One of the most popular example of utilized solar energy that is solar tree. In this paper illustratesthe various review about the solar tree and development of Solar Tree for domestic application considering the average requirementof small Indian house. Therefore, in this paper, an attempt has been taken to summarize the past and current research in the field of solar tree technology. The main objective of this paper is to present the review about the solar tree. In the world the utilization of energy is increasing day by day and therefore we required the renewable energy sources which are pollution free and easily availablelike sun light. Sun light is utilized by solar panels butwhen we required an array of panels the land requirement also increases whicharises as a problem. For solution of this problem and for getting more energy we use solar trees. In these trees basically there are solar panels which are arranged in Fibonacci series for getting more energy and the requirement of the land is less. Because of less requirement these are easily installed and these can be used in straight lighting, home supplies and in industries etc. The sun light easily available so these are very beneficial there is no worryof availability of sun light in future because till the end of the world this is also available. Meaning of the TREE in Solar Trees

T= Tree generating

R= Renewable Energy and

E= Electricity

Rein Trifled is a solar environment a list artist that has also begun to construct solar trees. He is one of the founders and the current president of the Solar Tree Foundation which began in 2008. The Solar Tree Foundation designs programs For elementary school students to show them the creative process for constructing a Solar Tree in order to educate a broad audience on the environmental and technologicalmaterial. It's also designed with the intention of instilling an appreciation for artistic aesthetics interpreted through sculptures as a medium of expression. This is performed by online lectures and webcams in which the students can engage with the architects and see the construction process in real time. Trifled believes that his Solar Trees will help preserve natural trees in the long

ME09_ICSCI2022_2524

FEA OF CONNECTING ROD

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Abstract. The main objective of this paper is to explore weight reduction opportunities for a production forged steel connecting rod. This has entailed performing a detailed load analysis. Therefore, this study has dealt with two subjects, first, static load stress analysis of the connecting rod, and second, optimization for weight. Structural systems of connecting rod can be easily analyzed using Finite Element techniques. So firstly a proper Finite Element Model is developed using Cad software Pro/E Wildfire 3.0. Then the Finite element analysis is done to determine the von Mises stresses in the existing connecting rod for the given loading conditions using Finite Element Analysis software ANSYS WORKBENCH 9.0

Keywords:- Stress Analysis, Optimization, Von Mises Stresses, Finite Element Model.

Introduction

This paper shows the implementation of the FEM software for the assessment of the strength and distortion characteristics of a connecting rod. Connecting rods transfer energy from pistons to crankshafts and convert the linear, reciprocating motion of a piston into the rotary motion of a crankshaft. From the viewpoint of functionality, connecting rod must have the highest possible rigidity at the lowest weight. The automobile engine connecting rod is a high volume production critical component. It connects reciprocating piston to rotating crankshaft, transmitting the thrust of piston to the crankshaft. Every vehicle that uses an internal combustion engine requires at least one connecting rod depending upon the number of cylinders in the engine. To reduce the obliquity of the connecting rod with the cylinder axis, its length should be kept as large as possible. Reduced obliquity decreases the oscillatory angular motion of the connecting rod about its small end, thereby decreasing the piston side thrust. A combination of axial and bending stresses acts on the rod in operation. The axial stresses are produced due to cylinder gas pressure (compressive only) and the inertia force arising in account of reciprocating action (both tensile as well as compressive), where as bending stresses are caused due to the centrifugal effects. To provide maximum rigidity with minimum weight the main cross section of the connecting rod is made an I-section is made to blend smoothly into two rod ends called the small end (piston end) and big end (crank end). Connecting rod for automotive applications are typically manufactured by forging from either wrought steel or powdered metal. They could also be cast. However, casting could have blowholes, which are detrimental from durability and fatigue point of view. The fact that forging produces blow-hole-free and better rods gives them an advantage over cast rods. Between the forging processes, powder forged or drop forged, each process has its own pros and cons.

Powder metal manufactured blanks have the advantage of being near net shape, reducing material waste. However, the cost of the blank is high due to the high material cost and sophisticated manufacturing techniques. With steel forging, the material is inexpensive and the rough part manufacturing process is cost effective. Bringing the part to final dimensions under tight tolerance results in high expenditure for machining, as the blank usually contains more excess material. A sizeable portion of the US market for connecting rods is currently consumed by the powder metal forging industry. A comparison of the European and North American connecting rod markets indicates that according to an unpublished market analysis for the year 2000, 78% of the connecting rods in Europe (total annual production: 80 million approximately) are steel forged as opposed to 43% in North America (total annual production: 100 million approximately). In order to recapture the US market, the steel industry has focused on development of production technology and new steels. AISI (American Iron and Steel Institute) funded a research program that had two aspects to address. The first aspect was to investigate and compare fatigue strength of steel forged connecting rods with that of the powder forged connecting rods. The second aspect was to optimize the weight and manufacturing cost of the steel forged connecting rod. with that of the powder forged connecting rods. The second aspect was to optimize the weight and manufacturing cost of the steel forged connecting rod. The first aspect of this research program has been dealt with in a master's thesis

ME20_ICSCI2022_9464

EXPERIMENTAL INVESTIGATION OF CAPSULE BASIN SOLAR STILL INTEGRATED WITHPARABOLIC REFLECTOR

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Abstract

Nonstop availability of fresh drinking water to meet the developing social, environmental and economic need of society is one of the major concerns for present situation. Solar Desalination is sustainable device to get the potable water from saline water. However, the lesser productivity of solar desalination is the major problem for universal applicability. In the present paper, an inventive modification in form of capsule basin solar still has been combined with parabolic reflector. The capsule basin solar still has been developed and performance has been investigated for various water mass such as 1 L, 2 L, 3 L, 4 L and 5 L in basin and different angle of solar still such as 35,40,45 degree. The daily average efficiency of capsule basin solar still is increased respectively for the 1 L, 2 L,3 L, 4 L, 5 L water mass in basin respectively. From experimental results, it has found that the distilled output increases with increase in mass of water in basin. And also change of angel of solar still respectively.

Keywords: Capsule basin, solar still; parabolic reflector; Desalination; Solar energy

Introduction

Water is play an important role for the human beings as well as for the agricultural and industrial growth of the country. At present situation, availability of water is sufficiently but the quantity is not infinite. Human beings rely on rivers, ponds and wells to get the pure water but these resources are not always clean. The fresh water is polluted by the industrial wastes. The total quantity of global water is about 1.4 billion km3 from which around 97.5% is sea water and residual 2.5% is clean water. The clean water is available in the form of exterior water, frozen water in poles and ground water. Thus, around 0.014% of clean water is accessible to human beings and other living creatures. Unsafe drinking water cause the diseases like diarrhea, cholera etc., which is the primary cause of death ofmillions of people including number of children. From the estimation, the spoiled water, water shortage and inadequate hygiene cause an 85–90% of diarrheal diseases in developing countries. Due to the lack of proper water distribution systems, people generally rely on potentially contaminated water sources such as lakes, rivers, wells, ground water and waterways, that are filled with debris and dirt.

Literature Survey

[1] Kalpesh V. Modi:- The performance of single-slope double-basin solar stills was evaluated with the use of small pile of wick materials in lower basin of stills. For the study, two similar single-slope double-basin solar stills were developed with the small pile of two different wick materials namely jute cloth and black cotton cloth. The experiments were conducted for the two different water depths such as 0.01m and 0.02m in lower basin under the environmental situation of Valsad, Gujarat (20.61°N, 72.91°E) India. From the results of experiments, the enhancement of 18.03% and 21.46% in yield was obtained at 0.01m and 0.02m water depth for the still with small pile of jute cloth compared to the still with small pile of black cotton cloth. From the experiment, it has been observed that the still with small pile of jute cloth achieved the overall higher productivity compared to the still withsmall pile of black cotton cloth.

[2]Vikarant P. Katekar:- Conventional solar still owns poor efficiency and low distillate output. Many investigators improved the performance of solar still by varying the design of its components. This paper evaluates the effect of several design modifications on the performance of solar still to

ME19_ICSCI2022_4631

FORMULATED THE ALTERNATE STRATEGIES (SOLAR ENERGY) FOR CONVERSION OF MUNICIPAL WASTE PLASTIC INTO FUELS

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ABSTRACT: Plastic was formulated by Alexander Parkes in 1855 and Alexander Parkes expose the first man-made plastic at the 1862 Great International Exhibition in London. Plastic had numbers advantages as well as disadvantages, it's become part of the daily life cycle. Plastic is light in weight, the life of products is more as compared to other, flexibility and mouldability are best for industrial and household products. Industries achieved successfully conversion of plastic into useful products, in the 20th-century rates of production and uses are rising similarly decomposition plastic issue is increasing and the earth turns to plastic pollutions.

The objective of the review paper is to formulate the machine that converts the plastic into useful fuel, discovering methods that recycle the waste plastic and make eco-friendly fuel. The procedure we utilizing regarded as Pyrolysis.The rate of production of fossil fuels such as crude oil, natural gas and coal, are reducing and necessities are increasing due to the present day financial growth rate being unstable

Key words: Waste plastics, pyrolysis, catalytic cracking, depolymerisation, fractional distillation, solar energy.

Introduction

The majority of plastics that are used are non-biodegradable in nature, they continue to be in surroundings for a lengthy length of time which influences the environmental quality. Plastics are non-biodegradable polymers. Plastics consist of frequently excessive density polyethylene, polyethylene, polypropylene, low-density polyethylene. According to the worldwide survey, about 100000 ton of plastic wastes had been produced each and every day in our country, however out of which solely 60% waste plastics are recycled.

Plastic has led to a make bigger in the use of packaging materials, broadly speaking in the shape of plastic. Plastics have turned out to be a quintessential section of today's world. Due to their lightweight, durability, power efficiency, coupled with ease of manufacturing and layout flexibility. These polymers are employed in the complete gamut of industrial and home areas. Plastics are produced from petroleum derivatives and are composed mainly of hydrocarbons, however additionally incorporate components such as antioxidants, colorants, and different stabilizers. Today about 129 million lots of plastics are produced yearly all over the world, out of which 77 million heaps produced from petroleum. Plastics are non-biodegradable polymers, broadly speaking containing carbon, hydrogen, and a few different factors like nitrogen, chlorine. However, some plastics can additionally be made from renewable substances such as polylactic acid, attainable from cellulosic materials. Plastic merchandise is plentiful, less expensive to produce, sturdy but low weight, and convenient to keep and transport. Due to its less-biodegradable nature, plastic wastes make contributions appreciably to the hassle of waste management. Disposal of plastic wastes poses an extremely good hazard to the surroundings and high-quality technique has no longer been implemented.

Most plastic wastes are separated into polyethylene (PE) and polypropylene (PP). Plastic waste is a huge trouble in most growing countries. due to the fact, the quantity of recycled plastic stays low due to the excessive funding wishes and running costs. However, the chances exist for the plastics to be recycled, dealt with, and used as uncooked material, thereby lowering the massive extent of waste and the extent of an environmental nuisance the waste represents to city streets. Recycling plastics already happens on a huge scale. The most alluring approach to chemical feedstock recycling is pyrolysis. Thermal cracking or thermal pyrolysis entails the degradation of the polymeric substances by using heating in the absence of oxygen. Pyrolysis is the thermochemical decomposition of natural fabric at excessive temperatures. This technique is a phase of de-polymerization, which is in distinction to the advent of plastics which makes use of polymerization from syngas and crude oil. The liquid product bought is beautiful due to the fact its homes have proven it manageable for use as a chemical feedstock or fuel. Recycling by using pyrolysis is one of the promising techniques for recycling waste plastics and includes the thermochemical decomposition of natural and artificial substances at extended temperatures in the absence of oxygen to produce fuels. The procedure is typically performed at greater temperatures between 500-800°C. These pyrolytic merchandise can be divided into a liquid component, a gaseous element, and strong residues.

MI20_ICSCI2022_7510

EXPERIMENTAL ASPECTS OF HEAT TRANSFER ENHANCEMENT BY FORCED CONVECTION FROM VARIOUS FLOW SURFACES

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Abstract: In most of the earlier investigation and various studies experimental relationships for duct flow with straight channel has been studied and equivalent heat transfer and pressure drop are recorded, very few researchers have been experimental performance on channel with turned flow therefore an experimental study is needed to be carried in a rectangular channel with turned flow at different inlet angle changes in Reynolds number which show turbulence. The bottom wall of the channel is mounted with a baffle, the channel would be heated from bottom with a constant heat flux, a separate heater arrangement would be made at the inlet for varying the inlet temperature. Furthermore, the effect of baffle height on heat transfer and pressure drop will be investigated and finally empirical correlations including several dimensionless parameters for average Nusselt number and friction factor will be obtained and presented.

Keywords - baffle height, constant heat flux, friction factor, Nusselt number, Reynolds number

Introduction

Need of energy savings and material implemented by the rapid changing environmental world resources and environmental worries has helped to developed the more efficient heat transfer rate.Heat transfer enhancement are of two types one active and other is passive method. The use of serpentine type or baffle type channel is commonly used.The use of serpentine type or baffletype channel is commonly used heat transfer enhancement strategies in signal phase internal flow However an attempt has been made to overcome the thermal problems subject to high heat flux and to increase the heat transfer rate using the detailexploration of turned flow in a rectangular channel.Since very few studies have been addressed in this issue it needs more effective study in this method,

Literature review

[1] **IrfanKurtbashave** investigated experimentally the heat transfer coefficient for a rectangular channel with 45^0 and 90^0 turned flow. Single baffle was used inside the channel of variable height. A detailed study was conducted for three different height of entry channel (named as the ratio of the height of entry channel to the height of test section (_Hc = hc/H)) by varying Reynolds number (Re). Another variable parameter was the ratio of the baffle height to the channel height (_Hb = hb/H). Only one baffle was attached on the bottom (heating) surface. The experimental procedure was validated by comparing the data for the straight channel with no baffle. Reynolds number Re was varied from 2800 to 30,000, so the flow was considered as only turbulent regime. All experiments were conducted with air. Accordingly Prandtl number (Pr) was approximately taken at 0.71. The results showed that average Nusselt number for $\theta = 45^0$ and $\theta = 90^0$ were 9% and 30% higher, respectively, than that of the straight channel without baffle. Likewise, the pressure drop increased up to 4.4 to 5.3 times compare to the straight channel.

[2]**K. Yongsiri , P.Eiamsa-ard , K.Wongcharee , S.Eiamsa-ard**have investigated experimentally the effects of the inclined detached ribs with different attack angles (e=0,15,30,45,60,75,90,105,120,135,150,165) on the heat transfer, friction factor and thermal performance behaviors have been investigated numerically for Reynolds numbers from 4000 to 24,000.The numerical results show that Among the ribs examined, the ones with θ=60 yield

ME21_ICSCI2022_2909

DESIGN AND FABRICATION OF WHEEL MOVABLE HYDRAULIC LADDER WITH ADJUSTABLE HEIGHT

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Abstract. This project focuses in design, fabrication of the mechanical part of machine and the system of the manually operated hydraulic ladder. To achieve this project objective, this hydraulic ladder body structure and mechanical system needs to concern some other criteria such as strength, safety and ergonomic design. This project flow must start from design, analysis, and lastly fabrication process. Before develop the hydraulic ladder, it must compare with other product in market.

With everlasting development of science and technology, more and more new technologies are applied to lifting appliance design. In this paper scissor ladder powered by hydraulics has been introduced. The main aim to design and analysis and construct multi-utility equipment for workers so that can carry their activities efficiently. The ladder should compact and cost effective. We expect that our ladder carry load around 150-200kg with factor of safety equal to 2.5 and lifting to height of around 7 to 8 ft. It is used for school, colleges, malls, hospital and small scale industries. The beginning aim of our project is to make marketable product in the market. To get maximum possible acceptance in the market will be our objective.

Keywords –Scissor Ladder, Hydraulic Cylinder, Multifunctional, compact, cost effective.

Introduction

This device hydraulic ladder has been developed to today itself needs of small and medium cable industries and home use also , who are normally man powered with very minimum of skilled labours . In most of the industries and place it use to go to the highest for work and the ladder can move from one place to another by not lifting it . In order to avoid all such disadvantages. This hydraulic ladder has been design in such a way that it can be used for climbing man easily because it is mounted on the trolley. The operation is made simple that even unskilled labour can handled, by just demonstrating the working of the hydraulic ladder once. The hydraulic pump and cylinder arrangement is used to lift the labour from ground to height. This hydraulic ladder is hand operated one. It is movable one from one place to other place easily by proper wheel arrangement. Material handling is specialized activity for modern manufacturing concern. It has been estimated that about 60-70 % of the cost production is spent in material handling activities.

For safety at a variety of height work, whether in industry or at home, ladders need to be designed to facilitate and increase worker safety? That is the one of the reasons why it is necessary to modernize the construction because of the ever-increasing demands for safety. It is therefore necessary to know their physical, dynamic and kinematic properties when designing ladders. The aim of the paper is to dynamically analyze the hydraulically lifted mounting ladder, which is necessary for the ladder sizing in order to achieve the best required properties.

Literature survey

[1] P. FRANKOVSKÝhave investigated a dynamic analysis of a hydraulically lifted ladder by means of analytical and numerical calculations. The solutions used in the dynamic analysis of mechanical systems were used in the analytical solution. A numerical model was created to verify the achieved results of the solved mechanical system with simulation of its motion.

ME16_ICSCI2022_8376

CUSTOMER RELATIONSHIP MANAGEMENT IN MANUFACTURING FIRM

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Abstract - TheAim of this paper is to provide academics, industrial persons and practitioners working with customer relationship management (CRM) with a review of key topics, such as advances in CRM, the shifting role of consumers, issues with conceptualization and consumer mistreatment &exploitation. The authors further add concepts of fairness, equality, faith and paradoxes of one-to-one marketing, which are little researched within customer management.

Keywords -Customer relationship management, Faith, Success, Optimise, CRM Software's

Introduction

Customer relationship management (CRM) is anmethod to managing a company's interaction with current, prospective & potential customers. It uses data analysis about customers' past with a company and to progress business relationships with customers, specifically focusing on customer retention and ultimately heavy sales growth.

One important characteristic of the CRM concept is the systems of CRM that collect the data from a range of several communication media or channels, including an calls, emails, company's website, chats, marketing resources, and more recently, social media. Through the CRM concept or method and the systems used to assist it, businesses learn more about their target audiences and how to best provide to their requirements. However, adopting the Customer Relationship Management theory or method may also occasionally lead to discernment within an audience of consumers, resulting in irritation among customers and failure of the resolution of CRM.

The biggest management challenge in the liberalization and globalization for a business is to offer and sustain good relationship with the customer. In the past producers acquired their customers for accepted, because at that time the customers were not challenging nor had additional source of supply or suppliers. But today there is a radical transformation. The variable business environment is categorized by demanding customer, increasing race, high consumer choice, economic liberalization, more stress on quality and value of purchase etc.

All these changes have completed today's producer move from old-fashioned marketing to current or modern marketing. Modern marketing calls for more than rising a product, pricing & promoting it and making it available to target consumer. It demands to build faith, a binding strength and value added relationship with the customers. The process of developing a helpful and collaborative and communal relationship between the buyer and seller is called customer relationship management (CRM). According to Head of Citi Bank "the creativity of CRM is to distinguish the individual customer intimately, so that the company has a modified product ready for him even before he asks for it."

Phases of crm

1. Customer Relationship Management Software

The thought and awareness of customer relationship management begin developing in the early 1970s, when customer fulfilment was measured using annual reviews or by front-line asking. At that time, businesses had to rely on individual mainframe systems to automate sales, but the degree of technology allowed them to categorize customers in spreadsheets and lists. The key year was 1982, when Kate and Robert Kestnbaumpresented the idea of Database marketing, namely applying statistical methods to analyze and collect customer data.

Four years later, Pat Sullivan and Mike Muhney from Dallas released their customerassessment system called ACT! Based on the principle of digital rolodex, proposing for the first time a well-shaped interaction management service. The style or fashion was followed by numerous developers trying to

Study and Fabrication of Flue Gas Desulphurization Unit

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Abstract— Fossil fuels used in thermal power plants contain significant amounts of sulphur. At burning, about 95% of the sulfur is converted to sulfur dioxide (SO2), which reacts with the particles of water in the atmosphere, forming acid rain under normal conditions of temperature and pressure. Sulphur dioxide, through its annual emissions, is the main gas pollutant, which is why over the last 80 years has been a concern for the development and streamlining of desulphurization processes. The flue gas desulphurization can be done both by wet or dry process. The most widespread process is wet desulphurization of limestone or lime, accounting for about 85% of all desulphurization processes. The paper presents the current state of the desulphurization technologies in the world, their advantages and disadvantages, as well as the future trends in this field.

Keywords: Limestone, Flue Gas Desulfurization, Sulphur Dioxide, FGD - Gypsum, Fly Ash

I. Introduction

The flue gas desulphurization (FGD) process utilizes a set of technologies to remove sulphur dioxide (SO2) from the flue gas emissions of coal- fired power plants. FGD systems were developed as a response to the exhaust- flue gases- from fossil fuel- burning plants, principally coal burning, that causes harm to both an environmental and human health as well. This SO2 can be removed from flue gases by a variety of methods. For a typical FGD predominantly employs two methods of filtering the emission.

1) Dry Scrubbing.
2) Wet Scrubbing.

This is done by means of an industrial process through the addition of absorbents. In this method, the flue gases are stream-saturated with the absorbent in aqueous solution. Method of removing SO2 can be removed from boiler and furnace exhaust gases have been studied for over 150 years. Early ideas for flue gases desulphurization were established in England around 1850. The first major FGD unit a utility was installed in 1931 at Battersea Power Station, owned by London Power Company.

This paper will be focused on systems for reducing sulphur dioxide from flue gases in thermal power plants, *[3]*. All three currently commonly used desulphurization processes for flue gases (dry calcite process, semi-dry, and wet process for desulphurization of flue gases, commonly known as DeSOx processes) will be presented, *[4]*.

We will make a detailed review of the wet process for desulphurization of flue gases in thermal power plants because it is the most commonly chosen BAT. *[5]*, (Best Available Technology). Its advantages are its favourable reagent and the harmlessness of cleaning the by-product, which can be further used in other parts of industry or disposed of in the environment, without any known side effects. With detailed engineering from the beginning of the desulphurization process to its execution, a very high level of scrubbing acid components from flue gases can be achieved by using a proper reagent; lime or limestone are often used. A by-product of this process is gypsum. It can be used for commercial purposes or further inside a thermal power plant as a medium in other industrial processes, such as the stabilization of electrostatic precipitator ash.

II. Literature Survey

Sr. No.	Title of the Paper	Authors	Name of Journal /ISSN No./Volume/ Number/Year	Proposed Concept and Details
1.	The state of the Art	R. K. Shrivastava	Journal of the Air and Waste management Association 27.DEC.2011	
2.	World Congress on Chemistry And Catalysis	Clara Smith	Journal of Industrial and Environmental Chemistry	
3.	Bio-fuels and Bio-energy	Ataullah Khan Mohammed	Key drivers and future potential	
4.	Bio-polymers	Takahiko Nakaoki	Archives in Chemical research 2016	
5.	World Research	Razvan Lixnic and Sorin Jinga	Study on current state and future trends of	
6.	World Research	Ming Kong	Separating sulfur from flue gas desulfurization Gypsum with an oxalic acid solution	
7.	Technologies News (Energy Words)	Gutikunda S. and Jawahar P.	Cost and benefits of Installing flue gas desulfurization units at Coal-fired power plants in India 2015	

8.	Environmental Protection	Puja Jawahar, Kshir Malik, Suresh Gutikunda	International Re-construction and development 2019	
9.	Energy Technology and Policy	Taylor and Francis Group	Review of design, Operating and financial consideration in FGD systems MAY 2015	

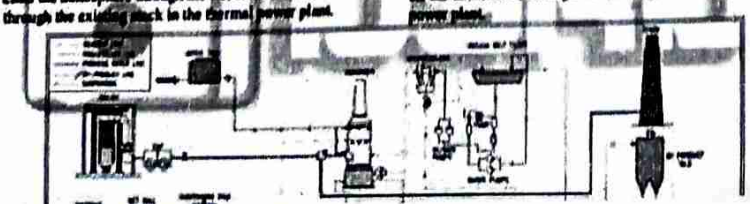
III. Methodology

Raw flue gases are directed through flue gas ducts to the absorber. Fresh process water and a fresh limestone suspension are also delivered to the absorber. Fresh process water can be supplied from a nearby river or lake. Furthermore, seawater, *[9]*, is suitable for the wet desulphurization process because it contains a high amount of chlorides that improve the effect of desulphurization. The limestone suspension must be prepared in advance in the limestone preparation plant, which consists of a delivery bunker, a day silo for limestone, and wet ball mills with corresponding tanks. Limestone is crushed in the mills, particles of limestone are separated in a hydro cyclone, and suitably sized particles of limestone are passed for further suspension preparation in tanks. The suspension is delivered to the absorber from these tanks.

All chemical reactions occur in the absorber, which consists of the zones that are described in chapter 5.4 in detail. After a suitable amount of time of flue gas retention in the absorber, they exit cleansed of the SO2 component. They enter the atmosphere through the wet stack on the absorber or through the existing stack in the thermal power plant.

IV. Working Principle

Raw flue gases are directed through flue gas ducts to the absorber. Fresh process water and a fresh limestone suspension are also delivered to the absorber. Fresh process water can be supplied from a nearby river or lake. Furthermore, seawater, *[9]*, is suitable for the wet desulphurization process because it contains a high amount of chlorides that improve the effect of desulphurization. The limestone suspension must be prepared in advance in the limestone preparation plant, which consists of a delivery bunker, a day silo for limestone, and wet ball mills with corresponding tanks. Limestone is crushed in the mills, particles of limestone are separated in a hydro cyclone, and suitably sized particles of limestone are passed for further suspension preparation in tanks. The suspension is delivered to the absorber from these tanks. All chemical reactions occur in the absorber, which consists of the zones that are described in chapter 5.4 in detail. After a suitable amount of time of flue gas retention in the absorber, they exit cleansed of the SO2 component. They enter the atmosphere through the wet stack on the absorber or through the existing stack in the thermal power plant.



ME17_ICSCI2022_6047

A REVIEW ON TIME AND MOTION TECHNIQUES THROUGH CAPACITY UTILIZATION

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Abstract .The time and motion techniques were utilized in order to optimize operations, identifying value-added and non-value added activities and wastes. The objective of this study is to improve productivity through capacity utilization in the industry. It's a continuous improvement process which involves from workers to mangers. Company can increase their effectiveness and efficiency through this process. The plant layout and flow of material in shop floor also a play an important role in enhancing productivity through distance and time. Capacity utilization of machines is a big challenging job in organization. It measures the actual capacity of machine with respect to the potential output within a specific period. In real scenario if the demand for product increase, the product capacity also increases but at the same time if demand falls capacity will also become very low.

Keyword: Cycle Time, Layout, Productivity, Capacity Planning, Time study, Manufacturing

Introduction

In the world of competitive business every enterprise wants to earn maximum profit with minimum inputs. Continuous improvement in the product is required for the survival of the industry in the global competition. Setting the time standard for different product is vital success of any enterprise. Time study gives the cycle time of the products on various machines which help in the capacity utilization calculations. From the manufacturing perspective, cycle time is one of the most important variables in manufacturing organizations. In this study, the woodworking organization encounters the very often situation of surplus demand than its capacity to manufacture. Because the company want to grab all the market demand in order to prevent other major competitors from penetrating the market and at the same time maintains the company reputation for on time delivery of products. The study is done in modular office furniture (wood) industry based in Nagpur.

Measurement of Capacity planning:

Capacity planning is basically matching the resource to demand. In case of stable demand, capacity planning becomes simple. But fluctuation in demand creates problems of acquisition of resources to match the demand. For manufacturing firm, creation of capacity means investment in resources like labor, machines and equipment etc. while for service organization, it means creation of more space, furniture, other accessories and equipments. Capacity utilization of machines is a big challenging job in organization. Both capacity management and demand management are said to be the integrated measure for the shop floor system. Demand management concerned with variation in production quantity, price etc. In capacity management involves changes in production capacity, machine compatibility are some of the important measures. In operations, management capacity is referred as a quantity of the input resources available to produce relative output over duration of time. In general, terms capacity is referred as most production capability, which may be attained inside an ordinary running schedule.

Case study

ME12_ICSCI2022_9015

A REVIEW ON ECO-FRIENDLY REFRIGERANTS

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Abstract: Refrigeration and air-conditioning play a vital role in domestic and industrial applications. They have great impact on our day-to-day life. It also contributed to the world's major environmentalissues like ozone layer depletion and global warming. The objective of this research paper is tofind substitutes for the environmentally harmful refrigerants by other environmentally friendlyones and compare their performance with various HVAC appliances. ODP and GWP of the Refrigerants calculated and studied by different researchers.

Keywords: Refrigerants, COP, Global warming

Introduction

Refrigeration is an old technology that started a long time ago. Refrigeration is the process ofremovingheatfromanenclosedspaceorfromasubstanceinordertomaintainalowertemperature than the surroundings. Before 1830, food preservation methods like salting, spicing, smoking, pickling and drying existed. Evaporative cooling was practiced in India and Egypt. Itwas discovered that adding chemicals like sodium nitrate or potassium nitrate to water caused the temperature to fall. Before mechanical refrigeration systems were introduced, people cooled theirfood with ice transported from the mountains, and ice was stored by using snow cellars, pits that were dug into the ground and insulated with wood and straw.(6)

Overview

3.TYPESOFREFRIGERANT:

1. Primary refrigerants: Primary refrigerants are those fluids, which used directly as working fluids, for example in vapour compression and vapour absorption refrigeration systems. These fluids provide refrigeration by undergoing a phase change process in the evaporator .e.g. Ammonia, Carbon dioxide,Sulphur dioxide,Methyl Chloride, Methylene Chloride,Ethyl Chloride and Freon group.

2. Secondaryrefrigerants: Secondary refrigerants are those liquids,which are usedforCarrying thermal energy from one location to other. Secondary refrigerants are also known asbrinesorantifreeze.

CLASSIFICATIONOFREFRIGERANTS

Halocarbon compounds: In this group refrigerants which contain one or more of three halogens,chlorine andbromine alsoknownasFreon.

Thelistofhalocarbon–refrigerantsusedisgivenbelow

R-12- Dichloro-difluromethane(CCL2F2),R-22-MonoChloroDifluoroMethane(CHCLF2)

Azeotropes:Theserefrigerantsgroupconsistsof Mixturesofdifferentsubstances.Thesubstancescannotbeseparatedintocomponentsbydistillations.Itpossessesfixedthermodynamic properties and does not undergo any separation with changes in temperature andpressure.Example:R-500

Hydrocarbons: Most of the refrigerants of this group are organic compounds. Most of thempossess satisfactory thermodynamic properties but are highly inflammable. Ex: R-50 Methane(CH4),R-170(Ethane C2H6),R-290Propane(C2H8),R-600Butane(C4H10).

ME27_ICSCI2022_3030

AN INNOVATIVE MODEL TO EVALUATE AUTOMATICWATER LEAK AND PIPE BURST DETECTION SYSTEM

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Abstract. The water supply shortage has increased in recent years due to overpopulation, climate change and obsolete water facilities, where deteriorated pipes cause most of the water leaks. The problem is not the size of the leak, but the time it takes to detect it.. The system consists of a water sensor installed by a water reservoir of interest, a microprocessor to interpret the data and evaluate. The design of a water level sensor device that can detect and control the level of water in a certain water tank, the system firstly senses the amount of water available in the tank by the level detector part and then adjusts the state of the water pump in accordance to the water level information. There has been wastage of water daily through the pipeline leakages due to its full water were never arrived to the taps. The aims of our proposed work are to develop a real-time prototype pipeline leakage alert system whether it is a water leak or not, an SMS alert message, and an electrical actuator to shut off the main water supply to avoid leakage.

Keywords– NodeMCU, Water FlowSensor, Ultrasonic Sensor, Buzzer, IOT.

Introduction

The world is growing rapidly, so the demand of fresh water has increased causing serious problems in the field of water supply. Therefore, control of water has become a considerable issue today. With the growth of the world population, the demand of fresh water has increased causing serious problems in the field of water supply. Therefore, control of water has become a considerable issue today. Scientists, technicians, politicians, and generally, many other inhabitants of the planet become increasingly educated on the subject. In addition, the water found needs treatment for human consumption, to eliminate particles and organism harmful to health, and ultimately must distribute through pipes to homes safety. This work focuses on the issue of distribution, more specifically, on the issue of "water leaks" in residential areas. In a developing country like India, loss of water in domestic sector on account of leakage is approximately 30 to 40% of thetotal flow in the distribution. This leads to high risks in public health, money invested and on the valuable natural resource. India had an irrigation efficiency of ~36 percent in 1993-1994 and projected that efficiency would have to increase to 60 percent by 2050 to bring a balance in the demand and supply of water. Even those slow leaks that only because mold damage require expenses to repair. The more water spilled (or splashed) the more money the repairs cost to residents. For this reason, it's crucial to have some system installed in residences to detect water leaks. Current digital water leak detection systems can locate multiple water leaks to within 1-meter resolution over a complex network of cables running several kilo meters.

Relavent works

Water leak detection is an expression more commonly used for larger, integrated systems installed in modernbuildings or those containing valuable artifacts, materials or other critical assets where early notification of a potentially damaging leak proves beneficial. Specifically, water leak detection has become a necessity in data centers, trading floors, banks, archives, and homes. The water leak detection industry, small yet specialized, has only a few manufacturers operating world-wide. The existing water supply system incorporate high range acoustic and pressure detection devices are way costlier to be implemented in developing countries. Some irrigation leak detection systems use heating coils to detect the flow rate difference which has a drawback of detecting the fast change over in the system due to the uniform response of the temperature

ME10_ICSCI2022_3981

DESIGN OF SOLAR POWERED COOLING SYSTEM INTEGRATED WITH PCM

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Abstract. India is a country producing varieties of fruits and vegetable every year, but per year availability of fruits and vegetables is very less because of post harvest losses. So there is a need to developed more and more cold storage system to reduce post harvest losses. The initial cost and running cost of cold storage systems is very. Number of researchers used renewable energy as key source to produce power. Solar energy is freely available energy which can be used to generate power. Also some researchers used Phase change material to save energy. This paper discuss about technologies developed by researchers to save energy for cold storages.

Keywords : Solar PV panels , Solar collectors, PCM

Introduction

India is a agricultural country. The challenge is to prevent post harvest losses because of bacterial attack on products after harvesting results in to bad smell, taste and loss of quality of products (fruits & vegetables). So need cold chain arrangement to store products for longer duration. To reduce running cost of cold storages researchers used solar energy as a source of power instead of grid energy in addition to this different types of phase change material (PCM) was used. PCM absorbs cooling energy while charging and released absorbed cooling energy during discharging. Phase change material was selected by considering storage temperature required, melting temperature of PCM and economical conditions. Power produced by Solar PV panels was utilized to run Vapour compression refrigeration system (VCRS). Also different types of Solar collectors was used as a source of thermal power, run Vapour absorption refrigeration system (VARS) to produce cooling effect inside cold chamber. Technologies developed by researchers to save power for refrigeration are discussed in current work.

Solar Photovoltaic panels

Various kinds of sunlight based PV panels was utilized to change over sun based energy in to electrical energy which was utilized to run cold storage system rather than grid energy as shown in fig.1

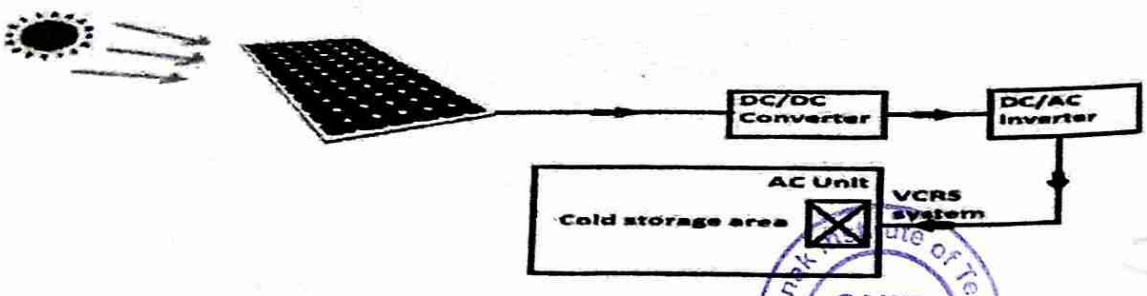

Fig.1 solar hybrid cold storage system

ME11_ICSCI2022_0746

DESIGN AND FABRICATION OF MANUALLY OPERATED FLOOR CLEANING MACHINE

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4 (Assistant Professor GNIT, Department of Mechanical Engineering, Nagpur University,Nagpur, India)

Abstract. With the advancement of technology, automated floor cleaning machines are getting more attention of researchers to make life of mankind comfortable. The concept is developing in economic countries but the reasons for non-popularity is the design complexity, cost of machines, and operational charges in terms of power tariff. In this paper, a manual floor cleaning machine is proposed. In early day a floor is clean by using a broom which is operated by human hand, in this a continuous movement of human hand is required which create fatigue and time consuming . The aim of this work is to develop and modernized process for cleaning the floor with wet and dry. This machine is capable of performing cleaning of floor in dry as well as wet condition, and it also have storage box to store a dust. This floor cleaning machine is designed by keeping the basic considerations for machine and efforts reduction, environment friendly and easy handling. The machine will work on electricity and there is no need of training to operate it. This work can be very useful to improve the life style of mankind.

Keywords : Mop, Brush, Vaccum Cleaner

Introduction

Cleaning is the essential need of the current generation. Basically in household the floor has to be cleaned regularly. This machine deals with designing and fabrication of floor cleaning machine. The main aim is that it combines operation of all three different device's operation i.e. vacuum cleaner, dryer & mop. For floor cleaning, many types of machines are available in the market are of high ranges and high weights. So, keeping the focus on weight as well as cost, they are not affordable to everyone. As many type of machines is widely used for this purpose. Hence, there is need to design and develop a floor cleaning machine which is multi use and cost effective. Considering weight criteria, machine assembly, handling the machine is very flexible. It is very simple in construction and easy to operate. Anybody can operate this machine easily. The size of the machine is also portable, so we can transfer from one place to other place very easily. This machine is applicable for various floor cleaning activities. Hence there is a need of bringing revolution in the area of science and technologies, which couldhelp easily in repetitive tasks which we perform daily. It also giving consideration to the intensity of labor requiredand improving qualities to its optimum level.

A manually operated floor cleaning is developed with major list of objectives:-

1. To achieve simultaneous dry and wet cleaning in a single run.
2. Lower Maintenance Cost and Time.
3. Required less cleaning time.
4. Clean more space in less time.

Literature Review

Himani Patel in her research, she works on wireless multipurpose floor cleaning machine. She focused on the problems of long wires so to overcome this problem she use battery system which can be rechargeable when electricity is available and work as required.[1] **Arjun V Murali et al. in their research,** they work on floor cleaning machine. Their aim to develop and modernized process for cleaning the floor with wet and dry. At first dust is collected from vacuum cleaner. After that Water is sprayed from water tank and floor cleaning is done by rotating press which is coupled to the DC motor. Fan is used to dry the water which is fitted to the Back side of the vehicle.[2] **Mr. S.**

ME13_ICSCI2022_1498

APPLICATION OF CONDENSER WASTE HEAT OF SIMPLE VAPOUR COMPRESSION REFRIGERATION SYSTEM FOR HEATING THE FEED WATER: A REVIEW

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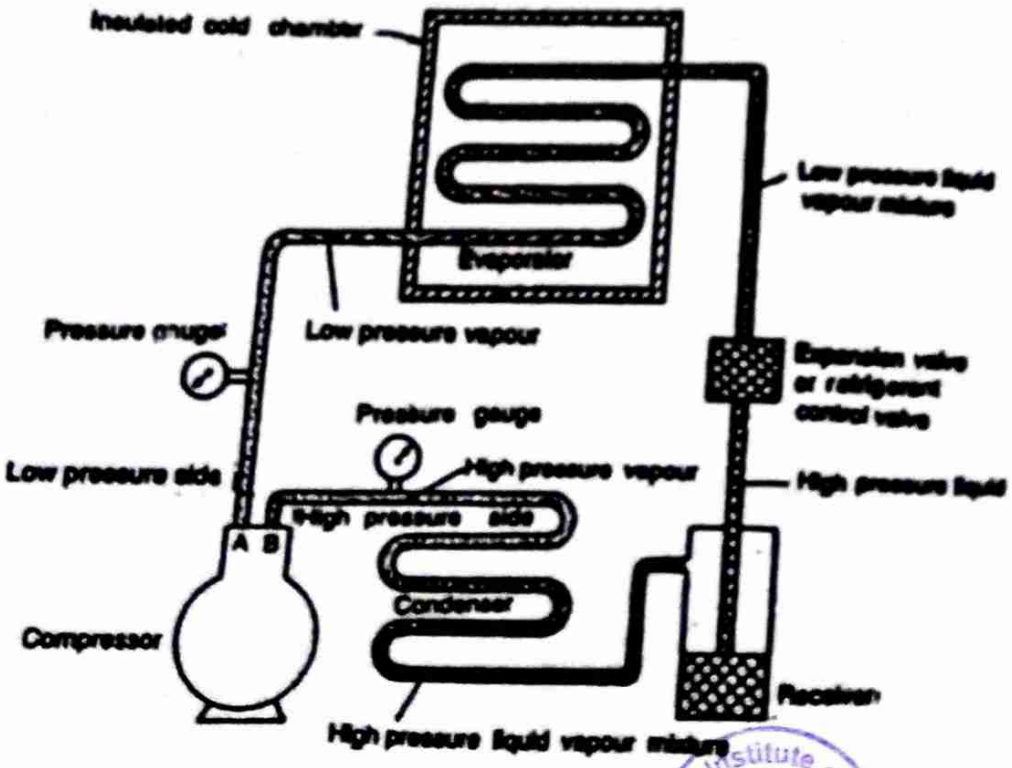
Abstract. The paper discusses the various applications which can be benefitted by utilizing the condenser waste heat for some useful purpose. A simple vapour compression refrigeration system, essentially consists of compressor, condenser, expansion valve, and evaporator. Compressor compresses the low pressure and low temperature refrigerant, thereby increasing the pressure and temperature of refrigerant. The high pressure and high temperature refrigerant is then passed to the condenser, where phase change occurs. High pressure and high temperature vapour is converted into high pressure and high temperature liquid. During this process some heat is rejected to the atmosphere. This heat is wasted without any use. By utilizing this wasted heat for many applications, can be proved to be the turning point in the field of refrigeration and mechanical engineering.

Keywords : compressor, condenser, expansion valve, evaporator.

Introduction



A simple vapour compression refrigeration system basically consists of compressor, condenser, receiver, expansion valve, evaporator. Figure1 shows the schematic diagram of simple vapour compression

ME14_ICSCI2022_3245

PERFORMANCE ANALYSIS OF BIOFUEL – ETHANOL BLENDS IN DIESEL ENGINE

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Abstract. A single cylinder, water-cooled, four-stroke diesel engine was used in the research.Engine operating at maximum load at 1500 rpm with 5.2 kW of rated power. Engine tests were conducted with the goal of producing comparable figures for particular fuel consumption, exhaust emissions, and thermal efficiency. The outcome of research into the fuel qualities of karanja biofuel-ethanol blends. The 50E50B blending (50% ethanol, 50% biofuel) has a higher thermal efficiency than the other blends and diesel. Among all fuel blends, diesel has the lowest brake thermal efficiency. The blend 10E90B (10% Ethanol, 90% Biofuel) has a lower Brake Specific Fuel Consumption than other blends, but is slightly higher than diesel. The brake thermal efficiency improves when the brake specific fuel consumption decreases. For all blends, the exhaust gas temperature rises as the braking power rises. The CO emission of 50E50B is lower than diesel at low loads, while it is slightly higher than diesel at high loads. According to the emission graphs, the 50E50B blend emits less HC than diesel. For all blends, NOx emission increases as load increases in the exhaust parameter.

Keywords: -Biofuel-ethanol blends, diesel engine, performance analysis.

Introduction

Researchers are currently working to replace fossil fuels with biofuels in order to minimize fossil fuel usage. Biofuels reduce greenhouse gas emissions while reducing oil imports. Convectional diesel used in diesel engine is non-renewable source of energy. This diesel is available in very less amount in the world. The oil crisis of the 1970s prompted many countries to look for alternative fuels to replace fossil fuels. Alternative diesel fuels, such as biodiesel and ethanol fuel blends, are becoming more important as public concern about pollution and energy security grows.

Biofuel

Biofuel can be made from feedstock that is considered renewable in general.Because most of the carbon in biodiesel comes from CO_2 in the air, full-cycle CO_2 emissions from biodiesel are substantially lower than those from fossil fuels.Energy is critical for people's quality of life, well-being, and social development, as well as economic prosperity. Biofuel is non-toxic and environmentally beneficial since it emits far less carbon monoxide and sulphur dioxide and contains no unburned hydrocarbons, making it a perfect fuel for extremely polluted cities. Biodiesel helps to minimize harmful air pollutants like particles and toxicity. Biodiesel reduces the risk of cancer and birth abnormalities by 90% due to its less harmful burning. Biodiesel offers a lot of promise for creating jobs in rural areas.Bio-diesel, like petroleum diesel, is burned in compression ignition engines, which require minimal or no engine changes due to bio-identical diesel's qualities to petroleum diesel fuels. It can be stored in the same way as petroleum diesel fuel can, therefore there is no need for additional infrastructure. The use of bio-diesel in conventional diesel engines reduces unburned hydrocarbons, carbon monoxide, and particulate matter significantly. Biofuel is a vegetable oil and animal fat-based diesel substitute. The importance of biofuels is growing due to (i) rising petroleum prices, (ii) restricted fossil fuel reserves, and (iii) biofuels environmental benefits.In this process biofuel is made from Karanja oil. Expeller pressing, cold pressing, or solvent extraction are all methods for extracting karanja oil from the seeds. The colour of the oil ranges from yellowish-orange to brown. It is poisonous and causes nausea and vomiting if consumed, although it is employed in a variety of traditional treatments. Karanja oil is antiseptic and pesticide-resistant. It has a high triglyceride content, and bitter flavonoid components such as karanja, pongamol, tannin, and karanja chromene give it an unpleasant taste and odour.

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ME15_ICSCI2022_2875

DESIGN AND FABRICATION OF ELECTRIC SCOOTER

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Abstract. In today's world, the infrastructure of College and Industries are becoming large so if one has to travel or visit from one place to another he has to walk a long distance and sometimes it becomes very hasty and inconvenient. Sometimes after too many travelling on campus, it causes strain and pain in the body. So to travel these distances two-wheeled or three-wheeled electric scooter like Segway PT, Irrway were introduced. But, these scooters are very costly such as they start from ₹ 50,000. Another problem with that vehicle is that they are difficult to handle when we drive the first time. So in alternate to this product, we developed whole newly designed product and this is Reliable, Eco-friendly, a Compact vehicle for the campus. Its utilities are college campus, Airports, Industries, Recreational Parks, Sanctuaries, Museums, Palaces, and Villas etc.

Introduction

An electric scooter is a battery-operated one-person capacity vehicle which is specially designed for people with low mobility. It is generally used by those who have difficulty in walking for long periods of time. Scooters are available in three common designs, those intended for indoor use, those for outdoor use, and those that are used for both.

An electric scooter may have three wheels or four. Since it runs on battery power, it does not create pollution. A typical electric scooter requires a pair of batteries, but the batteries are rechargeable. The length of time an electric scooter can run on each charge depends significantly on its battery's type, rating and capacity. The most common batteries are advertised to run for about eight hours, and between 20-30 miles, before needs to be charged.

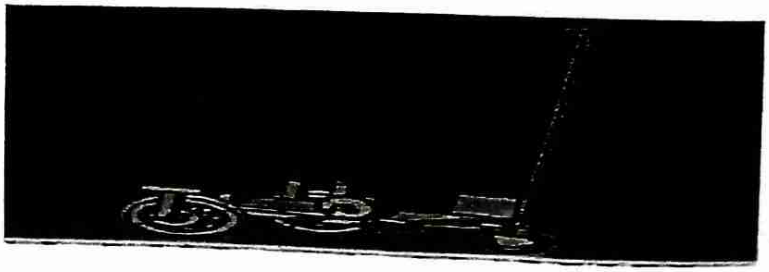
Problem statement

Nowadays, small scooter becomes popular especially during recreation time, relaxing and for human exercise after they had faced their office job. There is a lot of scooter type around us like have seated or stand while riding the scooter. Most of that is operation by motor electric or just using our leg to move scooter like playing skate board.

The problem is, most of that scooter is not flexible although it is already small. Even though some manufacturer make it can be flip, but there is just only a few part to be that like seat, handle, and sometime arm bar. Most of flip small scooter are operate by swinging rider leg to move it. Some of the scooter looked not so ergonomic and cannot be use for a long time.

Experimental setup

Scooter unit consists of following components – Scooter frame, wheel assembly, steering system and electrical unit.



ASH02_ICSCI2022_0110

Use of Chain Rule, Activation Functions, Perceptrons in Backpropogation Algorithms of Machine Learning & Deep Learning.

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Seema. S. Raut[3]
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Abstract

Deep learning is an emerging area of machine learning (ML) research. It comprises multiplehidden layers of artificial neural networks. The deep learning methodology applies nonlinear transformations and model abstractions of high level in large databases. The recent advancements in deep learning architectures within numerous fields have already provided significant contributions in artificial intelligence. This article presents a state-of-the-art survey on the contributions and the novel applications of deep learning. Back Propagation refers to a broad family of Artificial Neural Networks having architecture which consists of different interconnected layers. Chain Rule is the best method to calculate gradients in the network individually. Activation function is a mathematical gate in between the input feeding to the current neuron and its output going to the next layer. Furthermore, the superior and beneficial of the deep learning methodology and its hierarchy in layers and nonlinear operations are presented and compared with the more conventional algorithms in the common applications. The state-of-the-art survey further provides a general overview on the novel concept and the ever-increasing advantages and popularity of deep learning. DL nowadays considered as a core technology of today's Fourth Industrial Revolution (4IR or Industry 4.0). Due to its learning capabilities from data, DL technology originated from artificial neural network (ANN), has become a hot topic in the context of computing, and is widely applied in various application areas like healthcare, visual recognition, text analytics, cybersecurity, and many more. However, building an appropriate DL model is a challenging task, due to the dynamic nature and variations in real-world problems and data. We take into account deep networks for supervised or discriminative learning, unsupervised or generative learning as well as hybrid learning and relevant others. We also summarize real-world application areas where deep learning techniques can be used. Overall, this article aims to draw a big picture on how actually Activation function and chain rule plays a role in gradient descent algorithm.

Keywords: Deep learning, Activation function, Perceptron, Gradient descent, Machine learning, Convolution neural network (CNN), Deep neural network architectures, Deep learning applications, Supervised learning

Introduction to Deep Learning

In the late 1980s, neural networks became a prevalent topic in the area of Machine Learning(ML) as well as Artificial Intelligence (AI), due to the invention of various efficient learning methods and network structures. Multilayer Perceptron networks trained by "Back propagation" type algorithms, self-organizing maps, and radial basis function networks were such innovative methods. While neural networks are successfully used in many applications, the interest in researching this topic decreased later on. After that, in 2006, "Deep Learning" (DL) was introduced by Hinton et al., which was based on the concept of artificial neural network (ANN). Deep learning became a prominent topic after that, resulting in a rebirth in neural network research, hence, sometimes referred to as "new-generation neural networks". This is

Deep Learning is a sub-domain of Machine Learning inspired from human brain & its learning pattern. With accelerated computational power & large data sets. deep learning algorithms are able to self-learn hidden patterns

ICSCI2022_1017

BasicAspectsofRadiation Chemistry

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Abstract

Thepresentworkdealswithchemicalchangesproducedbygammaradiationonaluminumnitrateand in admixtures of aluminum nitrate with aluminum powder, aluminum oxide and aluminumsulphate.Theworkhasbeencarriedouttofindoutthechangesinformationofnitriteand$G(NO_2^-)$inpresenceofthes additives.AmountofNO_2^-formedhasbeendeterminedbyspectrophotometric method.The gamma radiolytic effects have been studied at various absorbeddoses. Radiation Chemistry may be defined as the study of the chemical effects produced in asystem by the absorption of ionizing radiation. Included in this definition are the chemical effectsproduced by radiation from radioactive nuclei (α-, β-, γ rays), by high energy charged particles(electrons,protons,deuterons,etc.)andbyelectromagneticradiationofshortwavelength.RadiationChemistryisthe studyofthechemicaleffectsthataccompanynuclearreaction,broughtabout, for example, by slow neutrons or by radioactive decay.[1] After that the ionization andchemical reactions were proportional to each other but the ion-pair yield were far greater than thecorresponding quantum yield which was explained by Lind and Mund on the basis of ion-clustertheory.[3]

Keywords: Radiochemistry, electromagnetic radiation, ^{60}Co Gamma Chamber, Radiolysis ofNitrate

EXPERIMENTAL

DoseMeasurement

Theaveragedoserateofthe^{60}CoGammaChamberGC-900duringtheperiodofthepresentworkwas found to be 0.35 kGy hr^{-1}.The dose was checked using Fricke dosimeter[16-18]. The dose ratewasalso calculated theoretically usingthe following expression.

$C=C_0\exp^{-\lambda t}$ ..... (II.1)

Where

C_0=initialactivity(dose,Mradshr^{-1})

C=present activity(dose,Mrads hr^{-1})

$\lambda = \frac{0.693}{T_{\frac{1}{2}}}$ $T_{\frac{1}{2}}$=5.27y

t= time(years)

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NovelApplicationsofTimeDilationTheory

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Abstract

ItbeganIn1905whenAlbertEinsteinpublishedhisSpecialTheoryofRelativity(Einstein, 1905)thatintroducedtheconceptofspace-time,whichmeansthatspaceandtimearepart ofthesameentity.Theideaoflengthcontractionandtimedilationisnotsupportedby MichelsonandMorley(M&M)[3]experiment.Itisarguedfurtherherethatthethought experiment did nottry, for noobvious reason,to testthe clock function in any other angles, *i.e.* $\varphi<90^{o}$.It is shown that if the clocks opositioned that$\varphi<90^{o}$not only the clock on average goesevenmoreslowerbutalsotheticksbecomeirregular.One tick is slowerand the following one is faster than the tick of the stationary clock.For Ex: Think of a clock as a heartbeat. If you run your heart beats faster and if you walk yourheart beats slower. But time works the other way around. The slower you move, the faster aclock ticksandfasteryoumove,theloweraclockticks.

In this paper I discuss the theory of Time Dilation, as predicted by Einstein's Special Relativity.In physics and relativity, time dilation is the difference in the elapsed time as measured by twoclocks. It is either due to a relative velocity between them or to a difference in gravitationalpotential between their locations. When unspecified, "time dilation usually refers to the effectduetovelocity.

Keywords:specialrelativity,visualisation,timedilation,physicseducationSupplementary

1.Introduction

According to Einstein's special theory of relativity, the concept called'time dilation'.Fortwoobservers,intwomovingreferentialframesatdifferentspeedeachonesees atime dilation different from the other time dilation (or time-delationsymmetry). But thesareclearlysubjectivetimedilations,notanobjective time dilation. These symmetrictime dilations cannotbe simultaneously done inpractice; itis absurd.Einstein'slightclockisnotanentirelythoughtcreationdevice.famous version ofitwas builtby MichelsonandMorley in 1887whichcanbeconsideredastwolightclocksperpendiculartoeachother.

Example:timedilationandarelativistictrain
Einstein was not the first physicist to appreciate the relativity of motion. Galileo and Newton would have said Time isabsolute inanyframe.Einsteinwouldagreebutwouldaddthatdurations

Einstein's theory of relativity has the biggest impact on our understanding of time. According toNewton he said that Time is absolute in any frame. It will not affect in any frame but after thatEinstein's proved that time is relative. What we see happen is that the "clock" in motion slowsdown compare to our clock, so therefore, we noted two different time. So which time is correct?This is happen because of time is not absolute in any frame it is relative. When we travel at thesappedof light then timegoesslow.
Solets take one example that Suppose two twins carrying a clock departs on a rocket ship fromthe other twin, an inertial observer, at a certain time, and they rejoin at a later time. So timedilation effect, the elapsed time on the clock of the twin on the rocket ship will be smaller thanthat of the inertial observer ,i.e. the non-inertial twin will have aged less than the inertialobserver twin when they meet with each other. If you are nearest to black hole then time goesslowed down.

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MECHANISM OF FERROELECTRIC DOMAIN FORMATION INKNBO$_3$ SINGLE CRYSTAL

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Abstract: Grown sample of potassium niobate ($KNbO_3$) crystals were subjected for domain studies. Trinocular microscopy method was used to verify the observations of ferroelectric domain. The observed domain walls and domain boundary is very attractive part of the domain study. In recent year domain walls in ferroelectric materials have attracted significant interest because of the unique properties that can be found in their vicinity. Brief mechanism of forming this domain structure and domain wall is discussed

Keywords: Domain studies, chemically etched, coupling of dipoles. Domain Wall

INTRODUCTION

Atomic force microscopy (AFM), Scanning electron microscopy, reflecting electron microscopy this are few promising technique by which to study the surface morphology of materials. It is also attracting interest in the experimental study of ferroelectrics [1]. AFM is the very important technique for the high resolutions surface study [2-3]. In AFM get good result without etching and without disturbing the crystal. But etching is important in surface study of scanning electron microscopy and reflecting electron microscopy [4]. In this work we apply the Trinocular microscopy to ferroelectrics domains walls and demonstrate the general feasibility of Trinocular microscopy for domain wall studies, as well as new opportunities it offers for characterizing such functional micro object. In our ferroelectrics test system KNbO3 we visualize the domain wall by Trinocular microscopy and mapped this different domain orientations. Because Trinocularmicroscopy has not yet been used for studying ferroelectric domain walls although it is well establishedfor imaging domain in ferroelectric

Experimental studies

A working method has been developed to identify domain patterns visibly on the pseudocubic {001} surface by simply observing the crystal flake under a Trinocular microscope. Here trinocular microscope use because of a trinocular microscope has two eyepieces like a binocular microscope and an additional third eye tube for connecting a microscope camera. They are therefore a binocular with a moving prism assembly in which light is either directed to the binocular assembly of the microscope or to the camera. The best models of this microscope will have at least three positions, allowing 100 percent of light to the binocular, 80 percent to camera and 20 percent to the binocular or simply a 100 percent to the camera. One of the biggest advantages of this microscope (three position trinocular) is its versatility. For instance,
for bright field photographic purposes, the 20% visual- 80% photo system would be the ideal choice. Aftertaking photographed the crystal flakes with pseudocubic {001} faces are then treated with methyl alcohol. During dissolution the layers of the surface are removed without stress, and the domain structures inside are brought to the surface and again studied in Trinocular microscopy.

Results

The pseudocubic (001) plane, we must find with a Trinocular microscope the line of impurity segregation associated with a near and parallel domain line that the line of impurity segregation should be associated with the 60° and 90° domains in the orthorhombic phase [5]. Indeed, such evidence can be obtained, as seen in the photomicrographs of figure 1. This photomicrograph shows several small domain wall portions, careful observations of the regions marked AB and CD in figure 1 shows the formations of 90° domains walls [6]. In this same crystal surface shows the typical regions of E and F shows the wedge shaped domains it is formed due to impurity dipoles.

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"A REVIEW ON THRMOELECTRIC REFRIGERATOR"

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Abstract – ***The global increasing demand for refrigeration in field of refrigeration and air-conditioning, food preservation, vaccine storages, medical services, and cooling of electronic devices, led to production of more electricity and consequently more release of CO_2 all over the world which it is contributing factor of global warming on climate change. Thermoelectric refrigeration is new alternative because it can convert waste electricity into useful cooling, is expected to play an important role in meeting todays energy challenges. Therefore, thermoelectric refrigeration is greatly needed, particularly for developing countries where long life and low maintenance are needed. Thermoelectric refrigeration is an eco-friendly (sustainable) technique used for producing refrigeration effect. Thermoelectric devices are developed based on Peltier, Seebeck and Thomson effect which has experienced major advancement and development in recent years. This review paper is based on thermoelectric refrigeration system, explored by the many researchers. This paper encapsulates the advancement in thermoelectric refrigeration with the help of solar panel, design methodologies, application in domestic appliances.***

INTRODUCTION

In many cases, people cannot afford a regular size of refrigerator due to economic problem. Available refrigerators in market consume more
than 500W power which is quite difficult for the
people living in remote areas. To reduce this type of problems thermoelectric refrigerator can be designed with easily available off-the-shelf component at very low costIt is using thermoelectric module, doesn't use any gas so it is an eco-friendly device. It is using heat sinker to absorb the heat dissipated. The overall size is small so it covers small space.[1] Thermoelectric refrigeration system is powered
by SMPS (switch mode power supply). It is a power handling electronic component that converts electrical power conductively. On the other hand the power supply for thermoelectric refrigeration solar photo voltaic (PV) cell generated DC voltage is also suitable for Indian climatic conditions and applicable for rural health centers. Due to proper design of solar devices radiation in the climate will be reduced. In this type of devices energy losses is also there i.e. in the SMPS and power conditioning equipment and the losses also occurs due to mismatch of module in the solar panel.[2] A thermoelectric module thus uses a pair of fixed junctions into which electrical energy is applied causing one junction to become cold while the other becomes hot. Because thermoelectric cooling is a form of solid-state refrigeration, it has the advantage of being compact and long lasting. It uses no moving parts except for some fans, employs no fluids, and do not require bulky piping and mechanical compressors used in vapour-cycle cooling systems. Such sturdiness favour thermoelectric cooling over conventional refrigeration in certain situations. The compact size and weight requirements, as well as portability in the design, rule out the use of conventional refrigeration.[3]

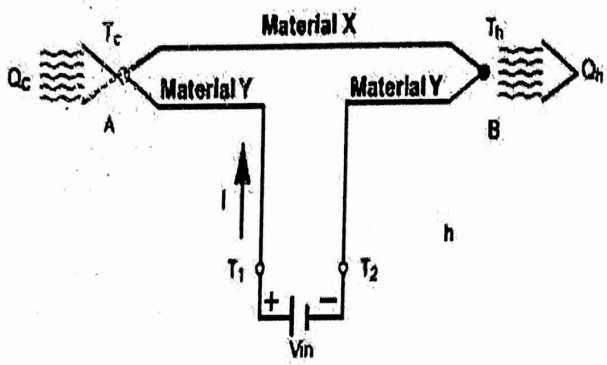

Fig. No. 1.1 Peltier Effect

I. LITERATURE REVIEW

Our Thermoelectric refrigeration is inspired by the following inventions as follows;

Thermoelectric cooling :-
In Thermo-electrical refrigeration system, the Peltier effect is the phenomenon of to create a heat flux between the junctions of two different types of materials. A Peltier heater, cooler or thermoelectric heat pump is a solidstate active heat pump, which convert heat from one side of the device to the other, with consumption of electrical energy, depending on the direction of the current. Such an instrument is also called a Peltier device Peltier heat pump, solid state refrigerator, or thermoelectric cooler (TEC).Thermoelectric cooling uses the Peltier effect to create a heat flux between the junctions of two different types of materials They can be used either for heating or for cooling (refrigeration) although in practice the main application is cooling. It can also be used as a temperature controller that either heats or cools. This technology is far less commonly applied to refrigeration than vaporcompression refrigeration. The main advantages of a Peltier cooler are its lack of moving parts or circulating
liquid, near-infinite life and potential to avoid leaks, and its small size and flexible shape. Its main disadvantage is high cost and poor power efficiency. Many researchers and companies are trying to develop Peltier coolers that are both cheap and efficient.[4]

SEEBECK Effect:-
When the two junctions of a pair of dissimilar metals are maintained at different temperatures, there is the generation of emf (electromotive force).He conducted a series of tests by varying the temperatures of the junctions of various combinations of a pair of materials. The emf output was found to be:
$\Delta E \alpha \Delta T$ ……(1)
Where ΔE and ΔT the emf output and the temperature difference of the junctions. The phenomenon of generation of emf is called Seebeck effect the proportionality constant of Eq.(1) is denoted by
$\alpha ab = \Delta E / \Delta T$……(2)

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Self Curing of Concrete

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ABSTRACT: As water is becoming a scarce material day-by-day, there is an urgent need to do research work pertaining to saving of water in making concrete and in constructions. Curing of concrete is maintaining satisfactory moisture content in concrete during its early stages in order to develop the desired properties. However, good curing is not always practical in many cases. Curing of concrete plays a major role in developing the concrete microstructure and pore structure and hence improves its durability and performance. Keeping importance to this, an attempt has been made to develop internal-curing concrete by using Poly Ethylene (PEG-400). In this experimental investigation the strength characteristics of Normal Strength Concrete and high strength concrete, cast with the self-curing agent PEG-400 have been studied and compared with the corresponding conventionally cured concrete. IS method of mix design was adopted, for the normal strength internal curing concrete of grade M20 and for M50 grade of concrete is design on trial and error basis. For producing internal-curing concrete trial dosage of 1%, 2% and 3% of PEG-400 by weight of cement was used and tested. It was observed that after implementation of new technique the water consumption for Curing was significantly reduced by 100%

Keyword- To prevent evaporation from temperature, compressive strength, economical at desert, etc.

I.INTRODUCTION

Curing plays a chief function in the growth of concrete properties throughout construction. Curing is often used to provide the method by which hydraulic cement concrete mature and increase hardened property more than time as a product of the constant hydration of the cement in the occurrence of enough water (ACI, 2008). The function of curing is to lessen water disappearance from concrete and keep acceptable moisture content, especially throughout early ages, for continuance of the hydration method that is essential for the growth of cement microstructure. This will lead to a improved class cement adhesive and concrete and will help to attain the preferred properties. Though, good curing is not realistic in lots of cases and a amount of researchers have questioned whether it is feasible to set up self-curing concrete. It was establish that the improvement of use self-curing agent is to lessen water fading from concrete, therefore rising its water preservation capability compare with that of conservative concrete and that water soluble polymers may have this potent. Building industry make use of bunch of water in the name of curing. The days are not far-off that all the building industry has to button over to an substitute curing system, not simply to save water for the sustainable growth of the atmosphere but also to encourage inside and open-air construction behaviour even in inaccessible areas where there is shortage of water.

II.NEED OF SELF-CURING

When mineral admixtures respond totally in blend system, their require for curing can be lot larger than that in a conservative normal cement concrete. When this water do not willingly obtainable, due to percolation of capillary porosity. Due to contraction happening throughout cement hydration, vacant pores are formed inside cement paste, most important to a diminish in its interior relative dampness and also to contraction which may reason early-age crack. This state is intensified in HPC due to normally advanced cement content, abridged water/cement (w/ c) percentage (fly ash, silica fume). The unfilled pores formed during self-desiccation bring contraction stresses and also control the kinetics of cement hydration procedure, restraining the last degree of hydration. The strength achieve by IC might be additional than that probable under soaked curing circumstances. frequently especially in HPC, it is not simply achievable to offer curing water from the top face at the rate necessary to gratify the current chemical contraction, due to the particularly low permeability's frequently achieved.

III.SIGNIFICANCE OF SELF-CURING

When mineral admixtures reply entirely in a combine cement structure, their order for curing water can be a lot better than that in a conservative ordinary cement concrete. When this water is not willingly obtainable, important autogenously bend and cracking may consequence. Due to chemical contraction taking place throughout cement hydration, vacant pores are created inside the cement adhesive, chief to a decrease in its inner relative dampness and to contraction which can reason early-age cracking.

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Enhancing the Strength of Pervious Concrete using Polypropylene Fiber

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ABSTRACT: The technology of polypropylene fiber is used to increase the strength of the pervious concrete It is used in construction of pavements to serve as drainage. Many types of fibers have been used to increase the strength related properties of concrete. But the polypropylene fiber is the most economical fire. In this project only the strength aspect of pervious concrete using polypropylene fibers has been studied.

In this project, test specimen has been casted and then investigation has been carried out on concrete by adding different percentage of polypropylene fibers. The test specimen left for curing for twenty eight days and after that tests such as compression test and permeability test has been carried out after the slump cone test. On the basis of test results, comparison has been carried out between plain pervious concrete and polypropylene fibers mixed pervious concrete and necessary results have been concluded.

I. INTRODUCTION

Pervious concrete is a composite material consisting of coarse aggregate, Portland cement, and water. It is different from conventional concrete in that it contains no fine sin the initial mixture, recognizing however, that fines are introduced during the compaction process. The aggregate usually consists of a single size and is bonded together at its points of contact by a paste formed by the cement and water. The result is a concrete with a high percentage of interconnected voids that, when functioning correctly, allow the rapid percolation of water through the concrete. Pervious concrete is a special type of concrete with high porosity. It can be used for concrete flatwork applications that allow water from precipitation and other sources to pass directly through thereby reducing the runoff from a site and allowing ground water recharge. The concrete paste then coats the aggregates and allows water to pass through the concrete slab. Pervious concrete is traditionally used in parking areas, areas with light traffic, residential streets, pedestrian walkways, and greenhouses. It is an important application for sustainable construction and is one of many low Impact development techniques used by builders to protect water quality.

The pervious concrete system and its corresponding strength are as important as its permeability characteristics. The strength of the system not only relies on the compressive strength of the pervious concrete but also on the strength of the soil beneath it for support.

Pervious concrete consists of cement, coarse aggregate and water with little to no fine aggregates. Water to cement ratio of 0.28 to 0.40 with a void content of 15 to 25%. The correct quantity of water in the concrete is critical. A low water to cement ratio will increase the strength of the concrete, but too little water may cause surface failure. As this concrete is sensitive to water content, the mixture should be field checked. Entrained air may be measured by a Rapid Air system, where the concrete is stained black and sections are analyzed under a microscope.

A perceptible concrete mixture contains little or no sand (fines), creating a substantial void content. Using sufficient paste to coat and bind the aggregate particles together creates a system of highly permeable, interconnected voids that drains quickly. Typically, between 15% and 25% voids are achieved in the hardened concrete, and flow rates for water through

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Analysis and comparison of the Flat and Traditional Slab System in Multistory building

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ABSTRACT: In today's activity of the construction use of flat slab is common it gives the reduction in the weight, increases the speed of construction and economical also. Similarly, the use of traditional slabs also got a place in providing better features. This work presents the comparative analysis of flat slab and traditional slab system under seismic loading by using ETABS software, for this purpose for various multi-story buildings of G+14 storey having plan area 1225 sq. m. the entire 4 models are modeled on the software. The result obtained from the seismic analysis compared for the various slab system. It's important to note that the study is conducted for seismic properties. The buildings are located in Seismic Zone 5. The worth obtain for max shear force, maximum story drift, maximum bending moment.
In the last some years it's been observed that in construction systems flat slabs are adopting majorly over traditional slabs. In a comparative study between flat slab and traditional slab, it's found that traditional slab carries more load than flat slab but there are some drawbacks of traditional slab like more loading, increases in story height, less economical whereas flat slab are more efficient. Also if we compare both slabs on the premise of appearance flat slabs system looks better than the normal slab.

KEYWORDS: G+14 storey, ETABS, seismic zone5, story drift.

I. INTRODUCTION

1.1 FLAT SLABS and TRADITIONAL SLABS

A slab can be with flat surface form, two-dimensional in dimensions also could be a planar structural element and it having a thickness small compared to its other two dimensions. It provides a flat surface for working or a shelter for covering the buildings. Flat slabs can supports mainly transverse loads, and it transfers them to support primarily by bending elements a bit like a flat plate. In traditional slabs can be a slab of design and construction is to supports the slabs by beams and supports the beams by columns. These slabs can be called Traditional -slab construction. A traditional slab has two-directional reinforcement on the skin of the fabric, giving it the form of pockets or a waffle. These slabs also have a great holding of a greater amount of load as we compared them with conventional concrete slabs. The net clear height available of the ceiling is always reduced by beams. Hence, the slab is directly laid or supported on the column in some offices, warehouses, and public halls or celebration halls. These types of construction are always aesthetically appealing. In building floors, water tanks, and bridges the interconnected grid systems are commonly used. A grid might be a planar structural system composed of continuous members like beams and columns that either intersect each other or cross one another in specific forms. Grids are not for covering large column-free areas and also are constructed in several areas in India n abroad too. Grids are always subjected to loads, and they can be applied normally to their plane, and this type of structure is referred to as Grid. Grids additionally having their aesthetically pleasing appearance also, so it is preferred and provides a variety of advantages over the opposite styles of roofing systems.

1.2 OBJECTIVE

The primary objectives of this plan are often shortening as follows:

1. To gauge the response of Flat slab and Traditional Slab subjected to seismic loads.
2. Analysis done by ETABs Software
3. To test the difference between Lateral displacement of Flat Slab and Traditional Slab.

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Advances in Development of Cooling Tower - A Review

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***Abstract** – Natural draught cooling towers are increasingly popular in nuclear and thermal power plants today. They lead to efficient electricity generation and a careful balance with the environment. These towers with incredibly thin shells are impressive structures because of their sheer scale and adaptability to flat loads. Thermal power plants depend heavily on hyperbolic cooling towers. Among natural draught cooling towers, hyperbolic cooling towers are the most commonly used shape. The taller and heavier the tower, the more complex loads and personal weight it is subject to. The paper provides a history of cooling towers and includes information on the most recent natural draught cooling towers. The various simulation, research, and construction technologies are summarized, and the problems encountered are addressed. Furthermore, it offers a range of cooling tower examinations which will provide restructured data for researchers and models working in the field of hyperbolic cooling towers.*

I- INTRODUCTION

Cooling towers are an essential part of power generating networks, and they also help to safeguard the environment. While hyperbolic cooling towers are commonly associated with nuclear and thermal power plants, they are often used to some degree in significant chemical and other industrial plants. They are high rise reinforced concrete buildings in the shape of doubly curved thin-walled shells of complex geometry, as are their study and construction. In these unique systems, the in-plane membrane actions mainly resist applied pressures, with bending playing a secondary role. The history of cooling towers can be traced back to the nineteenth century when condensers were used for steam engines (1902). The first hyperboloid-shaped cooling tower was designed in 1918 near Heerlen by Dutch engineers Frederik van Iterson and Gerard Kuypers and stood 35 metres tall. Prior to 1930, the first 68-meter-tall structures in the United Kingdom were constructed in Liverpool, England. Soon after, heights and capacities improved, and the first cooling tower with a height greater than 100 metres was built at the High Marnham Power Station in the United Kingdom. The 200-meter-high cooling tower installed in 2002 at the Niederaussem power station in Germany was the world's tallest hyperbolic cooling tower until the Kalisindh thermal energy plant was completed in Rajasthan, India, in June 2012. This plant's two towers (Fig. 1) have a height of 202 metres and a base diameter of 142 metres each.

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Traffic Signal Designing and Analysis for Heavy Traffic Road in Nagpur

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ABSTRACT: Traditional traffic signal system only gives instructions to stop and not to vehicle driver. But if someone is breaking the signal then this system is not able to catch them and there are chances of taking bribe. Therefore, to increase the security of traffic signal and to reduce human efforts and to avoid the bribery we are introducing smart traffic signal system through this mini project. Smart traffic signal based on the microcontroller & ultrasonic sensor, in which ultrasonic sensors are placed at one side of road in such a way so as to cover particular necessary area of road from where the vehicles are restricted to pass. If the signal is red and any vehicle is breaks the signal then ultrasonic sensor detect it and microcontroller take immediately action to buzzer alarm along with camera capture the image of that vehicle. It also makes record of when, where, which vehicle breaking signals by saving image in particular folder as name of current date and time.

I. INTRODUCTION

A set of automatically operated colored lights typically red, amber and green for controlling traffic at road junctions, pedestrian crossings and round about. Fig. traffic signal light Generally Traffic is defined as the movement of a person vehicles or any type of goods or person in between the site locations, and thus includes pedestrians and all types of vehicles mechanized, motorized or non-motorized. Nagpur is at present third largest city in Maharashtra which faces traffic congestion problems mostly in the different road intersection due to rapid development of the infrastructure and increasing population. While the seven intersection the vehicles are stopping for their turn to clear the particular patch of road, on the signal point the vehicle travelers to keep their vehicle engine on so that it leads to loss of fuel and they also keep unnecessary Thus it leads to delay in vehicle & noise pollution generally increased at the signal or seven intersections. This used to reduce congestion on the particular intersections the Bus Bay is to be provided for the city buses moving on the particular patch. Today man has his own vehicles to get transport from one place to another place. The Noise pollution, congestions and air pollution and the results in ill effects to the health and frustration have become addicted now a day. In this Analysis respectively increase in demand for survey is to be taken for vehicle count and analysis is done to increase future development of Transport Network in Nagpur city. In this Traffic volume analysis is give an idea to make better planning of roads routes, flyovers and in future Metro. To reduce the environment impacts the species of some plants which absorbs air pollutants described.

II. LITERATURE REVIEW

Lee et al. (2012) developed a real-time crash prediction model by taking total travel time and crash potential reduction. The study result indicated the variable speed limit could reduce crash potential by 5-17 %.omchainuek et al. (2013) investigated road side safety on thai nk. The result showed that speeding vehicles were involved in roadside crashes accounted for about 70% of the total crashes and 30% of road side crashes were due to road side trees.

Zegeer et al. (1991) studied the relationship between lane or shoulder widening and accident reduction rate. He concluded that 21% reduction in accident can be achieved by widening the lane 4 feet per side.

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Constructed Wetlands –Lake Water Treatment Using Aquatic Plants

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ABSTRACT- Constructed wetlands are engineered and managed wetland systems that are increasingly receiving worldwide attention for wastewater treatment and reclamation. Compared to conventional treatment plants, constructed wetlands are cost-effective and easily operated and maintained, and they have a strong potential for application in a small community. Constructed wetlands for wastewater treatment have substantially developed in the last decades. As an eco-friendly treatment process, constructed wetlands may enable the effective, economical, and ecological treatment of agricultural, industrial, and municipal wastewater. Due to water scarcity challenges around the world, it is essential to think about non-conventional water resources to address the increased demand in clean freshwater. Environmental and public health problems may result from insufficient provision of sanitation and wastewater disposal facilities. Because of this, wastewater treatment and recycling methods will be vital to provide sufficient freshwater in the coming decades, since water resources are limited and more than 70% of water are consumed for irrigation purposes. Therefore, the application of treated wastewater for agricultural irrigation has much potential, especially when incorporating the reuse of nutrients like nitrogen and phosphorous, which are essential for plant production. Among the current treatment technologies applied in urban wastewater reuse for irrigation, wetlands were concluded to be the one of the most suitable ones in terms of pollutant removal and have advantages due to both low maintenance costs and required energy. Wetland behavior and efficiency concerning wastewater treatment is mainly linked to macrophyte composition, substrate, hydrology, surface loading rate, influent feeding mode, microorganism availability, and temperature. Constructed wetlands are very effective in removing organics and suspended solids, whereas the removal of nitrogen is relatively low, but could be improved by using a combination of various types of constructed wetlands meeting the irrigation reuse standards. The removal of phosphorus is usually low, unless special media with high sorption capacity are used. Pathogen removal from wetland effluent to meet irrigation reuse standards is a challenge unless supplementary lagoons or hybrid wetland systems are used. In this paper Futala Lake, Nagpur lake water treatment using Hydrilla Submerged Aquatic plants.

KEYWORDS- Hydrilla, Lake Water, Submerged Plants, Constructed Wetlands, Wastewater Treatment

I. INTRODUCTION

1.1 OVERVIEW

Globally, most of the developing countries are geographically located in those parts of the world that are or will face water shortages in the near future. Moreover, the existing water sources are contaminated because untreated sewage and industrial wastewater is discharged into surface waters resulting in impairment of water quality. The treatment of wastewater using Constructed Wetland (CW) is one of the suitable treatment systems, used in many parts of the world. Wetlands are defined as land where the water surface is near the ground surface long enough each year to maintain saturated soil conditions, along with the related vegetation. Marshes, bogs, and swamps are all examples of naturally occurring wetlands.

As stated by Ramsar Convention, natural wetlands are those "areas of marsh, fen, peat-land or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters."

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SEISMIC ANALYSIS OF REINFORCED CONCRETE BUILDINGS

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ABSTRACT

A building's response to seismic excitation can be assessed in a variety of methods. Methods of structural analysis can be split into four groups. Equivalent static analysis, linear dynamic analysis, nonlinear static analysis, and nonlinear dynamic analysis are all terms used to describe the same thing. The Equivalent Static Analysis method, also known as linear static analysis, defines a set of forces acting on a structure to represent the consequence of ground motion caused by an earthquake. The design base shear for the entire building is computed in this manner, and it is then spread throughout the building's height. Eigen value analysis is used in response spectrum analysis to discover natural frequencies and mode shapes. It is used to calculate the peak response, whereas time history analysis is a technique for determining the exact response of a structure as a function of time. The response history is usually calculated by numerically integrating the equation of motion step by step. Pushover analysis is another name for nonlinear static analysis. To obtain a capacity curve, the pattern of forces is entered into a structural model that contains non-linear features (such as steel yield), and the total force is designed against a reference displacement. When a whole structural model is subjected to a ground-motion record in a nonlinear dynamic analysis, component deformations for each degree of freedom in the model are evaluated.

Keywords: Dynamic Analysis, Base Shear, Seismic Forces, Pushover Analysis, Time History.

I. INTRODUCTION

Due to increased urbanisation and a growing population, there is a significant demand for high-rise buildings all over the world, and earthquakes have the potential to cause the most damage to these structures. Multi-story reinforced concrete buildings are extremely challenging to model as structural systems for study. Finite beam elements are frequently used to model them as two-dimensional or three-dimensional frame systems. Because earthquake forces are unpredictably unexpected, engineering tools for analysing structures under the influence of these pressures must be refined. Earthquake loads must be thoroughly studied in order to analyse the real behaviour of structures, with the understanding that damage is to be expected but should be controlled. Analyzing the structure for prior earthquakes of various intensities and verifying for several criteria at each level has become increasingly important and crucial in recent years. The load carrying capability, ductility, stiffness, damping, and mass of a structure should all be examined during a seismic study. The design process can be broken down into two primary parts. After doing a linear study with dimensioning of all structural elements and establishing the structure's functionality after minor earthquakes, nonlinear methods must be used to investigate the behaviour of structures during large earthquakes. For both symmetrical and asymmetrical structures, dynamic analysis should be performed. Torque is the most important characteristic to consider in unsymmetrical construction structures.

II. METHODOLOGY

2.1 Introduction to Seismic Analysis

Four Analytical procedures can be used, these are as follows:

- **Linear Methods**

a. Linear Static

b. Linear Dynamic

- **Nonlinear Methods**

a. Nonlinear Static

b. Nonlinear Dynamic

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Accident Prevention and Road Safety for Hilly Road's at Hairpin Bend

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ABSTRACT: "The increasing number of road accident on National Highways & State Highways in India, which constitute about 4.9% of the total road network accounts of 1/3rd of the total fatalities. More than 1,40,000 were killed in India's roads, according to the figures released by the Govt. of India. More than half of the people killed in more than 6,00,000 road accidents in 2019 were age 15 - 43. Road accidents cause death or sever injuries and loss of potential income and hence road safety has becoming an issue of national concern. The main objective of this study is to describe the basic principles of a road traffic injury control that differentiate the current situation of the traffic accidents, and define the specific interventions that can be implemented in different settings to prevent the road traffic injuries and reduce the number of blackspots and to suggest various measures to strengthen the disaster risk governance to manage the risk of the disaster so that new efforts can be implemented to correlate the traffic accidents."

I. INTRODUCTION

"Road traffic injuries are among the ten leading causes of death worldwide, and they are leading cause of death among young adults age 15-43 year. Such accident also lead to 20-50 million non-fatal injuries, and many people incur a disability as a result of their injury. According to WHO, 1.25 million people worldwide died in road traffic accident in 2018, to provide some context, this figure is more than five times the death toll of the 2004 Indian ocean tsunami, one of the deadliest nature disasters ever recorded In hilly regions the road accident scenario is further gloomy due to various obvious reasons. Some of the reasons for accidents in hills are narrow roads, steep slope/gradient, hairpin bends, narrow and sharp curves, presence of valley/ river at one side of the road, poor visibility in winter, monsoon, landslides, width/type of shoulder, pavement surface, maintenance standard etc."

Figure 01- Hairpin Bend Road

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Highway Maintenance with Rubber Rolling Barriers to Reduce Accident

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ABSTRACT: The highway transportation rank high in travel and also in reportable accidents. Nowadays, there are various changes in road network and infrastructure developments done in our country. But according to the statistical report "Road Accident in India 2012" released by the Government of India, Ministry of Road Transport and Highways the reportable accidents, injury and fatality rates were in increasing order for the past decade up to 2011 and there is only a slight decline in the year 2012. In these accidents a considerable amount of accidents are due to vehicle-divider and vehicle-barrier collisions. This paper suggests and devises flexible median divider using suitable material, so as to reduce the risk level during median divider accidents.

The government is always looking at the latest technology that can ensure safety of road users, as outlined in the construction industry transformation plan. The Development of a country depends on the connectivity of various places with adequate road network. Roads are the major channel of transportation for carrying goods and passengers. They play a significant role in improving the socio-economic standards of a region.

I. INTRODUCTION

Development of a whole country depends upon transportation system and the transportation system should be well developed in roads, railway, waterways, and air ways. Developed transportation systems are essential for the development of a country as well as for reducing the cost of communication and arrival of daily commodities. It is seen that road transportation is the nearest to the people & easily travel to any places. The road network could serve the remotest villages of the vast country. People depend on roads and highway for the movement of a good transportation, for travel from one place to another, for service, for social and recreational purpose and many other activities necessary to the functioning of our complex society. But roads are not free from any failure of construction. If construction of road is done very carefully, the failure of road chances will be minimized to reconstruct. But for having mistaken in construction procedure and the defects of used materials, the road surface is failed. The maintenance of this failures is required to repair & also to increase the life of the road, to reduce operating vehicle and maintenance cost and to keep the road in serviceable condition. The based on structural and design purpose, road pavements are generally divided into two types as flexible pavement and rigid pavement. In the India flexible pavement is mostly constructed for having advantages than rigid pavement. But India is a developing country so rigid pavement also get the priority for construction. Now a days rigid pavement as roads with definite length, available fund, materials, equipment and workers according to the requirements. Most of the roads of the city are constructed and maintained by the Roads and Highway Department. Deteriorations of flexible pavements occurred every year due to poor quality of construction coupled as well as due to heavy rainfall and bad drainage condition. So, it requires more money for road construction as well as for the maintenance. However, the requirements are not satisfied. Because of these reason rigid pavements get constructed.

II. LITERATURE REVIEW

Mehedi Hasan

Total length of paved road in Rajshahi City is about 186.64 km (2011 census). It shows that about 23% of total road lengths are present in failure condition. This study shows an investigation to compute the flexible pavement's failure types, to define and identify the causes, and select the best maintenance for that failures of flexible pavement within Rajshahi City.

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Design of Water Cleaning Management System for Nag River

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ABSTRACT: India is a holy country and during festival like Ganesh Visarjan, Navratri, Durga Puja and daily waste dumping etc. there is a lot of water pollution done on nearby water bodies. These water pollutions are a very serious concern, for e.g.: Futala Lake. Due to increase in water pollution in the form of waster debris, it is hazardous to the life of aquatic animals as they can consume it and choke or die instantly. Not only the aquatic animals but also humans are in danger due to this problem. As this water is used for irrigation and drinking purpose it is not safe for us humans. This water when used for irrigation can infect the vegetable and can cause health issues for us. If drink then it can cause respiratory as well as diseases caused by water like jaundice and can also cause skin disease. As per a report published every year, we dump 29 crore liters of sewage waste in the Ganga river. Government and NMC are constantly working to remove the waste from these water bodies. One such moment was started by NMC under the guidance of '**Sir. TUKARAM MUNDE**' to clean the Nag River in Nagpur in 2016. In total over 5,000 tons of garbage and other waste was removed from a 17.68km stretch of the Nag River, starting from Ambari's overflow point to the confluence with Pili River beyond Bharatwada during a 15-day campaign. While doing this The Times of India newspaper gave the report of the amount of waste daily being dumped in the river to be around a ton. The major populations to be dumping waste in the rivers are those living in the slum areas. Every year the NMC is approximately removing at least half a ton of waste from nearby lakes.

I. INTRODUCTION

City of Nagpur is named after the Nag River. Nag River originates from a lake called Ambazari, which is located to the west of Nagpur City. Catchment of Ambazarilake was the present MIDC area and also some area beyond. Hence recharge of the lake was perennial. Overflow of lake constituted the river Nag. There is another lake called Gorewada, which is to the north-west of the city and its overflow constitutes origin of another river called Pili. This river ultimately meets the river Nag.

Classification of water of Nag River Basins / Sub-Basin by Environment Department, Government of Maharashtra. Notification is reproduced below. Environment Department, Government Of Maharashtra has classified 20 main rivers & their sub basins in A- I, A-II, AIII & A-IV on their best designated use.

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Study of Generation of Electricity from Waste Food by Using Microbial Fuel Cell

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ABSTRACT: The major challenges to be faced nowadays are the excessive generation of food waste and the lack of alternative sources of energy. Current reliance on fossil fuels is unsustainable due to pollution and finite supplies. Both the challenges are of major economic andenvironmental concern. Microbial Fuel Cell (MFC) is a bio-electrochemical system that derives an electric current by using bacteria and mimicking the bacterial interactions found in nature. The easily available food waste is blended with distilled water and used to produce electric current. The idea of using microbes to produce electricity was conceived in the early twentieth century. Michael Cresses Potter initiated the subject in 1911. Potter managed to generate electricity from Saccharomyces cerevisiae, but the work received little coverage. In 1931, Barnett Cohen created microbial half fuel cells that, when connected in series, could produce over 35 volts with only a current of 2 milliamps.

In this project we have studied the working of Microbial fuel cell and its component parts also we have compiled data from various research papers for more effective construction of Microbial fuel cell so that the output achieved is better. Research papers are downloaded from various sources and are studied thoroughly to formulate result and conclusion.

It is seen that when the number of salt bridge in the model oficrobial fuel cell is 8, maximum current of 1675 micro amperes was obtained which was more than that when the number of salt bridges is less than 8. Therefore, the number of salt bridge used plays a significant role in electricity generation. Different combinations of electrodes were used, and it was found that Cu/Zn (Copper/Zinc) combination gave the best and consistent results. Acetate as a substrate was the most preferential for the generation of electricity with the highest CE (Coulombic Efficiency). The glucose-fed-MFC generated the lowest CE and greatest PD (Potential Difference) among the substrates used in the study. With the increase in molar concentration of salt in the salt bridge, the current decreases. Optimum results were obtained for salt bridge fabricated using 1M KCl and NaCl. It produced a maximum voltage 0.451 V and 0.372 V respectively. The voltage and power outputs achieved by using Waste Food as substrate is lower than MFCs fed with simple substrates like glucose and acetate but is comparable with other single chamber MFCs using waste food as substrate. Thus, this project proves that MFC can be efficiently used to tackle the problem of excessive waste food and lack of alternative sources of energy simultaneous.

I. INTRODUCTION

It is well recognized that alternative sources of energy are urgently required. Current reliance on fossil fuels is unsustainable due to pollution and finite supplies. While much research is being conducted into a wide range of energy solutions, it does not appear that any one solution alone will be able to replace fossil fuels in its entirety. As such it is likely that a few different alternatives will be required, providing energy for a specific task in specialized ways in various situations. The discovery that bacteria can be used to produce electricity from waste and renewable biomass has gained much attention. Recently the increased interest in microbial fuel cell (MFC) technology was highlighted by the naming of Geobacter sulphureousness KN400, a bacterial strain capable of high current production, as one of the top 50 most important inventions for 2009 by Time Magazine. This list was also populated with other energy related devices such as solar shingles, smart thermostats and energy reducing light bulbs, further stressing the importance currently placed on energy. The discovery that microbial metabolism could provide energy in the form of an electrical current has led,to an increasing interest and a dramatic raise in the number of publications in the field of MFC research. These systems are very adaptable and hold much promise to provide energy in a sustainable fashion, but major improvements are required if widespread applications will be feasible. This review is unable to examine the entire field of MFC research in detail but hopes to highlight some important points regarding research in the field and recent important advances. Due to the shear number of papers currently published regarding MFCs we hope that omission of many articles will not cause offence to their authors. This review article will examine MFC's currently in use, potential future applications and the limitations to implementing those applications. We

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Bricks by Cow Dung using Lime and Clay

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ABSTRACT: This study was conducted to investigate the effect of cow dung, clay and lime in strengthening of clay bricks for the construction of environment friendly buildings. There is a need to explore sustainable approaches to building construction with the increasing demand for low cost housing and the high cost of building materials. Bricks which are the core material in building construction are made from clay, which is processed either by sundried or burnt, Lime prevents shrinkage of raw bricks.

A local earth was stabilized chemically by Cow dung. A better compressive strength at the dry state and after 10 minutes of immersion in water was obtained with cow dung stabilization at content of 15 to 30% by weight of earth. Bricks stabilized with 15 to 30% Cow dung contents by weight of earth have a dry and wet compressive strength of 6.64 and 2.27MPa respectively. There is an increase of about 25% in the dry compressive strength of bricks stabilized with 30% cow dung content over that of the plain earth brick without stabilizer The 30% cow dung content resulted in lower migration of water into the brick (i e. lower permeability). Also the abrasive resistance increased with increase in the cow dung content up to 30%. The highly decreased in compressive strength after 10 minutes of immersion in water, even with optimum Cow dung content, indicated that appropriate building design that would prevent stabilized earth bricks from coming into direct contact with rainwater is important. The study recommends that appropriate construction specification is necessary to prevent cow dung stabilized earth bricks from coming into any prolonged direct contact with rainwater.

I. INTRODUCTION

With the increasing demand for low cost housing and high cost of building material, there is a need to explore sustainable approaches to the needs of the building industry. Bricks as the core material in building construction can be produced by clay which is processed either through sundried or burned. The latter however is expensive and technically exhausting whereas sundried bricks can be produced by the layman. In order to ensure the durability and optimal strength output with sundried clay bricks, fibrous materials is believed to enhance such characteristics. This study intends to explore how cow dung can be used to enhance the quality of clay bricks that can be used for low cost building construction in various communities around Nagpur.

Clay bricks have been used since 4300BC and are still widely used today (Krakowiak et al., 2011). Next to concrete and steel, masonry is the most used construction material on Earth. Clay has the property of forming a coherent sticky mass when mixed with water, being readily mouldable when wet but if dried retains its shape (Okolode, et al, 2012). The brick making technology is driven by using the soil onsite or near to site, and then a certain amount of fibre is mixed into the soil, depending on the characteristics of the soil, and then stabilized by compaction, so as to improve the engineering properties of the produced bricks. (Makunza, 2006)

This research is driven by the objective of making extensive use of raw earth, containing a natural component of clay, as the main building material, aided by a fibrous material, which in this case is cow dung. This is to develop technologies that are energy saving, eco-friendly and sustainable (Okolode et al., 2012). The scope of this report presents the fundamental investigation and procedures for the manufacture of the clay brick of which the constituents are clay, cow dung, sand, silt and water. The principal processes and procedures for forming the bricks are researched, tested, analyzed and discussed, and appropriate conclusions and recommendations are drawn

Earth is one of many alternative materials that can be used in place of residential stick building. A number of binders have been used to stabilize earth, for construction. Such binders are aimed to improving water proofing or wear resistance properties of vulnerable earth based construction. Such binders include cements, lime, tars and bitumen's, sodium silicate, casein, oils and fats, molasses, and certain locally specific plant-based materials such as gum Arabic, other specific resins and the sap, latexes and juices from specific trees and other (Corum, 2005). Blast furnace slag and pulverized fuel ash are the two waste materials which are being used to the greatest extent in construction. These materials can make a particular

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Study and Analysis of Ground Water Quality

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Abstract: *Today's drastic issue takes place due to human behavior in our environment. And we are discussing about the issue of water pollution and harmful substance present in water which contaminates the ground water quality, so it may affect the ground water which drilled out through borewell or casing. A study has been carried out to get its physic -chemical characteristics of bore well and dug well water which are collected from Nagpur Region, Water samples were collected from different locations near from Nagpur region. The main aim of our study is assessing the water quality index (WQI) for ground water. At particular distance from Nagpur city .And analyzed for PH, conductivity, total hardness, Dissolved Oxygen, total alkalinity, sulphates, chlorides, temperature, TDS, physic - chemical Parameters and biological characteristics of ground water sample suggest that the monitoring of water quality below the ground surface as well as water quality management should be carried out periodic and as well as to protect the source of water resources. The study indicates the need for periodic monitoring and GIS based study of ground water in the study area which is high dense with population.*

Keywords: pH, Turbidity, Conductivity, total hardness, Chloride, Bore-well and Dug well

I. INTRODUCTION

The first thing we can search on the moon is water, so you can imagine that water importance of water in our everyday life. Water is the most essential requirement in our daily life. Without water our life affected badly we can't imagine our life without water. Unfortunately water gets contaminated by chemicals as well as microorganisms. Sources of chemical pollution is industrial waste where as that of microbial pollution is domestic and storm waste. Polluted water is responsible for spread of water borne disease. As can be seen, the share of tube wells has increased exponentially, indicating the increased usage of ground water for irrigation by farmers. The dependence of irrigation on ground water increased with the onset of the Green Revolution, which depended on intensive use of inputs such as water and fertilizers to boost farm production. Incentives such as credit for irrigation equipment and subsidies for electricity supply have further worsened the situation. So it is necessary to analyze the present environment. Well water are examined to locate the suitable sources of water and to determine the extent of treatment necessary to make it portable. Ground water constitutes 97% of global fresh water and many regions, ground water sources are the single largest supply for serving drinking water to the community. Ground water sources often necessitate. Water is second to oxygen as being essential for life. People can survive days, weeks, or even longer without food, but only about few days without water. The population of India has exceeded thousand million today and also the urban population more than four million, which indicate the large demand of water for domestic purposes .The ill health in the developing and under developing countries is mainly due to lack of safe drinking water. Water is one of the essential commodities of everyday life. Although it is nature's abundant gift but most of it is present in oceans (97%) and in the icebergs in the Polar Regions (2%) which are of no use for utilization and the remaining (1%) of all earth's water, which is available in lake, rivers and underground for utilization. More over this available water is also contaminating day by day due to different human activities. The largest component of ground water use is the water extracted for irrigation. The main means of irrigation in the country are canals, tanks and wells, including tube-wells. Of all these sources, ground water constitutes the largest share. Wells, including dug wells, shallow tube-wells and deep tube wells provide about 61.6% of water for irrigation, followed by canals with 24.5%. Over the years, there has been a decrease in surface water use

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Use of Software for Estimation of RCC Buildings

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ABSTRACT: Early stage cost estimate plays a significant role in the success of any construction project. All parties involved in the construction of a project; owners, contractors, and donors are in need of reliable information about the cost in the early stages of the project, where very limited drawings and details are available during this stage.Construction cost estimating is a cumbersome process. It takes a long time for an estimator to complete an accurate estimate and construction contractors must prepare cost estimates quite often in order to prepare bids for new projects. This presents a challenge to an estimator who has to prepare several estimates in a short period of time. In recent years, computers and estimating software have reduced the amount of manual work necessary for preparing an estimate by organizing and providing fast access to latest labor, material and equipment costs, quickly performing calculations and generating reports. There is room to improve the estimating process even more. This can be accomplished by using the latest CAD and visualization technologies. Improvements can be made in how information is transferred from design files to estimating applications and in visually matching CAD elements with estimating database assemblies.

KEYWORDS: 3DCAD, Estimation, Construction, Digitizing Tablets

I. INTRODUCTION

1.1 GENERAL

Cost estimating is an essential task for budgeting and bid preparation for any construction project. A good estimate depends on many factors including time given to the estimator, estimator's experience, and a wide range of assumptions regarding the project (Jrade and Alkass, 2007). Construction cost estimating involves collecting, analyzing, and summarizing all available data for a project (Holm et al., 2005). This chapter will focus on detailed estimates, the information needed for a detailed estimate and an example illustrating how the information is used to make an estimate. Today's detailed estimating technologies and the difficulties associated with detailed estimates are also reviewed.

1.2 2.3 DETAILED COST ESTIMATES AND THE ESTIMATING PROCESS

Detailed cost estimating is a time-consuming process. It is prepared when all documents of the construction project have been completed. Creativity and knowledge are essential for preparing a construction cost estimate. Different contractors use different processes, methods, and technologies during construction. Therefore, estimators need knowledge, creativity, and experience to execute the estimating task successfully. Detailed cost estimating consists of two important steps: quantity estimate, also known as quantity takeoff, and pricing.

In a detailed cost estimate, the estimator divides the project into individual work items and estimates the quantities of materials for each work item. This is also known as quantity takeoff. Labor, equipment, and material needed for executing a work item are then determined based on the specification and the construction method.

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Sand Plastic Paver Block using Waste Plastic

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ABSTRACT: The Plastic usage is large in consumption and one of the largest plastic wastes is polyethylene (PE) Plastics are rapidly growing segment of the municipal solid waste. Disposal of waste materials including waste plastic bags has become a serious problem. Amount of waste plastic bags being accumulated in 21st century has created big challenges for their disposal. At present nearly 56lakhs tones of plastic waste is produced in India every year. The waste plastics in house hold is large and increasing with time. In each country waste consumption is different, since it is affected by socioeconomic characteristics and waste management programs, but the level of plastics in waste consumption is low. In order to overcome this issue, we have to use it in effective manner for different purposes. This project aims at recycling waste plastics into pavement blocks, and studies their characteristics. Pavement blocks are perfect materials on the pathways and streets for simple laying and finishing. Here the strength properties of pavement blocks comprising of waste plastics and the design considerations for pavement block incorporating waste plastic bags is presented. It will be a boon to modern society and environment.

The aim of this study is to Reuse Plastic Waste dumped in Landfill sites of Country in manufacturing of Paver Blocks. Plastic waste is used as binding material and to replace cement to reduce the cost of paver block when compared to that of conventional concrete paver blocks. The degradation rate of plastic waste is also a very slow process. Hence the study is helpful in reducing plastic waste in a useful way. In this study we have used plastic waste with Sand. The study bears on plastics with transparent bags and films in PP, Polyethylene terephthalate (PET). Plastic waste is melted, and along with some amount of bituminous material and fly ash is mixed with sand. The paver blocks are to be prepared and tested and the results to be interpreted. The proposed tests include water absorption test, temperature sustainability test and compression test. Ultimately we propose to use the waste plastic in construction fields with appropriate additives. It will definitely be a cost effective and efficient mode of waste plastic consumption.

I. INTRODUCTION

Paver block paving is versatile, aesthetically attractive, functional, and cost effective and requires little or no maintenance if correctly manufactured and laid. Mostly concrete block paving constructed in India also has performed satisfactorily. Natural resources are depleting worldwide at the same time the generated wastes from the industry and residential area are increasing substantially. The sustainable development for construction involves the use of Nonconventional and innovative materials, and recycling of waste materials in order to compensate the lack of natural resources and to find alternative ways conserving the environment.

Plastic waste used in this work was brought from the surrounding areas. Currently about 56lakh tones of plastic waste dumped in India in a year. The dumped waste pollutes the surrounding environment. As the result it affects both human beings and animals in direct and indirect ways. Hence it is necessary to dispose the plastic waste properly as per the regulations provided by our government. The replacement of cement with plastic waste provides potential to environmental as well as economic benefits. Paving block also known as brick paving is a commonly used as decorative purpose and creating a pavement or hard standing. The main benefit of bricks over other materials is that individual bricks can later be lifted up and replaced. This allows for remedial work to be carried out under the surface of the paving without leaving a lasting mark once the paving bricks have been replaced. In sand plastic paving block the various material are use such as waste plastic, sand and fly ash in the construction of the paving bricks.

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A Review Paper on Flood Controlling System by using Super Levees & Sub Grade Drainage System

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ABSTRACT - *The Low - lying topography, meteorological and hydrological condition of the Sangali makes it vulnerable to floods and storm water. Various measure have been conducted for mitigation if flood and inundation damages, but the drainage problem is still one of the major tasks. Recently Sangli suffered major floods that occurred in 2019. The flooding inflicted serious damages over the last year; these floods have become both more extensive and more severe as experienced in recent storms. In order to address the problem, different engineering works are utilized to provide flood protection and reduce flood damages. One alternative flood control measure is to provision of super levees in the bank of river for the purpose of major blind walls between a river and the urban area. Upgrading such river embankments to super levees will open up to the view and improve access to the water front creating a new riparian space that provides the enjoyments of water any Greenery. The second one alternative flood control measure is to provision of sub grade drainage system in an open area of the Sangali nearer to river. For the purpose of peak discharge of flood in river. In light of the hydrological, topographic and flooding data accumulated from government and private establishments.*

Key words: *Flood control, super levees, flood sub grade drainage.*

I. INTRODUCTION

Flooding is one of the most serious problem in the India today. As indicated by the Indian, Atmospheric, Geophysical and Astronomical Services Administration flooding is described as an "irregular dynamic" ascent in the water level of stream. That may result in the overflowing by the water of the normal confines of the stream with the subsequent inundation of area which are not normally submerged.

Flood are categorized according to its natural and artificial causes. In the city of Sangali, the natural causes of flooding includes the overflowing of the Krishna river due to high river level coupled with high tides during the wet season from May to October; Inadequate in land drainage facility to handle the excess local surface run-off particularly in the low-lying Central part of the city. Sangali on the bank of river Krishna western Maharashtra faced a historic flood 2 August (2019). Almost one lakh individuals were uprooted and more than 30 lost their lives right now.

While the impact of flood on the agricultural and rural fabric of Sangali, Sangali city with a population of more than 22 lakhs, to suffered huge losses.

Sangali - Miraj - Kupwad Municipal Corporation is on the bank of Krishna - warna confluence in western Maharashtra. Both river reached historic high flood levels in the 2019 floods. Warna, in Samdoli village, Sangali district recorded an HFL of 546.9 meters on 9 August 2019 breaking all previous records. Irwin Bridge a memorable scaffold work in 1929 in Sangali city, recorded a stream arrange that the extension had never experienced. Sangali and the nearby region are is not new to floods and has Witnessed devastating floods in 1853, 1856, 1914, 2005, 2006 and latest 2019.

Same is the story downstream. Especially in the pilgrimage Centre of Narsoba Wade near kurundwad town of Kolhapur district: situated at the confluence of Krishna and Punchganga, floods are not new the Narsoba wadi. In facts there are elaborate flood rituals, in which the daily is moved to upper precincts after each flood event. But here too 2019 proofs broke all previous records, including the 1914 HFL.

II. LITERATURE REVIEW

Nurul Ashikin Binti Mabahwi[1], Hitoshi Nakamura2 (2006) The target of the investigation is to Re-assess the conceptualisation of super levees by concentrating on the accessibility of open space as clearing territory along the Arakawa River. The future study need to use of open space for the use of high rise building and the road to overcoming scarce of evacuation area for super levees development.

T. Tingsanchali[2] (2012), this paper depicts ideas, strategy, plan and activity on incorporated urban flood calamity and hazard the board. In most creating nations, flood fiasco the executives exercises are dealt with by government. Flood catastrophe the executives in creating nations is for the most part receptive reacting to winning calamity circumstance (crisis reaction and recuperation). Receptive reaction ought to be change to proactive reaction to expand adequacy of the board and decrease misfortunes of life and properties.

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RESEARCH ARTICLE OPEN ACCESS

Partial Replacement of Quarry Dust and Cement with Ground Granulated Blast Furnace Slag

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Abstract:

Concrete is an essential part in the development of infrastructure Viz., buildings, industrial structures, bridges and highways etc., preeminent to usage of great quantity of concrete. The construction industry in today's date is growing expeditiously. Cement is a prime material in the concrete mixture which manufactured by the materials like lime and silica. The value of concrete is attributed to value of its ingredients are high cost. Thus this study is carried out to find the alterative option in ingredients of concrete, like GGBS (Ground Granulated Blast furnace Slag) can be used as a replacement of cement in the concrete. This replacement will lower the cost and will make less use of cement in concrete. In this experimental study the compressive strength of concrete with GGBS as ingredient will be understand. Along with that the cost analysis is also done to suggest the most optimized percentage of GGBS to be used in various condition.

Keyword: GGBS; Compressive Strength; Cement; Concrete

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I. INTRODUCTION

Concrete is now-a-days no longer a material consisting of cement, aggregates, water and admixtures, but it's manufactured by different types of ingredients performed in different conditions exposures. Engineers are tailoring concrete with different specific applications and it contain different materials like micro silica, colloidal silica, binders, fillers and pozzolanic materials. One of the main reasons for the deterioration of concrete in the past is that too much emphasis is laid on concrete compressive strength rather than on the performance of concrete. Concrete has tendency to harden and attain strength for few more years. Concrete withstands compression (crushing), but is extremely poor in tension (stretching). After the water cement is the prime ingredient of concrete. But the productions of cement is more costly and expensive and major problem for environment and civil engineer is resolution to find out the need.

Many researchers have resolved the path of reducing the cement as ingredient to avoid the CO2 emissions. Several by-products are replaced with cement like Fly ash, Silica Fume, GGBS. River

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Experimental Study on Effect of Nailing in Cohessionless Soil

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ABSTRACT: Soil nailing is a construction remedial measure to treat unstable natural soil slopes or as an construction technique that allows the safe over steepening of new or existing soil slopes. There is failures of soil nailing and most happening failure is a pullout failure, so there is a need to identify the pullout resistance of the soil before any construction of soil nail and it's become compulsory if the soil is cohesionless, because pullout failure is generally happen in a cohesionless soil. This paper gives the experimental study to identify pullout resistance of soil in horizontal direction in a cohesionless soil.

I.INTRODUCTION

The work forms a part of continuing research of soil reinforcement at Oxford University, which has included pull- out and direct shear tests of several types of reinforcement using a large scale direct shear apparatus, investigations of the analysis and design theory of unpaved roads on soft soil, and a study of the role of bending stiffness of nails on the stability of nailed slopes. In this research programmed, rather than trying to consider all the numerous parameters which may affect the performance of soil nailing, it was decided to concentrate on relatively simple models using ideal soils, nails and facing walls in the experiments, in the hope of understanding the fundamental mechanics and developing an appropriate design theory of soil nailing. It will then be possible to investigate full scale earth structures constructed with more complex soils and boundary conditions.The most important feature of soil nailing as opposed to the ground anchor technique is that the nail force is passively generated by the displacement of the soil, and the displacement is in turn due to the nail force.

II.RELATED WORK

PULLOUT TEST OF A NAIL: In a soil nail as well as reinforced soil walls the friction between reinforcing element and the surrounding soil plays a major role in improving the stability of earth structures. Since the axial force in a nail is generated by the relative displacement between the nail and the soil, a full understanding of soil nailing requires an understanding of the interaction mechanism between them. It is not however, an easy task to achieve because the interaction is influenced by several factors, such as the properties of the soil, roughness and the stiffness of the nail and the boundry conditions of the test apparatus, as reported by Palmeira and Milligan (1989). Furthermore, the change in stress on the nail due to dilatancy of the soil, when a nail is pulled out, makes the interaction mechanism very complicated and difficult to analyse (Schlosser and Guilloux, 1979).

1. Pull-out Device

The pullout device permits the pullout loads to be applied in a displacement rate controlled manner up to 6.0 mm/min. Its maximum pullout capacity is 50 kN, which is adequate for carrying out pullout tests of grouted nails in sandy fills. During the test, the device was mounted on a frame at the required inclination for pulling the nail along its longitudinal direction.

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Design of Rigid Pavement by Using Geosynthetic Materials (Polypropylene Fibre)

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ABSTRACT: Geosynthetics have been used to reinforce the base layer of rigid pavement systems for the past thirty years. However, and in spite of the good field evidence that geosynthetic reinforcements can improve pavement performance, the specific conditions or mechanisms that enable and govern the reinforcement function are, at best, unclear as they have remained largely unmeasured. Overall, the selection of design parameters for geosynthetics has been complicated by the difficulty in associating their relevant properties to the improved pavement performance. Field evidences indicate that geosynthetic reinforcements can improve pavement performance. Yet, the specific conditions or mechanisms that enable and govern the reinforcement function are, at best, unclear as they have remained largely unmeasured.

Significant research has been recently conducted with the objectives of:

a) Determining the governing mechanisms and relevant properties of geosynthetics that contribute to the enhanced performance of pavement systems,
b) Developing appropriate analytical, laboratory and field methods capable of quantifying the above properties for geosynthetics, and
c) Enabling the prediction of pavement performance depending on the various types of geosynthetics used.

In this paper Polypropylene Fiber (.50%,1%,2%,6%,8%12%) adding with concrete for experimental study.For polypropylene - The capability of durable structure to resist weathering action, chemical attack, abrasion and other degradation processes during its service life with the minimal maintenance is equally important as the capacity of a structure to resist the loads applied on it. Although concrete offers many advantages regarding mechanical characteristics and economic aspects of the construction, the brittle behavior of the material remains a larger handicap for the seismic and other applications where flexible behavior is essentially required.

KEYWORDS- Geosynthetic Materials, Rigid Pavement, Polypropylene Fiber

I. INTRODUCTION

Geosynthetics have been widely used to serve a variety of roles that greatly lead to roadways performing well. These provide isolation, filtration, stabilization, stiffing, drainage, barrier, and safety functions. Any or more of these different features is used in at least six major roadway applications. The applications include migration of reflective cracking in asphalt overlays, isolation, road base stabilization, ground soft subgrade stabilization, and lateral drainage. The American Society for Testing and Materials (ASTM) Committee D35 on geosynthetics has described geosynthetics as planar products made from polymeric materials used with materials related to soil , rock, earth, or other geotechnical engineering as an integral part of a man-made project, structure, or system. Geosynthetics is the term used to describe a variety of polymeric materials used in construction of civil engineering works. The concept is commonly considered to cover eight major categories of goods. These include geotextiles, geogrids, geonets, geomembrane, liners of geosynthetic mud, geofoam, geocells, and geocomposite. The geotextiles and geomembrane are the most common geosynthetics employed. The ASTM (1994) describes geotextiles as permeable textile materials used as an integral part of a civil engineering project, structure, or device in contact with soil, rock, earth, or any other geotechnical substance. Geomembrane is an inherently impermeable membrane, in the shape of a sheet that is commonly used as cut-offs and

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Experimental Investigation on Replacement of Fine Aggregate with Manufactured Sand and Partial Replacement of Cement with (GGBS)

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ABSTRACT: One of the most widely used construction materials in civil engineering industry is concrete because of its high structural strength and stability. The concrete industry is looking for supplementary cementitious material or industrial by-product with the objective of reducing the carbon dioxide emission which is harmful to environment. Ground-granulated blast-furnace slag (GGBS), the solid wastes generated by industry, is used as a replacement material for cement. Manufactured sand is used to reduce the excessive natural sand consumption. This paper deals with the effective utilization of waste material in concrete production as a partial replacement for cement and partial replacement for sand. The cement has been replaced by GGBS in the range of 10%, 20% and 30% by the weight of cement for M15 and M20 grade mix. Workability test was carried out on fresh properties of concrete while the compressive strength was carried out on hardened concrete. It is found that the partial replacement of cement with GGBS and partial replacement of sand with manufactured sand helped in improving the strength of the concrete substantially compared to normal mix concrete. Compressive strength test was carried out for 7 & 14 days.

I.INTRODUCTION

One of the most widely used construction materials having high compressive strength is concrete. The ordinary Portland cement (OPC) is the main component for making concrete. Production of one ton of cement requires about two tons of raw materials of shale and limestone, and also releases large amount of carbon dioxide to the atmosphere that significantly contributes to greenhouse gas emissions. One method to reduce the carbon dioxide emissions of the concrete is the replacement of ground-granulated blast-furnace slag (GGBS), which is the by-product of the industrial waste used as supplementary cementitious material in concrete. The supplementary cementitious materials not only improve the mechanical properties of concrete but also reduce the cement consumption by replacing part of cement with these pozzolonic materials. Manufactured sand, produced from granite stone, has been used as an alternative to fine aggregate that 50% replaces the river sand which is far superior to river sand in all aspects. This project work is to determine the material properties of cement, GGBS, aggregates and manufactured sand, and to study about the mechanical and durability properties.

II.RELATED WORK

MATERIALS USED

FINE AGGREGATE

Fine aggregate (Sand) Fills voids between aggregates. It forms the bulk and makes mortar or concrete economical. It provides resistance against shrinking and cracking. It is naturally available.Fine aggregate conforms to the grading curve zone II with specific gravity 2.55, and a fineness modulus 2.1 was thus obtained as per IS 383-1970 specifications

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Stopping Water Pollution By Using Coconut Drainage Net

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ABSTRACT:Water is the basic need for the existence of life on earth. In spite of 70% water on earth majority of the water is not suitable for drinking purpose. Our proposed system is used to clean and control the drainage level using mechanical control technique include total or halfway sorting of waste material through flowing water by applying sock-like traps at the end of the drainage pipes. Plastic pollutants and floating trash in water resources is an ever-growing global problem. Not only it is dangerous for human being,but also for the wild life as well.
The worthy replacement of traditional water drainage system is drainage system with use of net made of coconut fiber. A general view looks like sock-like net that fits over s stormwater drainage outlet to collect rubbish. It has been described as the "simple pollution control solution " over some areas outside India. we face daily problem with such a waste like plastic containers, bottles, paper and vegatation discharge into the city's waterways by stormwater drains. With huge population like our country India, this idea could be more profitable than other countries as we are using coconut fiber as a mesh which has been placed on the outer mouth of the drainage pipes.

KEYWORDS:Coir-Coconut fibre, gutter underground concrete pipes

I. INTRODUCTION

Water pollution is the contamination of water bodies, usually as a result of human activities. Water bodies include for example lakes, rivers, oceans, aquifers and groundwater. Water pollution results when contaminants are introduced into the natural environment. For example, releasing inadequately treated wastewater into natural water bodies can lead to degradation of aquatic ecosystems. In turn, this can lead to public health problems for people living downstream. The net drainage system is a robust and modern filtration system for use where there are cost or space constraints or specialised cleaning equipment is not available. This system is designed to specially capture and retain large gross pollutants as well as small particles.This system has unique net release mechanism that eliminates any adverse hydraulic impact traditionally encounter with direct screenin trash racks.it contains stainless steel sleeveextension that is fitted into existing or new ,outlets and a removable polyethylene net.There are numerous techniques available for removing gross pollutants fromwater. The most effective strategies involve a combination of non-structural measures(e.g.education and waste management programs, and source controls) and structural treatmentsIt is a subsurface structure that consists of a perforated pipe that is installed flat in a yard with a sloped trench that helps move water runoff from a highest point at thestart to the lowest at the end, where it goes into a sewer, cistern, or swale. French drains help to redirect water from wherever the drain starts–usually close to the foundation of a structure to some sort of sewer or cistern. In general, French drains are used to help the natural flow of water from high to low. These systems are usually found around commercial buildings, including restaurants and loading docks. You can also find them on city streets and even pool deck.

II. RELATED WORK

It is a subsurface structure that consists of a perforated pipe that is installed flat in a yard with a sloped trench that helps move water runoff from a highest point at thestart to the lowest at the end, where it goes into a sewer,

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HAND WRITTEN CHARACTER RECOGNITION SYSTEM

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Abstract - *Automatic handwritten character recognition is a subject that receives much attention at present. One of the main drivers behind current research is the capacity to quickly interpret tiny handwriting samples such as those seen in checks and envelopes. Many (offline) hand-written Text Recognition (HTR) systems research have been conducted to create state-of-the-art models for small enterprise line recognition. But it presents significant problems to add HTR capabilities to a multiple OCR system. This article deals with three issues related to systems such as data, efficiency and integration.*

The Project is a computer based programme that minimises effort in converting the handwritten script photographs into text documents. The problems are addressed through the use of online handwriting data for the online recognition system for a large-scale manufacturing. We present our pipeline of picture data creation and investigate how HTR models may be built using online data. We show that the data considerably enhance models in the circumstance that just a few number of actual pictures, generally the case with HTR models, are available. It allows us to considerably decrease the costs of a new script. Secondly, we present a model for line recognition based on non-recurring connectivity neural networks. We are exploring this approaches in order to develop an excellent English written word recognition system based on the recognition of character. Lexicon post-processing is used to increase the overall accuracy of recognition. There are several approaches accessible for the extraction and training, each with its own superiorities and limitations, of CR systems in literature. With the LSTM models, the model achieves equivalent precision while enhancing parallelism in training and inferences. Finally, we are offering an easy approach of integrating HTR models into OCR. This is a solution for bringing HTR into a wide-ranging OCR.

Key Words: Character, Picture, Text, Word, Image, visualization.

1.INTRODUCTION

The processing of pictures might be a computer vision modification of images. There are various ways for manipulating pictures with the use of technology. In many fields, text recognition has an enormous significance. But such a task by a machine is hard to try. We must guide the system in order to recognise the text. The acquisition, extraction, categorization and recognition of character comprises multiple phases. The capacity to receive and analyse the handwritten information from an external source is handwriting recognition. The main purpose of this research is to design a system that can acknowledge the real format character of a neural network effectively.

Neural computing may be a fairly new area, and consequently style components are less specific than other architectures. Neural computers use parallel data. A neural computer works considerably differently from the functioning of a normal computer. Neural computers are taught such that the provided data is compared to the system learned and the user receives appropriate output text. A handwriting recognition system manages formatting, segments correctly and identifies the most likely words. The automatic translation of the text of an image into letter codes, used within your computer and text-processing programmes, requires offline handwriting identification. The information collected in this way is seen as a static handwriting image.

1.1 Objective

Most companies utilise papers to obtain consumer information. These papers are usually written by hand. These may include paperwork, inspections and so on. Documents are converted and saved in digital versions for quicker retrieval or data gathering. Common procedure to manage this data is that the same data is input into the computer manually. The handling of such documentation is tireless and time-consuming. Therefore the demand for a specific handwritten recognition software is made, which recognizes texts automatically from images of documents. Handwritten Character Recognition (HCR) Software makes it easier to extract and save data from hand-written documents in

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Accommodation of Safety Edge to Minimize Road Accidents

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ABSTRACT: Road accidents are the causes of death worldwide more than 1.5million are killed in road accidents worldwide. The occurrence of accident depends on like geometrics of road, vehicle, pavement condition and whether condition. When a vehicle leaved the travelled way and encounter a pavement shoulder drop-off, it can be difficult for driver to return on roadway. The side of the tire may scrub along the drop-off resisting the driver's attempts the steering angle of vehicle 'slingshot' across the road. This can result in collision with other traffic or loss of control on roadside. The safety edges are innovation treatment intended to minimize drop-off related crushes.
It has been noticed that potholes are also the main cause of accidents. To reduce these accidents rates occurring due to the portholes on pavements the chipfill system is developed.

I. INTRODUCTION

In today's world road and transport has become an integral a part of growth and development of a nation. Everybody may be a road user in one or other shape. This transport system has minimized the space but it's on the opposite hand increased the life risk. Every road crashed end in loss of lakh of lives and high to injuries to corers of individuals. India features a total of about 2 million kilometers of roads out of which 960,000 km are surfaced road and about 1 million km of roads in India are of poor quality.

As we experience increase in number of vehicles on road simultaneously road accidents also are increasing in same manner. Road accidents are one among the most important killers in India.
To deal with this accommodation of safety edges on pavement is developed. We notice that due to resurfaced pavements and edges on it also results in increasing the accidents rates. Safety edges make it easier for a driver to safely reenter the road way after in inadvertently driving on to the shoulder. Potholes are the cause of accidents and due to this fatal rates and injuries occurs. Overturning and turning of vehicles also may result. To deal with this chip-fill system is developed. Many road crews are ill-informed on the proper materials and methods for pothole repair. Correct selection of pothole patching materials and proper application of repair procedures can greatly increase the longevity of pothole repairs, lead to fewer driver frustrations, and lower road maintenance budgets.

II. LITERATURE REVIEW

Theconceptof safety edge wasfirstintroduced by ***Gregory A. Howell1***,1) ***Gregory A. Howell1*** Worked on Working near the edge: A new approach to construction safety in august 2000, Development security has drastically improved, yet has arrived at a level .2)***Krammes, R., Brilon, W. (Eds.)*** has worked on Safety in geometric design standards 1: Three Anecdotes. June 14-17, 2000. Many accept that streets planned to guidelines are protected streets. In the partner paper the case will be made that such streets are neither safe nor dangerous; that their security is unplanned3) ***Keith W. Anderson***, Worked on Pavement Edge Treatment January 2013,Four projects were built over two construction sites using special devices attached to the asphalt machine that produces a 30° slope on the outside pavement edge in place of the near vertical drop-off common with conventional paving equipment.4)***Zheyuan Wang, Member IEEE,*** 2018 has conducted study on Road Edge Detection in All weather and Illumination via Driving Video Mining, To obstruct the vehicles running through countryside, street edge location is a key function. Current work on street edge identification has not perfectly handled all climatic as well as environmental conditions..5) ***Megan S Ryerson***, has Worked on Safety Edge: a Safely Frame Work to Identify Edge Conditions in the Future Transportation System with Highly Automated Vehicles, July2019Atomized driving frameworks (ADS) have the potential for improving security yet also represent

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Black Water Filtration by using Sodium Compound

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ABSTRACT: Black water is the mixture of urine, feces and flushwater along with annal cleaning water or dry cleaning materials. black water requires biological or chemical treatment and disinfection before reuse by which can save the maximum water ..if the black water or grey water is reused then the ground water minimizes and increases the level of water. Black water is any wastewater that is contaminated with water discharged from a toilet ,bathtubs, washing machine and kitchen sinks.after the black water filtration .we can reuse for various purposes like car washing, gardening,floor washing plantation and for irrigation purposes.

In black water filtration the materials which is used locally available the materials used in it , limestone, charcoal,fine sand and coarse sand ,sodium dichloroisocyanurate as well as there is no need of electricity for filtration so it is very economical .in black water filter the five steel tanks are used of size 18cm × 30 cm..

In first storage tank black water can be stored as a source , sedimentation tank is a tank in which water can be distributed condition for 30 min by adding sodium dichloroisocyanurate in it which helps to settle down the impurities.this impurities is used to making the fertilizer and this fertilizer used for agricultural land and garden plantation land..after the sodium compound added in water .next process the valve of sedimentation tank open and water can be entered into the filtration tank and in this tank limestone and sand is used as filter media.size of limestone is 2.5cm and sand size is 2.36mm retained in IS sieve second filtration tank use charcoal and size 2.5cm and fine sand is used.

The charcoal and fine sand can help to remove the impurities . charcoal can remove colour ,odour, iron, manganese and oil then the water can pass into a disinfection tank in which potassium permanganate is used for disinfection the tank is connected to a pipe of this type the filtration process can be done..

I. INTRODUCTION

1.1 General Introduction:-

BLACK WATER :-

Blackwater is the mixture of urine, feces and flushwater along with anal cleansing water (if water is used for cleansing) and/or dry cleansing materials. Blackwater contains the pathogens of faeces and the nutrients of urine that are diluted in the flush water.

Blackwater in a sanitation context denotes wastewater from toilets, which likely contains pathogens. Blackwater can contain feces, urine, water and toilet paper from flush toilets. Blackwater is distinguished from greywater, which comes from sinks, baths, washing machines, and other kitchen appliances apart from toilets. Greywater results from washing food, clothing, dishes, as well as from showering or bathing.

1.2 Objectives :-

The objective of Waste Water Treatment:-

- To remove harmful bacteria, to make water safe and attractive for drinking and domestic purposes.
- Design of the treatment plant for a specific water treatment requirement.
- Installation and set-up of the whole plant on a small scale.

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Analysis of Contamination of Ground Water Due To Dump Yard: Case Study of Bhandewadi Dump Yard, Nagpur, India

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ABSTRACT: Now a day's solid waste management and its proper disposing is major concern in the developing countries. The general method of disposing the solid waste is by land filling in dump yard. In this method the disposing site should be far away from the residential area. The present study is conducted on the ground water, in the vicinity of Bhandewadi Dump Yard in Nagpur. Urbanization and improper disposal of solid wastes lead to contamination of groundwater and surface water resources in this region. Municipal solid wastes of the city are presently disposed as open landfills at Bhandewadi region near Pardi east Nagpur. The leachate form due to solid waste is directly infiltrate into the ground and contaminate the ground and surface water resources which results into unsuitability of water for drinking and other utility purposes. Hence a detailed study and analysis is carried out on the ground water in the vicinity of this area. For this analysis four sample of different area of varying distances is collected from this study region, and these samples are analyzed for physical, chemical and biological parameters such as pH, Nitrate, BOD, etc. This study is try to analyze the suitability of ground water for drinking, household purpose, etc. by comparing with the standard parameters set by the Bureau of Indian Standard (BIS) and World Health Organization (WHO). The study indicates that the water quality parameters exceed the permissible limits for drinking at many locations leading the water unsuitable for drinking.

I. INTRODUCTION

Since the beginning, human kind has been generating waste, each household generated garbage or waste day in or day out either solid or semisolid form and generally exclude industrial hazardous wastes. Waste is a byproduct of life. High standards of living and ever increasing population have resulted in an increase in the quantity of wastes generated. During the last two decades groundwater quality has emerged as one of the most important environmental issues confronting much of the world's populace. Among the multitude of the environmental problem existing in the urbanizing cities of developing countries, MSW management and its impact on groundwater quality have become the most prominent in the recent years. Ground water contamination is generally irreversible i.e. once it is contaminated it is difficult to restore the original water, degrades water quality producing an objectionable taste, odor and excessive hardness. It is always better to protect ground water first rather than relying on technology to clean up water from a contamination source. Due to lack of efficient solid waste management system and improper dumping of MSW as open landfills, the groundwater and surface water in the Nagpur city is found to be contaminated in various places. The processing and disposal of the MSW generated by Nagpur city with environmentally safe and legally acceptable management is done by company namely Hanjer Biotech Energies Pvt. Ltd. NMC pays 275 Rs. per ton to these firms to treat garbage. Hanjer was allowed to sell the byproducts of treating garbage, which include wet organics, dry organics and plastics. Several studies have been carried out studying the impact of improper solid waste management mainly focused on pollution, health problems, diseases etc. To study the effects of solid waste on health of neighborhood inhabitants, Bhandewadi the only dumping yard of Nagpur city was chosen as primary testing area. It was assumed that the impact of solid waste would be more apparent and prominent at neighborhood settlements of Bhandewadi as these settlements are in proximity and in direct contact with the dumping yard.

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Storm Water Runoff Solution by Infiltration Bed

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Abstract – *The purpose of research such that, urban flooding is a major problem in many parts of the world and is one of the most natural disastrous event which takes place every year, especially in a coastal cities. Urban flood, being a natural disaster, cannot be avoided; however, the losses occurring due to flooding can be prevented by proper flood mitigation planning. As such, it is necessary to have a proper estimation of flood extent and flood hazard for the different flow conditions so that proper flood evacuation and disaster management plan can be prepared in advance. In coastal urban cities like Mumbai, mostly severe flood scenarios take place due to combination of surface flooding.*

The report is comprised of a technology review and explores a solution on "Runoff Storm Water by Infiltration Bed". The basic Design of the study of project Consist of layers. The most upper layer is of porous pavement (permeable pavement layer), middle layer will be infiltration bed in which consist of clean uniformly graded aggregates with depth of 5 – 8 thickness. Then below the layer of aggregates percolated PVC Pipe will provide for collection of Infiltrate water. That water is transferred towards the Municipal Corporation and again it will filtered then its delivered to utilization purposed.

Overall the report aims that – Urban flood in the city causes great amount of distraction and inconvenience, it cause heavy traffic jam due to street water logging, paralyzes day by day activities, damage the urban Infrastructure (i.e. Road, parking lots, electric poles...etc) causing sewer economic damage. So, here advancing that runoff storm water is penetrated through porous pavement road and it infiltrated by providing Infiltration Bed. The filtered storm water runoff collected in PVC pipe and transfer to the Municipal Corporation for the utilization in better way.

Keywords- ***Road runoff, Storm water treatment, Permeable pavement with infiltration bed, infiltration rate.***

I- INTRODUCTION

1.1 **General Introduction**; Storm water, also spelled storm water, is water that originates from rain, including snow and ice melt. Storm water runoff is water resulting from rainfall that does not get absorbed by the surfaces it touches and can be observed flowing over yards, streets, buildings, parking lots, and other surfaces when it rains. Storm water can be seen flowing down the sides of roads during a heavy rainstorm. All properties with impervious surfaces (e.g., roof, driveway, sidewalk, etc.) generate storm water runoff. Storm water runoff flows across the land or in more developed areas Into a Storm water systems also include green treatment infrastructure like rain gardens, infiltration swales, etc. Storm water is ultimately conveyed to our local streams, rivers, ponds, and lakes – sometimes with treatment, but often time simply by direct conveyance without treatment.

Increase in world Population urbanization leads to decrease in available resources. Due to the increase in Population, it becomes necessary to build commercial and residential building like houses, office, factories, shopping complexes and construction like Road, building, etc. to complete the demands of people. Thus more and more land is being covered with concrete. This results being cut to clear the land (deforestation). Forests bring rain. Due to the excessive deforestation the natural resources are day by day decreases. Sometimes sun rays are directly contact with earth surface and also many gasses are present in the atmosphere it becomes increase the earth temperature it cause global warming.

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Finite Element Analysis of Hyperbolic Cooling Tower

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Abstract – Natural draught cooling towers are widely used in modern thermal and nuclear power plants. Because of their shear size and susceptibility to horizontal stresses, these towers with very thin shell thickness are unique constructions. The boundary conditions should be regarded as free at the top and fixed at the bottom. The cooling tower's material characteristics include a young modulus of 31GPa and a Poisson Ratio of 0.15. Finite Element Analysis was used to analyse these cooling towers for seismic and wind stresses. Wind loads on these cooling towers have been estimated in the form of pressures using the design wind pressure coefficients as supplied in IS: 11504-1985 code together with the design wind pressures at different levels as specified in IS: 875 (Part 3) - 1987 code. Ansys 18.2 was used to conduct the analysis. The study yields maximum deflection and maximum equivalent stress.

Keywords: *Cooling tower, FEA, Seismic analysis & wind analysis.*

I- INTRODUCTION

The natural draught cooling tower is a critical component in both thermal and nuclear power plants. These are massive buildings with thin shell structures. Cooling towers are susceptible to their own weight as well as dynamic loads such as seismic motion and wind impacts. In the absence of seismic loading, wind is the primary loading for natural draught cooling tower design. There has been a lot of study work described in the literature on the seismic and wind load on cooling towers [1–5]. G. Murali et al., [1] Wind load response of a cooling tower. He examined the two cooling towers, which were 122m and 200m above ground level, respectively. They computed quantities such as meridional forces and bending moments. D.Makovika investigated the Response Analysis of an RC Cooling Tower under Seismic and Windstorm Effects in Acta Polytechnica [2]. The estimated values of the displacement and internal force envelopes owing to seismic loading states are compared to the envelopes of the loading states due to dead, operational, and live loads, wind, and temperature actions. After establishing a finite element model, the mechanical properties of the tower under gravity, temperature load, and wind loads are examined. A. M. El Ansary [3], A. M. El Ansary [4], A. M. El Ans The goal of this work is to create a numerical tool capable of attaining an optimum shape and design of hyperbolic cooling towers by combining an in-house created non-linear finite element model with a genetic algorithm optimization approach. The influence of asymmetric imperfection on the earth quake response of a hyperbolic cooling tower was investigated by R.L.Norton [4]. Shailesh S[5], software programme used in a real application by taking into account the problem of natural draught hyperbolic cooling towers. The major goal is to show that the column supports on the tower can be replaced by similar shell pieces, allowing the software created to be readily used.

II- DESCRIPTION OF THE GEOMETRY OF THE TOWER

The tower's overall height is 200 metres. The base, throat, and top radii of the tower are 136 m, 85.27 m, and 88.41 m, respectively, with the throat positioned at 68 percent, 71 percent, 74 percent, 77 percent, and 80 percent of total height above the base, as shown in Fig.

Current progress and comparative study of performance of the energy saving lighting devices: a review

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Abstract. In the present scenario, rare earth activated phosphor materials are important families in luminescent materials, which is useful in various applications. Over the past few years, rare earth activated phosphor has gained a lot of attention from the society and research community due to its exceptional properties such as low cost, eco-friendly behavior, solution processability, better PL properties, wider range of color tunability, color purity and defects tolerance etc. In this review, we first discuss energy saving lighting devices, after that, we have discussed those methods which are used to synthesize rare earth activated phosphors. We have been focusing on the modification and tailoring of the photoluminescence of phosphors, which may lead to the acquisition of new phosphors with tunable emission colors. In this review, we are discussed recently reported color tunable phosphors. At the end of the review, scope in lighting field, energy saving devices, and future scope also discussed.
Keywords: luminescent materials; color tunability; photoluminescence; energy saving devices

1. Introduction

In a last few year, the consumption of energy of light sources concerning with biasing of light source became one of the major problems for the entire world. Thus, the main demand of the world economy and the global environment is to saving energy and reduction in the carbon emission and also the environmental cycles deflecting gases. The main lighting sources are candescent and fluorescent. Due to the very low luminous efficacy of an incandescent light and very limited life-time, incandescent light source was not enough source that reference for the energy saving purposes. The fluorescent light is more efficient as compared to the incandescent but fluorescent tubes are fragile and bulky in form. Although fluorescent light has a typical color rendering index (CRI) values in the range of 80-90 CRI (CRI measures the ability of light source to reproduces colour of various object related to the sunlight) there is also problem of disposal due to the presence of mercury. In addition, because of low power or energy circulation and long lifespan, compact fluorescent lamps (CFLs) have emerged as one of the alternatives to incandescent lamps or bulbs. But CFLs require a high initial input current. 220V AC current is not sufficient to start fluorescent lamps. This requires an electronic explosion to achieve the required 600–1000 high voltage ignition spike. [1]. Also, CFLs cannot operate in humid indoor, refrigerators and microwave ovens. At the present time, the research society hopes that the widespread use of the LEDs source of light as compared to the traditional light sources will reduce power consumption and support the environment worldwide. The current lighting system promotes the development of LEDs for an additional lighting system in the modernization era. Noble prize in physics (2014) honours the researchers (I. Akasaki, H. Amano, s. Nakamura) of high efficient blue LEDs which offers not only energy saving lighting source but also accrete the interest of researchers toward LEDs

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Generation of Heat Transfer Coefficient Data in Regenerator for Stirling Cycle Refrigeration System

Narendra. N .Wadaskar, S.K.Choudhary, R.D.Askhedkar

Abstract: This paper attempts to generate the data of heat transfer coefficient for regenerator in stirling cycle refrigeration system on the basis of available experimental data. The available data is based on assumption that the mode of heat transfer in regenerator is conduction. This data does not produce optimal design of regenerator. Heat transfer coefficient must be modified to account for heat transfer in a regenerator by all three modes i.e conduction, convection & radiation. The data for heat transfer coefficient is generated on the basis of experimental results available in literature of performance of various stirling cycle refrigeration systems with different designs of regenerator. These models can be used to predict the performance of stirling cycle refrigerator system on the basis of dimensions of regenerator. The models are validated and optimized. This paper also presents the effect of variations in regenerator dimensions i.e. regenerator length, regenerator diameter, wiremeshsize, wire mesh arrangement, and wire mesh materialonHeat Transfer coefficient of regenerator.This data for heat transfer coefficient for regenerator of Stirling cycle refrigeration system can be used for optimizing design of regenerator of stirling cycle refrigeration system or predicting performance of stirling cycle system accurately. ,

Keywords: Regenerator, Performance, Regenerator length, Regenerator diameter; optimal value; Regenerator; Heat Transfer Coefficient.

I. INTRODUCTION

Presently vapour compression refrigeration systems are the most commonly used among all refrigeration systems. Cloro-Fluoro-Carbon (CFC) is used as a refrigerant in this system, this refrigerant CFC are most destructive to environment as they caused depletion of stratospheric ozone layer and contribute to the green house global warming. Our country is a party to Montreal protocol and Kyoto protocol. as per Montreal protocol The CFC group of refrigerant which cause ozone layer depletion should be banned by year 2010 and HCFC refrigerant do not cause ozone layer depletion but lead to global warming.kyotoprotocol is signed in 1997 and banned used of HCFC as a refrigerant to prevent global warming by year 2030.An alternate refrigeration system is working on non CFC, non HCFC and environment friendly refrigerant should be used.

1.1 DRAWBACKS OF PRESENT VAPOUR COMPRESSION REFRIGERATION SYSTEM

1. The heat transfer through refrigerants in VCRS is in the form of latent heat; so the refrigerants used in this system should have the property to change their phase at the desired pressure and temperature conditions. The refrigerant having the above properties is Cloro-Fluoro-Carbon (CFC). The CFC refrigerants have very high ozone depletion potential and also cause global warming.
2. High initial cost.
3. CFC refrigerant are hazardous for environment.

1.2 NECESSITY OF NEW REFRIGERATION SYSTEM

Chlorofluorocarbons (CFCs) have been used extensively in last five or six decades as refrigerants in the vapor compression cycle to produce refrigerating and air-conditioning effects. In recent years it has been found that CFCs are most destructive to the environment. It has been proved that CFCs are a major cause of depletion of the earth's stratospheric ozone layer and contribute to the greenhouse effect (global warming).

Presently large quantities of CFCs are being used as refrigerants in a number of refrigerating and air-conditioning systems. Though the refrigerant moves in a closed cycle, there are lots of leakages that escape to the atmosphere and cause destruction of the ozone layer. The most shocking fact about CFCs is that they have exceptionally long atmospheric life which, in certain cases, even extends to 100 years. This means that if CFC refrigerants are leaked today in the atmosphere, they will keep depleting ozone layer for the next 100 years.

When the CFC refrigerants are leaked from refrigeration or air-conditioning systems, they drift around the lower layers of the atmosphere. Slowly they start infiltrating into the upper layers of the atmosphere and soon reach the ozone rich stratosphere, where they undergo major chemical changes.

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Design & Analysis of Synchronous Reference Frame Based Shunt Active Power Filter Using Matlab Simulink

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Abstract *– This paper presents the implementations of a new control algorithm for a three-phase shunt active power filter to regulate load terminal voltage, eliminate harmonics, and improve the power factor in systems with an uncontrolled rectifier and an AC controller as the non-linear loads. Different methods are used to control the active power filters. The reference current to be detected from the load current and processed by the active power filter controller is obtained from control algorithms, of Synchronous Reference Frame Theory (SRF Theory). The voltage source inverter (VSI) is the core of an active power filter. The system is modeled and simulated using MATLAB/Simulink simulation package with a shunt active power filter to compensate for the harmonics current injected by the loads.*

Keywords- *Shunt Active Power Filter, Voltage Source Inverter, Current controller, Non linear load, Synchronous Reference Frame, Total Harmonic Distortion.*

INTRODUCTION

The increasing number of power electronics based equipment has gravely impacted the quality of electric power supply. Harmonics are caused by both industrial and domestic loads. At the same time, much of the equipment causing the disturbance is quite sensitive to the harmonics themselves. A shunt active power filter (SAPF) is a device that is connected in parallel to a group of loads. The shunt active power filter cancels the reactive and harmonic currents drawn by the load so as to make the supply current sinusoidal. Thus, the resulting total current drawn from the ac main becomes sinusoidal. Shunt active power filters is the device which generates the same amount of harmonic as generated by the load but 180o phase shifted. The advantage of active filtering is that it automatically adapts to changes in the network and load fluctuations. They can compensate for several harmonic orders, and are not affected by major changes in network characteristics, eliminating the risk of resonance between the filter and network impedances. Another advantage is that they take up very little space compared to traditional passive compensators. One of the key issues for a proper implementation of an active filter is to use a good control algorithm. Control strategies are applied to active power filters for determining the reference compensation currents to maintain sinusoidal source currents supplied to nonlinear loads according to IEEE-519 standards. The design of an active power filter becomes a challenging task for meeting the strict requirements of critical loads. The use of computers in the 978-1-4799-3421-8114/$31.00 ©2014 IEEE design stage helps in the better understanding of the circuit behavior, selection of component ratings; design of closed loop controllers, and also to arrive at optimum solutions. Simulation is a powerful way to reduce development time and ensure the proper fulfillment of critical steps. This paper proposes a model of a three-phase three-wire shunt active power filter based on synchronous reference frame control strategy for the extraction of reference

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Partial Shading, Effects and Solution for Photovoltaic String: A Review

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Abstract
The energy which is generated from natural resources that are abundantly available in nature is called Non-conventional energy sources. Light energy from sun, current of air, storage of water at hilltop, water movement inside sea, heat inside earth is the example of Non-conventional energy sources, etc. The solar energy is based on the conversion of sun rays into electrical voltage and current and it is the single-stage conversion of radiation into electricity. The photovoltaic (PV) power generation is a phenomenon in which photons from sun rays collide on PN junction of semi-conductor material and generates electrical energy. This solar power system uses the string of solar panels distributed over large areas. Power generated by these strings is affected by shadow initiated from different causes. The effect of these shadows is to reduce the power generated by the photovoltaic system. This paper explains the various effect of shadow on PV system and summarizes the different methods for improving the PV performance under shadow conditions. It also covers a wide review of the trends and state-of-art techniques indicated through research to curb the effects of partial shading.

Keywords
Solar Photovoltaic System, Bypass Diode, MPPT, Partial Shading, Topology, Reconfiguration.

Introduction

Amongst different non-conventional energy sources, photo-voltaic (PV) energy is an abundant and clean alternative for electrical power generation. It provides a number of benefits such as free fuel, flexible in terms of generation and requirement, low running cost, etc.[1-4]. Electrical Power generation by this technology can support to reduce environmental pollution and also a reduction in the consumption of conventional fuels. The solar insolation, atmospheric temperature, array configuration, and shading due to surrounding objects influence the performance of PV system. The momentary or constant shading on PV panel due to a passing cloud or neighboring objects not only causes energy loss in the conversion but also creates non-linearity on the I-V characteristics of PV system. [5]

The component of solar power generating systems are solar modules that convert solar radiations into electrical energy, power electronics grid inverter which converts dc electrical power into alternating electrical power. This grid inverter is interfacing device in-between grid and dc solar system. When a number of solar panels (modules) are connected in series it is called as solar string (array). The number of panels depends upon the system voltage requirement and such strings are connected in parallel to increase the current capacity of the whole system. Since all the modules are connected in series each module contributes to string voltage & also contributes to current. As they are connected in series the current generated by each module should be same but due to shadow effect the affected module may not do so. When the modules in the string experience multiple irradiation intensities, their generated power gets reduced [5-6]. If shading exists on the PV string, power output generated from string gets reduced. When one or more PV modules are in different operating conditions and operating with their individual maximum power points (MPPs) such a situation is called as (I–V) characteristics mismatch [6-7] and due to this mismatch there is a reduction in electrical power output of the by entire PV string. If anyone module of a PV array comes under shadow then that particular shaded module will be in reverse bias, which leads to power loss in the entire string. The bypass diode is a solution for avoiding this condition of the module. The bypass diodes are connected in anti-parallel with each module which bypasses the module during shadow period but it creates additional loss due to their ON state resistances during conduction [8]. The array topology defines the connection of different modules installed in different rows & columns. Different connections used in PV systems are Series-Parallel (SP), Total Cross Tied (TCT) and Bridge Linked (BL) [9-10].

In a PV string, current generated by the whole string is decided by the shading on the panels. The mostly shaded panel limits the current generated by the entire array. Various methods have been in literature to minimize effect.

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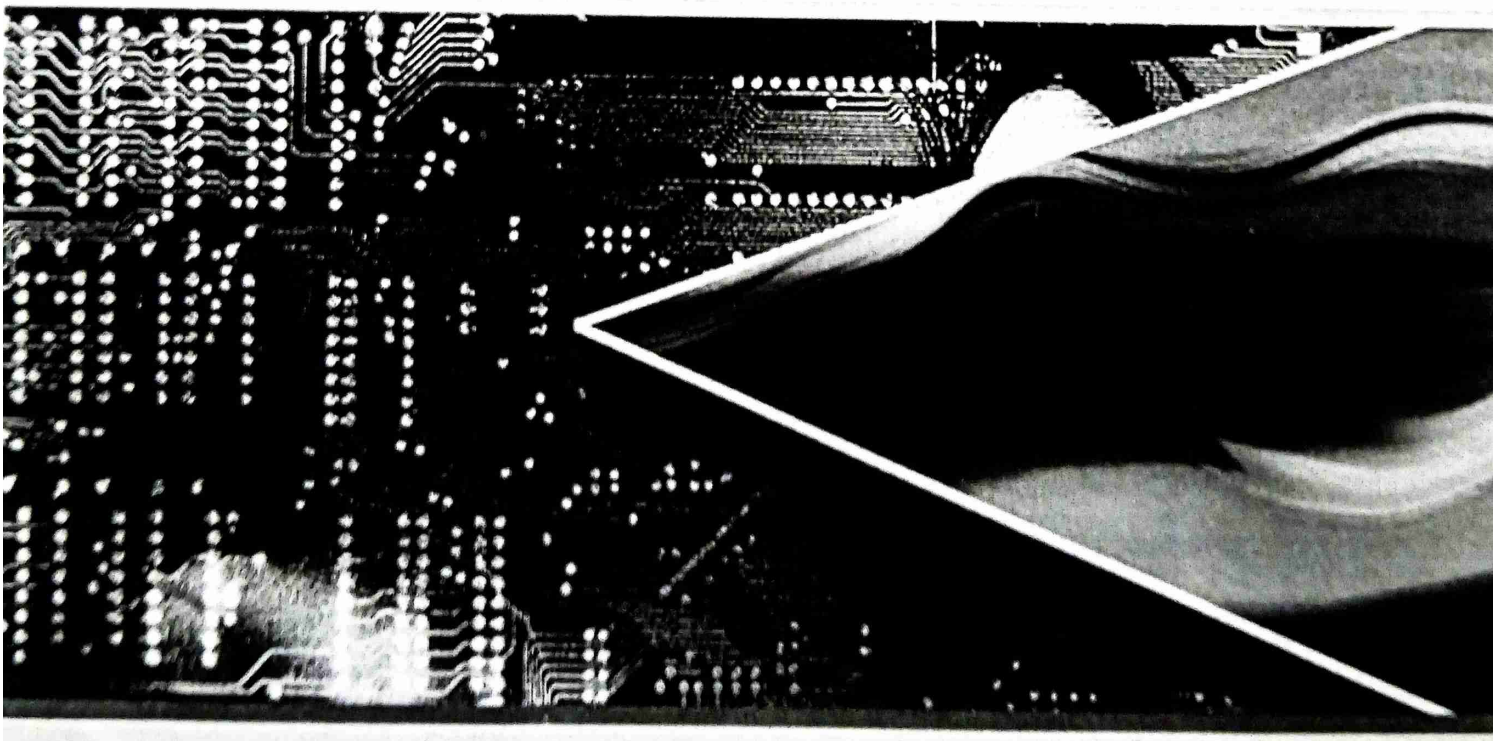

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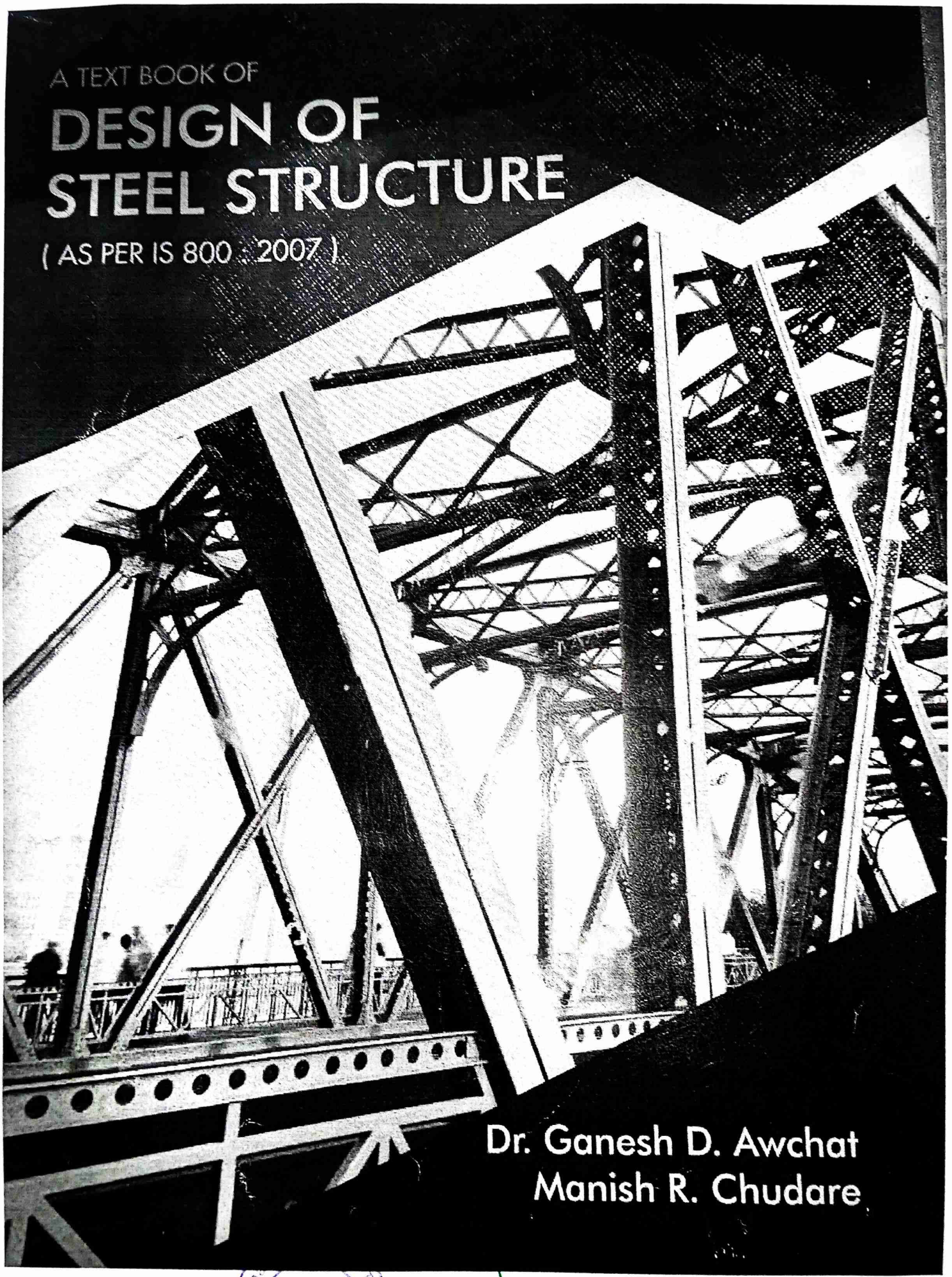

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System and Architecture

Abstract

High farad values of ultra capacitors (UCs) are associated with very large current during charging. This paper proposes numerous switching configurations within ultra capacitor

Energy Efficient VANET using Data Rerouting.

Prachi Jangale, Uday Gawali, Gayatri Hatwar, Prof. Manjusha Talmale
Department of CSE, GNI Nagpur Maharashtra

Abstract - This article proposes DIVERT, a distributed vehicular re-routing system for congestion avoidance. DIVERT offloads a large part of the rerouting computation at the vehicles, and thus, the re-routing process becomes practical in real-time. To take collaborative rerouting decisions, the vehicles exchange messages over vehicular ad hoc networks. DIVERT is a hybrid system because it still uses a server and Internet communication to determine an accurate global view of the traffic. In addition, DIVERT balances the user privacy with the re-routing effectiveness. The simulation results demonstrate that, compared with a centralized system, the proposed hybrid system increases the user privacy by 92% on average. In terms of average travel time, DIVERT's performance is slightly less than that of the centralized system, but it still achieves substantial gains compared to the no re-routing case. In addition, DIVERT reduces the CPU and network load on the server by 99.99% and 95%, respectively.

Keywords - VANET, Security, Energy Efficiency

I. INTRODUCTION

Vehicular ad hoc networks (VANETs) are a subgroup of mobile ad hoc networks (MANETs) with the distinguishing property that the nodes are vehicles like cars, trucks, buses and motorcycles. This implies that node movement is restricted by factors like road course, encompassing traffic and traffic regulations. Because of the restricted node movement it is a feasible assumption that the VANET will be supported by some fixed infrastructure that assists with some services and can provide access to stationary networks. The fixed infrastructure will be deployed at critical locations like slip roads, service stations, dangerous intersections or places well-known for hazardous weather conditions.

Nodes are expected to communicate by means of North American DSRC standard that employs the IEEE 802.11p standard for wireless communication. To allow communication with participants out of radio range, messages have to be forwarded by other nodes (multi-hop communication). Vehicles are not subject to the strict energy, space and computing capabilities restrictions normally adopted for MANETs. More challenging is the potentially very high speed of the nodes (up to 250 km/h) and the large dimensions of the VANET.

The primary VANET's goal is to increase road safety. To achieve this, the vehicles act as sensors and exchange warnings or – more generally – telematics information (like current speed, location or ESP activity) that enables the drivers to react early to abnormal and potentially dangerous situations like accidents, traffic jams or glaze. The information provided by other vehicles and stationary infrastructure might also be used for driver assistant systems like adaptive cruise control (ACC) or breaking assistants. In addition, authorized entities like police or firefighters should be able to send alarm signals and instructions e.g. to clear their way or stop other road users. Besides that, the VANET should increase comfort by means of value-added services like location based services or Internet on the road.

The recent adoption of the various 802.11 wireless standards has caused a dramatic increase in the number of wireless data networks. Today, wireless LANs are highly deployed and the cost for wireless equipment is continuing to drop in price. Currently, an 802.11 adapter or access point (AP) can be purchased for next to nothing. As a result of the high acceptance of the 802.11 standards, academia and the commercial sector are looking for other applicable solutions for these wireless technologies. Mobile ad hoc networks (MANET) are one area that has recently received considerable attention. One promising application of mobile ad hoc networks is the development of vehicular ad hoc networks (VANET).

A MANET is a self-forming network, which can function without the need of any centralized control. Each node in an ad hoc network acts as both a data terminal and a router. The nodes in the network then use the wireless medium to communicate with other nodes in their radio range. A VANET is effectively a subset of MANETs. The benefit of using ad hoc networks is it is possible to deploy these networks in areas where it isn't feasible to install the needed infrastructure. It would be expensive and unrealistic to install 802.11 access points to cover all of the roads in the United States. Another benefit of ad hoc networks is they can be quickly deployed with no administrator involvement. The administration of a large scale vehicular network would be a difficult task. These reasons contribute to the ad hoc networks being applied to vehicular environments. Traffic fatalities are one of the leading causes of death in the United States. The Federal Communications Commission (FCC), realizing the problem of traffic fatalities in the US dedicated 75 MHz of the frequency spectrum in the range 5.850 to 5.925 GHz to be used for vehicle to vehicle and vehicle to roadside communication. The 5.9 GHz spectrum was termed Dedicated Short Range Communication (DSRC) and is based on a variant of 802.11a. Seven channels of 10 MHz each make up DSRC, with six of the channels being used for services and one channel for control. The goal of the project is to enable the driver of a vehicle to receive information about their surrounding environment. The control channel is used to broadcast safety messages e.g. to alert the driver of potentially hazardous road conditions. The control channel is also used to announce the services that are available. If vehicle finds a service of interest on the control channel, it then switches to one of the service

Efficient Routing in Vehicular Adhoc Network: A Review

Manisha Doye, Heena Patankar, Shubhangi Kayalkar, Prof. Manjusha Talmale
Department of CSE, GNI Nagpur Maharashtra

Abstract - Vehicular ad hoc networks (VANETs) are a subgroup of mobile ad hoc networks (MANETs) with the distinguishing property that the nodes are vehicles like cars, trucks, buses and motorcycles. This implies that node movement is restricted by factors like road course, encompassing traffic and traffic regulations. Centralized solutions for vehicular traffic re-routing to alleviate congestion suffer from two intrinsic problems: scalability, as the central server has to perform intensive computation and communication with the vehicles in real-time; and privacy, as the drivers have to share their location as well as the origins and destinations of their trips with the server. In this paper we will review different work done by various researchers in the field of VANET.

Keywords - VANET, Security, Energy Efficiency

I. INTRODUCTION

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Research paper

Twitter based Analytics for Business Footprints of the Banking Sector in India

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Abstract

Twitter is one of the world's most popular social media platforms with over 330 million users. Many businesses use Twitter to reach and connect with their customers. There are a number of advantages that using twitter can bring to a business. Some of the prominent advantages of tweeter platform to the businesses are the reach to broad spectrum of customers worldwide, delivery of customer services, establishment of brand identity, gathering customer feedback etc. The best part of it is that these advantages are at the free of cost. This paper proposes a system, that can help the banking sector in India, to compare their impression on the general customer by analyzing the tweets by the banking organizations and the replies by their customers The analysis includes the tweet handles by two nationalized banks (State Bank of India and Punjab National Bank) and two private sector banks (ICICI and HDFC).

Keywords: *Big data applications, Data mining, Data visualization, Machine learning algorithms, Natural language processing, Sentiment Analysis, Social computing, Social Intelligence, Twitter.*

1. Introduction

Twitter is one of the biggest marketing platforms for any business in the world. With faster digitization in the banking sector of India, twitter has become one of the come popular mechanisms for banks to promote their products, offers and services to the customers. For customers the twitter has become an easy and quick way to share their feedback and comments from anywhere in the world.

Although the mechanism to interconnect between banking sector and customer has become easy, to extract the sentiment of the customers and their perspective towards the products is still a challenge to the banking businesses. Often in the business, the offerings and responses to the competitor organization is very crucial for further planning.

This ideation paper proposes a system that provides a twitter based approach towards understanding the baking market from customers view point and improve the bank's brand, design future marketing strategies and campaigns format.

- Abbreviations and Acronyms

API – Application Programming Interface
DB – Database
NLP – Natural Language Processing

2. Related Work

Strategic use of social media data not only impacts the way in which the financial institutions market their product and services, but also on how they conduct competitive analysis for product and service design. Banks have established their presence on social media like Facebook, Twitter, and LinkedIn. Twitter is a massive social media which enables microblogging through tweets which are public. Every word, photo, video and follower can have an impact. There is huge volume and variety of data on twitter which can be analyzed using the big data approaches suited for financial sector. [1,2]

Additionally, Twitter API's are available for publically practitioners and researchers which can aid in data analysis of twitter data. [1]. each account on Twitter is associated with a unique id and a unique Twitter handle which can be used to retrieve the profile and tweets for data analysis.

Twitter data analytics was researched in the past on a variety of domain like Stock market [4], supply Chain [5], Hospitality [6] etc. Tweets extraction was done for a span varying from 3 to 12 months by different authors. Tweet is an unstructured data, which needs to be filtered by using various Natural language processing techniques like stemming, stop word and proper noun removal [7] to obtain the useful data.

The most important phase of this research lies in mining the data for extracting knowledge for gaining deep insights into the tweets for customer behavior, feedback on products and complaints.

Sentiment analysis will find out the sentiments of the costumer to be positive, negative or neutral. Most of the literature uses lexicon based approach, but this requires a good and powerful dictionary which is not always available. Semantics of the text also plays a major role when performing sentiment analysis, which is usually ignored. Researchers have found that increased accuracy can be achieved if semantics are incorporated. [8]. A bunch of research have been done on prediction of the stock market data based on the sentiment analysis and other algorithms like - SOFNN (Self Organizing Fuzzy Neural Networks) [10]

A variety of NLP algorithms are used for clustering like K-mean, hash tagging, TF-IDF [11] and then context analysis should be carried out on the tweets for understanding the correlation, aggregation and association form the tweets. Recent focus is on the topic Spatio-temporal clustering of social media data[12] .

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Personalization of Search Engine by Using Cache based Approach

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ABSTRACT

As profound web develops at a quick pace, there has been expanded enthusiasm for strategies that assistance effectively find profound web interfaces. Be that as it may, because of the extensive volume of web assets and the dynamic idea of profound web, accomplishing wide scope and high productivity is a testing issue. In this venture propose a three-organize structure, for productive reaping profound web interfaces. In the principal organize, web crawler performs website based hunting down focus pages with the assistance of web indexes, abstaining from going to countless. To accomplish more precise outcomes for an engaged creep, Web Crawler positions sites to organize exceedingly pertinent ones for a given theme. In the second stage the proposed framework opens the pages inside in application with the assistance of Jsoup API and preprocess it. At that point it plays out the word include of inquiry website pages. In the third stage the proposed framework performs recurrence examination in view of TF and IDF. It additionally utilizes a mix of TF*IDF for positioning website pages. To wipe out inclination on going to some very applicable connections in shrouded web registries, In this undertaking propose plan a connection tree information structure to accomplish more extensive scope for a site. Undertaking trial comes about on an arrangement of delegate areas demonstrate the nimbleness and precision of our proposed crawler structure, which productively recovers profound web interfaces from extensive scale locales and accomplishes higher reap rates than different crawlers utilizing Naïve Bayes algorithms.

KEYWORDS: *personalization; search engine; user interests; search, cache, web crawlers, frameworks;*

I. INTRODUCTION

The profound (or shrouded) web alludes to the substance lie behind accessible web interfaces that can't be listed via seeking motors. In view of extrapolations from an investigation done at University of California, Berkeley, it is assessed that the profound web contains around 91,850 terabytes and the surface web is just around 167 terabytes in 2003. Later investigations assessed that 1.9 petabytes were come to and 0.3 petabytes were expended worldwide in 2007. An IDC report appraises that the aggregate of every computerized datum made, duplicated, and expended will achieve 6 petabytes in 2014. A noteworthy part of this gigantic measure of information is assessed to be put away as organized or social information in web databases — profound web makes up around 96% of all the substance on the Internet, which is 500-550 times bigger than the surface web. This information contains a tremendous measure of profitable data and elements, for example, Infomine, Clusty, Books in Print might be keen on building a list of the profound web sources in a given space, (for example, book). Since these elements can't get to the exclusive web lists of web search tools (e.g., Google and Baidu), there is a requirement for a proficient crawler that can precisely and rapidly investigate the profound web databases.

It is trying to find the profound web databases, since they are not enlisted with any web indexes, are normally scantily appropriated, and keep continually evolving. To address this issue, past work has proposed two kinds of crawlers, nonspecific crawlers and centered crawlers. Bland crawlers, bring every accessible shape and can't center around a particular point. Centered crawlers, for example, Form-Focused Crawler (FFC) and Adaptive Crawler for Hidden-web Entries (ACHE) can consequently seek online databases on a particular point. FFC is composed with connection, page, and shape classifiers for centered creeping of web frames, and is stretched out by ACHE with extra parts for frame separating and versatile connection student.

The connection classifiers in these crawlers assume a significant part in accomplishing higher creeping effectiveness than the best-first crawler. In any case, these connection classifiers are utilized to foresee the separation to the page containing accessible structures, which is hard to appraise, particularly for the deferred advantage joins (interfaces in the end prompt pages with shapes). Thus, the crawler can be wastefully prompted pages without focused structures. Other than proficiency, quality and scope on important profound web sources are additionally testing. Crawler must deliver a substantial amount of fantastic outcomes from the most pertinent substance sources. For surveying source quality, Source Rank positions the outcomes from the chose sources by figuring the assertion between them.

Web Testing instruments are for the most part used to accumulate execution and dependability data about the web application running on a specific server.
Web Testing is isolated into three fundamental classes:

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Improving Personalization of Search Engines using Cache based System

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Abstract:- As profound web develops at a quick pace, there has been expanded enthusiasm for methods that assistance productively find profound web interfaces. Be that as it may, because of the huge volume of web assets and the dynamic idea of profound web, accomplishing wide scope and high productivity is a testing issue. In this undertaking propose a three-stage framework, for productive collecting profound web interfaces. In the main stage, web crawler performs website based looking for focus pages with the assistance of web indexes, abstaining from going to countless. To accomplish more precise outcomes for an engaged creep, Web Crawler positions sites to organize very significant ones for a given point. In the second stage the proposed framework opens the website pages inside in application with the assistance of Jsoup API and preprocess it. In this task propose plan a connection tree information structure to accomplish more extensive scope for a site. Undertaking test comes about on an arrangement of agent areas demonstrate the dexterity and precision of our proposed crawler framework, which proficiently recovers profound web interfaces from substantial scale destinations and accomplishes higher reap rates than different crawlers utilizing Naïve Bayes algorithm.

Keywords: *personalization; search engine; user interests; search, histories, Jsoup, API, framework, SEO.*

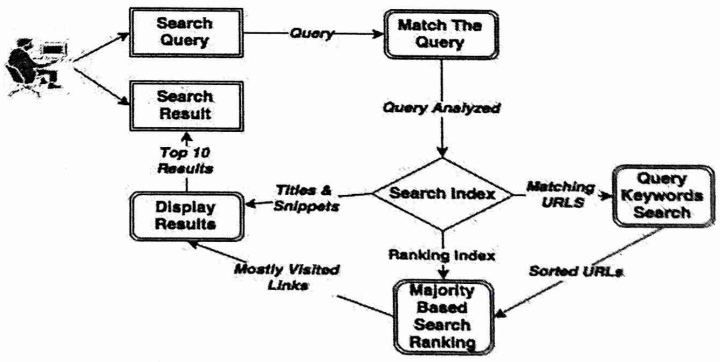
I. INTRODUCTION

The significant (or covered) web suggests the substance lie behind open web interfaces that can't be recorded through looking engines. In light of extrapolations from an examination done at University of California, Berkeley, it is assessed that the significant web contains around 91,850 terabytes and the surface web is simply around 167 terabytes in 2003. Later examinations assessed that 1.9 petabytes were come to and 0.3 petabytes were consumed worldwide in 2007. An IDC report evaluates that the total of each and every electronic datum made, reproduced, and exhausted will accomplish 6 petabytes in 2014. A basic piece of this monster measure of data is surveyed to be secured as sorted out or social data in web databases — significant web makes up around 96% of all the substance on the Internet, which is 500-550 times greater than the surface web. These data contain an enormous measure of productive information and components, for instance, Infomine, Clusty, Books In Print may be excited about building a record of the significant web sources in a given space, (for instance, book). Since these components can't get to the selective web records of web lists (e.g., Google and Baidu), there is a prerequisite for a beneficial crawler that can accurately and quickly explore the significant web databases.

It is trying to find the profound web databases, since they are not enrolled with any web crawlers, are typically meagerly conveyed, and keep always showing signs of change. To address this issue, past work has proposed two kinds of crawlers, nonexclusive crawlers and centered crawlers. Nonexclusive crawlers, get every accessible frame and can't center around a particular point. Centered crawlers, for example, Form-Focused Crawler (FFC) and Adaptive Crawler for Hidden-web Entries (ACHE) can naturally seek online databases on a particular point. FFC is composed with connection, page, and shape classifiers for centered slithering of web frames, and is reached out by ACHE with extra parts for shape separating and versatile connection student.

II. DIAGRAMS

1. STUDY ON PERSONALIZATION OF THE SEARCH ENGINE



Personalization of web crawler is a subject centered by different web look for instruments, and is another propensity of web crawler movement. The intranet web searcher structure has four limit modules: information recuperation module, requesting module, looking module and human-PC affiliation interface.

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Internet of Things (IOT) Based Underground Cable Fault Detector using ATmega Microcontroller

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Abstract: **A fault is an unexpected change of the system functionality, which causes deviation of a plant behavior from that which is specified it .The problem of detect the location of fault in transmission line has become complex and expensive which depended on The current mechanism used to detect the fault in power transmission lines approximated by the calculation of the impedance obtained from voltage and current data. The works of this is to find solution of how detected and located of fault in the transmission line Diagnosing fault source is difficult and entire cable should be taken out from the ground to check and fix faults. The project work is intended to detect the location of fault in underground cable lines from the base station in km using a micro-controller 8051. To locate a fault in the cable, the cable must be tested for faults. This prototype uses the simple concept of Ohms law. The current would vary depending upon the length of fault of the cable. In the urban areas, the electrical cables run in underground instead of overhead lines. Whenever the fault occurs in underground cable it is difficult to detect the exact location of the fault for process of repairing that particular cable. The proposed system finds the exact location of the fault. The prototype is modeled with a set of resistors representing cable length in km and fault creation is made by a set of switches at every known distance to cross check the accuracy of the same. In case of fault, the voltage across series resistors changes accordingly, which is then fed to an ADC to develop precise digital data to a programmed 8051 IC that further displays fault location in distance. The fault occurring distance, phase, and time is displayed on a 16X2 LCD interfaced with the micro-controller. IOT is used to display the information over Internet using the Wi-Fi module ESP8266.A web page is created using HTML coding and the information about occurrence of fault is displayed in a web page. At the end of research we have acquired results that it can be determined where the error with high accuracy.**

Index Terms: **Underground Cable, Fault Location, Location Methods, Micro-controller, web page, IOT.**

I. INTRODUCTION

In an electric power system, a fault is detected by any abnormal electric current follow. For example, a short circuit is a fault in which current bypasses the normal load. An open-circuit fault occurs if a circuit is interrupted by some failure. In three-phase systems, a fault may involve one or more phases and ground, or may occur only between phases. In a "ground fault" or "earth fault", charge flows into the earth. The prospective short circuit current of a fault can be calculated for power systems. In power systems, protective devices detect fault conditions and operate circuit breakers and other devices to limit the loss of service due to a failure. In a poly phase system, a fault may affect all phases equally which is also called symmetrical fault. If only some phases are affected, the resulting asymmetrical fault becomes more complicated to analyze because the simplifying assumption of equal current magnitude in all phases is no longer applicable. The analysis of this type of fault is often simplified by using methods such as symmetrical components.

A symmetric or balanced fault affects each of the three phases equally. In transmission line faults, roughly 5% are symmetric this is in contrast to an asymmetrical fault, where the three phases are not affected equally. An asymmetric or unbalanced fault does not affect each of the three phases equally Power transmission and distribution lines are the vital links that achieve the essential continuity of service of electrical power to the end users. Transmission lines connect the generating stations and load centers. Faults are caused either by insulation failures and conducting path failures. Most of the faults on transmission and distribution lines are caused by over voltage due to lighting and switching surges or by external conducting objects falling on over head lines. Birds, tree branches may also cause faults on over head lines. Other causes of faults on over head lines are direct lightning strokes, aircraft, snakes, ice and snow loading, storms, earthquakes, creepers etc. In the case of cables, transformers, generators the causes may be failure of solid insulation due to aging, heat, moisture or over voltage, accidental contact with earth.

II. TYPES OF FAULTS IN CABLE

1.1.1. Open Circuit Fault:

When there is a break in the conductor of the cable, it is called open circuit fault of the cable. The open circuit fault can be checked by meager. For this purpose, the three conductors of the 3-core cable at the far end are shorted and earthed. Then resistance between each conductor and earth is measured by a meager. The meager will indicate zero resistance in the circuit of the conductor that is not broken. However, if the conductor is broken, the meager will indicate infinite resistance in its circuit.

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A Review on Smart Ac Using Peltier Module

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Abstract: *The presently in use air conditioning system produces cooling impact by refrigerants like Freon, Ammonia etc...using these refrigerants will get maximum output however, one among the main disadvantages is harmful gas emission and global warming, this problem can be overcome by using thermoelectric module air conditioner and their by protecting the environment. If, standard vapour compression type of air conditioner presently employed in vehicle is replaced with this one with an arrangement for its placement. It would reduce the overall weight of vehicle and increase fuel economy. It will have a smart functioning like when we want to control it we just need to give voice command to our android phone like "ok Google turn on my AC ".same likewise for turned it off". It is IOT based and we can control it using remote control too. Thermoelectric cooling system have benefits over standard devices like, compact in size, light weight, high reliability, no mechanical moving element and no operating fluid.*

Keywords: *Peltier module, thermoelectric air-conditioner, Vehicle, Global-warming, IOT based.*

I. Introduction

Air conditioning is one of the major consumers of electrical energy which causes energy shortage. It is also one of the main causes of global warming. We know how beneficiary air conditioner is. It increases the efficiency of human being, provide us with cool air and comfortless. Besides all these air conditioners have some disadvantages. Humans may suffer from headaches, nasal issues etc. In extreme cases pneumonia and asthma attacks can also develop. These air conditioners don't affect only humans but also, they indeed contribute to greenhouse effect. So, the best way to get rid of this is by making use of natural resource rather than using electrical energy. So, the best alternate is thermal energy which uses Peltier effect which has the ability of cooling the specific area. This model does not need any compressor, primer moving parts etc. The main objective of this project is to deliver a low-cost air-conditioning system which works on Peltier module that can be used at remote areas where people cannot afford high cost air conditioning system.

II. Literature survey

[1] Allwin Jose, Alan D'souza, Sarvesh Dandekar, Jitesh Karamchandani, Pavan Kulkarni, "Air Conditioner victimization Peltier Module", 2015 International Conference on Technologies for property Development (ICTSD-2015), Feb. 04 – 06, 2015, Mumbai, Asian country 978-1-4799-8187-8/15/$31.00 ©2015 IEEE

In this paper author gives a picture of a conceptual design of an air conditioner using Peltier modules to achieve desired amount of cooling. The appearance of this thermo electrical variety of air conditioning resembles a standard window air conditioning. This brings the simplicity in construction. The air conditioning is meant to require up the cooling load in volume of house as in typical vehicles like cars. If typical vapour compression style of air con presently utilised in vehicles is replaced with this one with an appointment for its placement, it would reduce the total weight of vehicle and increase fuel economy.

[2] Pavan Attavane, Arjun G B, Rajath Radhakrishna, Santhosh Rao, "Jadav Solar powered portable food warmer and cooler based on peltier effect" 2nd IEEE International Conference On Recent Trends in Electronics Information & Communication Technology (RTEICT), May 19-20, 2017, India 978-1-5090-3704-9/17/$31.00 © 2017 IEEE1975

In this paper, we aim at presenting a preponderant, propitious and a simple solution for performing both cooling (Refrigeration) and heating effects in a more efficient manner by the utilization of solar energy. The Peltier module is more efficient, static and easy to handle. It is reliable and eco- friendly. A prototype has

Detection of Diabetic Retinopathy Diseases using Image Processing

[1]Saurabh Badhel,[2]Pranay Gornule,[3]Mayuri Barsagade,[4]Anita Dongre,[5]Prof. Reena Thakur
[1,2,3,4,5]*Department of Computer Science and Engg. BIT MH Wardha*

Abstract-Here we address the detection of Hemorrhages and micro aneurysms in color fundus images. In pre-Processing we separate red, green, blue color channel from the retinal images. The green channel will pass to the further process. The green color plane was used in the analysis since it shows the best contrast between the vessels and the background retina. Then we extract the GLCM(Gray Level Co-Occurrence Matrix) feature. In the GLCMs, several statistics information are derived using the different formulas. These statistics provide information about the texture of an image. Such as Energy, Entropy, Dissimilarity, Contrast, Inverse difference, correlation Homogeneity, Auto correlation, Cluster Shade Cluster Prominence, Maximum probability, Sum of Squares will be calculated for texture image. After feature Extraction, we provide this feature to classifier. Finally it will predict about the retinal whether it is hemorrhages or micro aneurysms . After predicting the about the retinal image we will localize the affected place. For segmenting the localized place we will use adaptive thresholding segmentation. .

Keywords- *GLCM; Fundus; Hemorrhages; Micro aneurysms.*

I. INTRODUCTION

A. Images and pictures

As we mentioned in the preface, human beings are predominantly visual creatures: we rely heavily on our vision to make sense of the world around us. We not only look at things to identify and classify them, but we can scan for differences, and obtain an overall rough feeling for a scene with a quick glance. Humans have evolved very precise visual skills: we can identify a face in an instant; we can differentiate colors; we can process a large amount of visual information very quickly. However, the world is in constant motion: stare at something for long enough and it will change in some way. Even a large solid structure, like a building or a mountain, will change its appearance depending on the time of day (day or night); amount of sunlight (clear or cloudy), or various shadows falling upon it. We are concerned with single images: snapshots, if you like, of a visual scene. Although image processing can deal with changing scenes, we shall not discuss it in any detail in this text. For our purposes, an image is a single picture which represents something. It may be a picture of a person, of people or animals, or of an outdoor scene, or a microphotograph of an electronic component, or the result of medical imaging. Even if the picture is not immediately recognizable, it will not be just a random blur.

II. ASPECTS OF IMAGE PROCESSING

It is convenient to subdivide different image processing algorithms into broad subclasses. There are different algorithms for different tasks and problems, and often we would like to distinguish the nature of the task at hand.

A. Image enhancement: This refers to processing an image so that the result is more suitable for a particular application.

B. Image restoration: This may be considered as reversing the damage done to an image by a known cause.

C. Image segmentation: This involves subdividing an image into constituent parts, or isolating certain aspects of an image.

These classes are not disjoint; a given algorithm may be used for both image enhancement or for image restoration. However, we should be able to decide what it is that we are trying to do with our image: simply make it look better (enhancement), or removing damage (restoration).

An image processing task

We will look in some detail at a particular real-world task, and see how the above classes may be used to describe the various stages in performing this task. The job is to obtain, by an automatic process, the postcodes from envelopes. Here is how this may be accomplished:

D. Acquiring the image: First we need to produce a digital image from a paper envelope. This can be done using either a CCD camera, or a scanner.

E. Preprocessing: This is the step taken before the _major_ image processing task. The problem here is to perform some basic tasks in order to render the resulting image more suitable for the job to follow. In this case it may involve enhancing the contrast, removing noise, or identifying regions likely to contain the postcode.

F. Segmentation: Here is where we actually get the postcode; in other words we extract from the image that part of it which contains just the postcode.

G. Representation and description: These terms refer to extracting the particular features which allow us to differentiate between objects. Here we will be looking for curves, holes and corners which allow us to distinguish the different digits which constitute a postcode.

A Survey on Retinopathy Disease Detection using Image Processing

[1]Saurabh Badhel,[2]Vedanti Balwaik,[3]Vaishnavi Ambhorkar, [4]Prof. Reena Thakur
[1,2,3,4]Department of Computer Science and Engg. GNIT Nagpur India

Abstract-Here we address the study on detection of Hemorrhages and microaneurysms in color fundus images. In pre-Processing we find different separate red, green, blue color channel from the retinal images. The green channel will pass to the further process. The green color plane was used in the analysis since it shows the best contrast between the vessels and the background retina. Then we extract the GLCM(Gray Level Co-Occurance Matrix) feature. We made a survey of different author who have done their work in this field. We also compare the different data mining techniques that are required to perform detection in proper way.

Keywords-*GLCM; Fundus; Hemorrhages; Microaneurysms.*

I. INTRODUCTION

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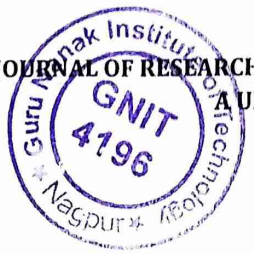
D. Representation and description: These terms refer to extracting the particular features which allow us to differentiate between objects. Here we will be looking for curves, holes and corners which allow us to distinguish the different digits which constitute a postcode.

E. Recognition and interpretation: This means assigning labels to objects based on their descriptors (from the previous step), and assigning meanings to those labels. So we identify particular digits, and we interpret a string of four digits at the end of the address as the postcode.

IV. LITERATURE SURVEY

The role of hemorrhage and exudates detection in automated grading of diabetic retinopathy

Automated grading has the potential to improve the efficiency of diabetic retinopathy screening services. While disease/no disease grading can be performed using only micro aneurysm detection and image-quality assessment, automated recognition of other types of lesions may be advantageous. This study investigated whether inclusion of



Principal
Guru Nanak Institute of Technology

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A Survey on Energy Efficient Routing in UWSN

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Abstract-Underwater wireless sensor networks (UWSNs) have been showed as a promising technology to monitor and explore the oceans in lieu of traditional undersea wireline instruments. Nevertheless, the data gathering of UWSNs is still severely limited because of the acoustic channel communication characteristics. One way to improve the data collection in UWSNs is through the design of routing protocols considering the unique characteristics of the underwater acoustic communication and the highly dynamic network topology. In this paper, we propose the GEDAR routing protocol for UWSNs. GEDAR is an anycast, geographic and opportunistic routing protocol that routes data packets from sensor nodes to multiple sonobuoys (sinks) at the sea's surface. When the node is in a communication void region, GEDAR switches to the recovery mode procedure which is based on topology control through the depth adjustment of the void nodes, instead of the traditional approaches using control messages to discover and maintain routing paths along void regions.

Keywords-*Underwater WSN; GEDAR.*

I. INTRODUCTION

OCEANS represent more than 2/3 of the Earth's surface.These environments are extremely important for human life because their roles on the primary global pro-duction, carbon dioxide (CO2) absorption and Earth's cli-mate regulation, for instance. In this context, underwater wireless sensor networks (UWSNs) have gained the attention of the scientific and industrial communities due their potential to monitor and explore aquatic environ-ments. UWSNs have a wide range of possible applications such as to monitoring of marine life, pollutant content, geo-logical processes on the ocean floor, oilfields, climate, and tsunamis and seaquakes; to collect oceanographic data, ocean and offshore sampling, navigation assistance, and mine recognition, in addition to being utilized for tactic surveillance applications .Acoustic communication has been considered as the only feasible method for underwater communication in USWNs.High frequency radio waves are strongly absorbed in water and optical waves suffer from heavy scattering and are restricted to short-range-line-of-sight applications. Nevertheless, the underwater acoustic channel introduces large and variable delay as compared with radio frequency (RF) communication, due to the speed of sound in water that is approximately 1:5 103m/s (five orders of magnitude lower than the speed of light (3 108 m/s)); temporary path loss and the high noise resulting in a high bit error rate; severely limited bandwidth due to the strong attenua-tion in the acoustic channel and multipath fading; shadow zones; and the high communication energy cost, which is of the order of tens of watts.In this context, geographic routing paradigm seems a promising methodology for the design of routing protocols for UWSNs . Geographic routing, also called of position-based routing, is simple and scalable. It does not require the establishment or maintenance of complete routes to the destinations. Moreover, there is no need to transmit routing messages to update routing path states. Instead, route decisions are made locally. At each hop, a locally optimal next-hop node which is the neighbor clos-est to the destination, is selected to continue forwarding the packet. This process proceeds until the packet reaches its destination. Geographic routing can work together with opportunistic routing (OR) (geo-opportunistic routing) to improve data delivery and reduce the energy consumption relative to packet retransmissions.Using opportunistic routing paradigm, each packet is broadcast to a forwarding set composed of neighbors. In this set, the nodes are ordered according to some metric,defining their priorities. Thus, a next-hop node in the for-warding set that correctly received the packet, will forward it only whether the highest priority nodes in the set failed into do so. The next-hop forwarder node will cancel ascheduled transmission of a packet if it hears the transmis-sion of that packet by a higher priority node. In OR paradigm, the packet will be retransmitted only if none of the neighbors in the set receives it.The main disadvantage of geo-opportunistic routing isthe communication void region problem. The communication void region problem occurs whenever the current forwarder node does not have a neighbor node closest to the destination than itself, i.e., the current forwarder node is the closest one to the destination . The node located in a communication void region is calledvoid node. Whenever a packet gets stuck in a void node, the routing protocol should attempt to route the packet using some recovery method or it should be discarded.

In this paper, we propose the GEographic and opportu-nistic routing with Depth Adjustment-based topology con-trol for communication Recovery over void regions (GEDAR) routing protocol. GEDAR utilizes the location information of the neighbor nodes and some known sono-buoys to select a next-hop forwarder set of neighbors to con-tinue forwarding the packet towards the destination. To avoid unnecessary transmissions, low priority nodes sup-press their transmissions whenever they detect that the same packet was sent by a high priority node. The most important aspect of the GEDAR is its novel void node recovery methodology. Instead of the traditional message-based void node recovery procedure, we propose a void node recovery depth adjustment based

Efficient Rerouting in Underwater Wireless Sensor Network through Void Node Discovery and AODV Routing

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[1,2,3,4]*Department of Computer Science and Engineering GNIT Nagpur Maharashtra, India*

Abstract-Underwater wireless sensor networks (UWSNs) have been showed as a promising technology to monitor and explore the oceans in lieu of traditional undersea wireline instruments. Nevertheless, the data gathering of UWSNs is still severely limited because of the acoustic channel communication characteristics. One way to improve the data collection in UWSNs is through the design of routing protocols considering the unique characteristics of the underwater acoustic communication and the highly dynamic network topology. In this paper, we propose the GEDAR routing protocol for UWSNs. GEDAR is an anycast, geographic and opportunistic routing protocol that routes data packets from sensor nodes to multiple sonobuoys (sinks) at the sea's surface. When the node is in a communication void region, GEDAR switches to the recovery mode procedure which is based on topology control through the depth adjustment of the void nodes, instead of the traditional approaches using control messages to discover and maintain routing paths along void regions

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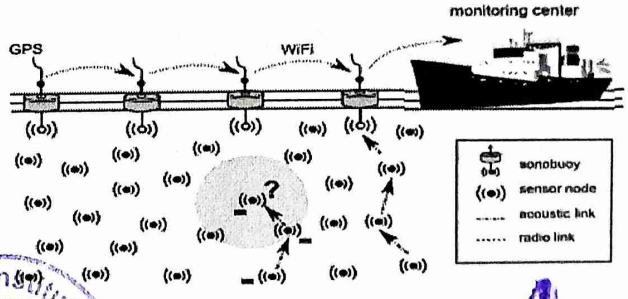
I. INTRODUCTION

OCEANS represent more than 2/3 of the Earth's surface. These environments are extremely important for human life because their roles on the primary global production, carbon dioxide (CO2) absorption and Earth's cli-mate regulation, for instance. In this context, underwater wireless sensor networks (UWSNs) have gained the attention of the scientific and industrial communities due their potential to monitor and explore aquatic environments. UWSNs have a wide range of possible applications such as to monitoring of marine life, pollutant content, geo-logical processes on the ocean floor, oilfields, climate, and tsunamis and seaquakes; to collect oceanographic data, ocean and offshore sampling, navigation assistance, and mine recognition, in addition to being utilized for tactic surveillance applications .Acoustic comm.
unication has been considered as the only feasible method for underwater communication in USWNs.High frequency radio waves are strongly absorbed in water and optical waves suffer from heavy scattering and are restricted to short-range-line-of-sight applications. Nevertheless, the underwater acoustic channel introduces large and variable delay as compared with radio frequency (RF) communication, due to the speed of sound in water that is approximately 1:5 103m/s (five orders of magnitude lower than the speed of light (3 108 m/s)); temporary path loss and the high noise resulting in a high bit error rate; severely limited bandwidth due to the strong attenuation in the acoustic channel and multipath fading; shadow zones; and the high communication energy cost, which is of the order of tens of watts.In this context, geographic routing paradigm seems a promising methodology for the design of routing protocols for UWSNs . Geographic routing, also called of position-based routing, is simple and scalable. It does not require the establishment or maintenance of complete routes to the destinations. Moreover, there is no need to transmit routing messages to update routing path states. Instead, route decisions are made locally. At each hop, a locally optimal next-hop node which is the neighbor clos-est to the destination, is selected to continue forwarding the packet. This process proceeds until the packet reaches its destination. Geographic routing can work together with opportunistic routing (OR) (geo-opportunistic routing) to improve data delivery and reduce the energy consumption relative to packet retransmissions. Using opportunistic routing paradigm, each packet is broadcast to a forwarding set composed of neighbors. In this set, the nodes are ordered according to some metric,defining their priorities. Thus, a next-hop node in the for-warding set that correctly received the packet, will forward it only whether the highest priority nodes in the set failed into do so. The next-hop forwarder node will cancel ascheduled transmission of a packet if it hears the transmission of that packet by a higher priority node. In OR paradigm, the packet will be retransmitted only if none of the neighbors in the set receives it.The main disadvantage of geo-opportunistic routing isthe communication void region problem. The communication void region problem occurs whenever the current forwarder node does not have a neighbor node closest to the destination than itself, i.e., the current forwarder node is the closest one to the destination . The node located in a communication void region is calledvoid node. Whenever a packet gets stuck in a void node, the routing protocol should attempt to route the packet using some recovery method or it should be discarded.

II. PROPOSED METHODOLOGY



Efficient Rerouting in Underwater Wireless Sensor Network through Void Node Discovery

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Abstract-Underwater wireless sensor networks (UWSNs) have been showed as a promising technology to monitor and explore the oceans in lieu of traditional undersea wireline instruments. Nevertheless, the data gathering of UWSNs is still severely limited because of the acoustic channel communication characteristics. One way to improve the data collection in UWSNs is through the design of routing protocols considering the unique characteristics of the underwater acoustic communication and the highly dynamic network topology. In this paper, we propose the GEDAR routing protocol for UWSNs. GEDAR is an anycast, geographic and opportunistic routing protocol that routes data packets from sensor nodes to multiple sonobuoys (sinks) at the sea's surface. When the node is in a communication void region, GEDAR switches to the recovery mode procedure which is based on topology control through the depth adjustment of the void nodes, instead of the traditional approaches using control messages to discover and maintain routing paths along void regions.

Keywords-*Underwater WSN; GEDAR.*

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In this paper, we propose the GEographic and opportu-nistic routing with Depth Adjustment-based topology con-trol for communication Recovery over void regions (GEDAR) routing protocol. GEDAR utilizes the location information of the