IEI Epitome

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Contents

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Members in the News

Mr Selvaraj Rangasamy, FIE

Former Sr. Dy. General Manager, Boiler Production, BHEL, Tiruchirappalli and Member, Production Engineering Division Board, IEI

Elevated as Chairman, Computer Society of India, Tiruchirappalli Chapter on 15 September 2019 in the Annual General Body Meeting of Computer Society of India, Tiruchirappalli Chapter held at Bharathidasan University Technology Park, Conference Hall, Tiruchirappalli.

Mr A K Mishra, FIE

Managing Director, Mangdechhu Hydroelectric Project Authority, Thimphu, Bhutan

Received Aqua Foundations Excellence Award, 2019 under the category of Professional Excellence (Individual).

Mr Vinay Kumar Shukla, MIE

Manager, Instrumentation Department, National Fertilizers Limited

Awarded First Prize for SLOGAN ON VIGILANCE AWARENESS WEEK 2019, organised by National Fertilizers Limited.

The Institution of Engineers (India)

Notification for

R&D Grant-in-Aid (2019-20)

To promote appropriate technology, assist in building up design & research talents and, most importantly, to help in nurturing potential R&D venture amongst engineering students pursuing Diploma/UG/PG/PhD courses, The Institution of Engineers (India) had instituted the R&D Grant-in-Aid program way back in 2001.

Like every year, the Institution invites applications for the session 2019-2020 for funding R&D projects and research initiatives aimed at improving the life-style of common people from engineering students pursuing full time Diploma/UG/PG/PhD engineering program in AICTE/UGC/NAAC approved Institutions/Colleges/Universities. The application form and guidelines are available in our website https://www.ieindia.org. The projects should be carried out under the guidance of faculty members who are Corporate Members of IEI. Membership criteria for student(s), guide(s) and Institution(s) are as follows:

Project Category	Student/Applicant Membership	Guide(s) Membership	Institutional Membership
1. Diploma	Exempted [Membership of Student Chapter is desirable]	AMIE/MIE/FIE	Not Mandatory
2. UG (BE/BTech/AMIE/Equivalent)	'Student Member' (SMIE)	AMIE/MIE/FIE	Applicant's Institute should preferably be an Institutional Member with NBA / NAAC Accreditation or valid NIRF Rank
3. PG (ME/MTech/Equivalent)	AMIE/MIE/FIE	MIE/FIE	Applicant's Institute should preferably be an Institutional Member with NBA / NAAC Accreditation or valid NIRF Rank
4. PhD	AMIE/MIE/FIE	MIE/FIE	Applicant's Institute should preferably be an Institutional Member with NBA / NAAC Accreditation or valid NIRF Rank

The soft copy of the duly filled-up applications (in editable format), as per the proforma available in our website www.ieindia.org, should be sent through email to research@ieindia.org and one printed copy of the same should reach the following address:

Director (Technical)
The Institution of Engineers (India), 8 Gokhale Road, Kolkata 700 020

Applications received in format other than that available on our website will not be accepted. Application should be forwarded through the Guide, Head of the Department or Head of the Institution. Please note that preference will be given to project proposals received from Institutions who are members of The Institution of Engineers (India) and with NBA / NAAC Accreditation or valid NIRF Rank. Kindly go through the guidelines (visit link https://www.ieindia.org/webui/IEI-Activities.aspx#RnD-Initiative) carefully before filling up the application.

The grant is not intended for the faculty members who have access to other avenues of research funding. Proposals received will be scrutinized and the recipients of R&D Grant will be informed accordingly.

Publication by Members

Mr Matruprasad Rout, AMIE

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Title of Paper: "Microstructure and Texture Evolution in Austenitic Stainless Steel during Low Strain Rate Deformation at Elevated Temperature'. *International Journal of Material Forming, 2019.*

DOI: https://doi.org/10.1007/s12289-019-01500-8

Co-authors: Shiv Brat Singh, and Surjya Kanta Pal

Abstract: Microstructure and texture development in an austenitic stainless steel at high temperatures and low strain rate were studied through laboratory scale compression and rolling experiments. The uniaxial compression tests were performed under constant temperature with sample temperatures of 900 °C, 1000 °C and 1100 °C whereas, the rolling experiments were performed at the same initial sample temperatures but in a transient condition. The average strain rate was 1 s−1 and 1.23 s−1, during the compression and rolling experiments, respectively. After deformation the microstructure and texture developed in the samples were examined through the electron back scattered diffraction technique. For compression test, deformation at 900 °C produces mostly deformed grains whereas, at 1000 °C and 1100 °C only recrystallized grains were observed. In contrast, rolling produces partially recrystallized microstructures at all the three temperatures. Finite element (FE) modeling was used to calculate the variation of the state variables like temperature, strain and strain rate and the differences in microstructure for the two processes were analyzed in the light of FE simulation results. In texture, tube orientation like α fiber was developed by the compression at 900 °C whereas, at 1000 °C and 1100 °C random texture with cube as the significant texture component, was observed. Similarly in rolling, α, β and τ fibers with different intensities were developed at the center and random texture was observed near the surface of the samples.

Keywords : *Hot rolling; Compression; Finite Element Modeling; Microstructure; Texture; EBSD*

Mr C P Kumar, FIE

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Title of Paper: "Purpose Driven Studies Under National Hydrology Project, India". *International Journal of Scientific Research in Science, Engineering and Technology (IJSRSET), ISSN (Print): 2395-1990, ISSN (Online): 2394-4099, 6(5), 2019, pp. 213-229.*

https://doi.org/10.32628/IJSRSET1196522

Abstract: Considering the peculiarities and large variation in the nature of problems associated with water resources planning, development and management, the issues involved in research related to particular region and specific project, there is a provision under National Hydrology Project (NHP) of India is to take up applied and action-oriented R&D studies by the implementing agencies. This article presents the details of purpose driven studies taken up by various implementing agencies under the National Hydrology Project of India.

Keywords : *Hydrology; Water resources;* National Hydrology Project; Purpose Driven Studies

Publication by Members

Dr Nethaji N, *MIE*

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Title of Paper: "Energy Conservation in Domestic Refrigerators by Cooling Compressor Shell – A Case Study". *Thermal Engineering, 10, September 2017, pp 382-387.*

https://doi.org/10.1016/j.csite.2017.08.002

Co-author: S Tharves Mohideen

Abstract: Application of energy efficient compressors, air handling units (AHUs), condensers and evaporators of high effectiveness are the some of the measures towards energy conservation in re-frigeration systems. Cooling of compressor shell with the defrost drips is an energy saving measure which is explored in this paper. In tropical countries which have 70–80% RH year round, the quantity of defrost formation is significant while refrigeration systems are on. This defrost water is dripped on the compressor's shell, which in turn cools the compressor oil and hence reduces the friction losses and winding temperature of the motor. Once winding temperature is reduced the compressor's ampere rating is reduced which ultimately reduces the energy consumption of the compressor. For given conditions of refrigerator function, the compressor shell temperature and ampere rating of compressor are tabulated and investigated before and after compressor shell cooling. The investigation reveals that around 8–10% energy savings are achieved for the given conditions.

Keywords : *Defrost Drip; Shell Cooling; Indirect Cool Refrigerator; Direct Cool Refrigerator*

Title of Paper : "Application of Heat Pipes in HVAC Systems: A Review". *Advances in Natural and Applied Sciences, ISSN: 1995-0772 Published by AENSI Publication, EISSN: 1998-1090, July 2017, 11(9), pp 277-284.*

http://www.aensiweb.com/ANAS

Co-author : S Tharves Mohideen

Abstract: The recent investigations show that the application of heat pipes in HVAC systems such as pre cooling the return air, reheating the supply air on the evaporator side and heat recovery from the condenser side result in more energy savings. Heat pipes incorporated in HVAC systems control the humidity at an optimum level which results in better comfort and optimum utilization of energy resource. A literature review on the studies and applications of heat pipes in HVAC system has been conducted. Based on the investigation of theoretical and experimental studies, it is found that the heat pipes are more suitable as an effective way to recover heat, control humidification and for reducing the heat load on HVAC systems and thereby saving precious energy.

Keywords : Humidity Control; Pre-cooling; Reheating; Indoor Air Quality; Passive Cooling; Energy Resource; Green Building; Global Warming

Title of Paper : "Experimental Studies on Improvement of Cop of Window Air Conditioning Unit". *Thermal Science: Year 2017, 21(3), pp 1349-1358.*

https://doi.org/10.2298/TSCI141215139t

Co-author : S Tharves Mohideen

Abstract : This paper presents the performance analysis of a window air conditioner unit incorporated with wick less loop heat pipes (WLHP). The WLHP are located on the evaporator side of the air conditioning unit. The working medium for the WLHP is R134a refrigerant gas, an alternate refrigerant. The supply and return humidity of room air, the heat removal rat, and the coefficient of performance of the unit are analyzed for various ambient and room temperatures before and after incorporation of WLHP. The performance curves are drawn by comparing the power consumption and humidity collection rates for various room and ambient temperatures. The results show that the coefficient of performance of the unit is improved by 18% to 20% after incorporation of WLHP due to pre-cooling of return air by WLHP, which reduces the thermal load on compressor. Similarly, the energy consumption is reduced by 20% to 25% due to higher thermostat setting and the humidity collection is improved by 35% due to pre-cooling effect of WLHP. The results are tabulated and conclusion drawn is presented based on the performance.

Keywords: Wick Less Loop Heat Pipes; Coefficient of Performance; Pre-cooling; Reheating; Return Air; Supply Air; Dry Bulb Temperature

Publication by Members

Prof (Dr) Gulshan Chauhan, FIE

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Title of Paper: "A Phase-wise Approach to Implement Lean Manufacturing". *International Journal of Lean Six Sigma, 10(1), pp 106-122, 2019 [ISSN 2040-4166], Emerald Group Publishing Ltd., UK.*

Co-author: Viral Chauhan

Abstract: *Purpose:* Today, manufacturing companies are facing a fierce competition and are under a great pressure of cutting cost for survival in the market. So emphasis has been given to enhance quality, minimize waste, customer delight and increasing productivity through reduction in wastage of resources. But, most of the companies hesitate to implement all measures simultaneously to acquire lean manufacturing because of some practical/ capital constraints. Therefore this paper aims to develop a phase-wise approach to implement lean manufacturing.

Design/methodology/approach: The paper opted for an exploratory study using the qualitative flexible system methodology framework proposed by Sushil (1994) and options field methodology proposed by Warfield (1982, 1990) including rigorous group discussion comprise of the employees representing middle and senior management having mainly productivity improvement background. The response of experts was recorded in a specially designed instrument in the light of the parameters suggested in group discussion. The measures/ actions were arranged in the decreasing order of their cumulative score.

Findings: The paper provides a phase-wise approach to implement lean manufacturing. Mixed approach is preferred over the other three approaches to implement lean manufacturing. Thirty measures/ actions contribute to mixed approach are identified to implement lean in three phases. A three phase approach is developed, in the first phase 10, second phase 14 and third phase 6 measures are identified to implement lean manufacturing after considering the practical constraints faced by the companies.

Research limitations/implications: All the measures/ actions suggested to implement lean manufacturing are focused on engineering manufacturing industry. Thus the research results may lack generalisability and limited to engineering manufacturing industry. The model developed in this research is based upon experts' opinions. The experts' opinion may be biased. The results of model may vary in real world setting.

Practical implications: The present paper provides guidelines to practitioners for implementing lean manufacturing in phases. Hopefully this study will motivate the firm's management for implementing lean manufacturing and limiting the effect of practical constraints and scarcity of resources.

Originality/value: This paper fulfills an identified need to develop an approach to implement lean manufacturing phase-wise due to some practical constraints.

Keywords: Lean Manufacturing; Phase-wise Approach; Options Profile Methodology; Analytical Hierarchy Process; Manufacturing Industry

Publication by Members

Dr Manikandan V M, AMIE
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Title of Paper: "An Improved Reversible Data Hiding Scheme Through Novel Encryption, Conference on Next Generation Computing Applications (NextComp)-2019", *University of Mauritius, Mauritius, IEEE, September 19-21, 2019.*

DoI 10.1109/NEXTCOMP.2019.8883637

Abstract: Reversible data hiding is an active research area in the field of medical image transmission. In general, along with the medical image, we may want to transmit some additional data such as patient details, diagnosis results, etc. The reversible data hiding schemes allow us to embed such additional information in the medical image itself instead of sending it as a separate file. A reversible data hiding through encryption scheme is already proposed and the existing scheme achieved to obtain good embedding rate with very less bit error rate. In this paper, we modified the existing reversible data hiding through a novel encryption process to improve the embedding rate by a factor of three without compromising the bit error rate. As per the proposed scheme, three bits of information could be inserted into a single image block of size B × B pixels. Similar to the existing scheme, in the proposed scheme also the sender and receiver want to share three encryption/decryption keys only.

Keywords : Reversible Data Hiding; Image Encryption; Support Vector Machine; Medical Image Transmission

Mr AbdulRub Bin Mohsin, AMIE
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Title of Paper: "Source based Deduplication in Cloud Computing with the help of Block Chain Technology". *International Conference on "Opportunities and Challenges of Blockchain Technology" organised by Tamil Nadu State Centre, IEI, 17-18 October 2019, Chennai.*

Abstract: Now a day's huge amount of data storage represent one of the most important services in cloud computing. However conventional Deduplication process lead to many problems like security issues such as data loss , data modification and data faster retrieval. Source Based Deduplication (Eliminating of redundant data for transmitting to the backup target). Due to the huge storage of data on cloud computing, Deduplication techniques have been widely used in storage to save both space and network bandwidth. Data Security Issues such as data loss, data Modification and data faster retrieval processing time is more and costly operation. Cloud providers ensure two major requirements which are data integrity and storage efficiency block chain data structure and the efficient source based data Deduplication represent possible solution to affirmation limitations. Author proposed a source based Deduplication with block chain scheme which help to achieve high reliability and confidentiality .In which the files are distributed to multiple storage areas and the information of file is recorded on the one time stamped block chain. By which the processing time is reduce and storage capacity can be optimal utilize .

Keywords: Blockchain; Cloud Computing Deduplication; Integrity; Source based Technique

Publication by Members

Dr K Mohammed Haneefa, MIE
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Title of Paper: "Microstructure and Geochemistry of Lime Plaster Mortar from a Heritage Structure". *Construction and Building Materials 225, 2019, pp 538–554.*

https://doi.org/10.1016/j.conbuildmat.2019.07.159

Co-authors: S Divya Rani, R Ramasamy and M Santharam

Abstract: This study presents the observations from a comprehensive Scanning Electron Microscopy (SEM) study of lime mortar from a heritage structure. Microstructural and geo-chemical characterization of carbonate, chloride and sulphate phases was performed based on Energy Dispersive Spectroscopy (EDS). The hydrated carbonates underwent polymorphic changes ranging between the vaterite, aragonite and calcite forms. The habit of crystallization of calcite widely varies depending upon its environment of crystallization amidst pore spaces and voids. The repeated influx and evaporation of capillary ground water and storm water into the lime mortar caused the precipitation of carbonate materials of wide compositional variation. The presence of halite mineral crystallized as interstitial skeletal or hopper crystals was found inside the mortars. Capillary channels filled with these crystals indicated that the capillary forces played a critical role in the influx and evaporation of pore fluids with successive chemical variations from bicarbonate ground water source contaminated with chloride ions. Presence of portlandite, anhydrite, and gypsum was confirmed along with minor traces of ettringite and thaumasite. Chemical compositions of these minerals indicated that they were crystallized from a common source of pore fluids of meteoric water composed with carbonates, chlorides and sulphates. The repeated differential order volume change by expansion and shrinkage had induced the development of hairline cracks and deformations in the lime mortar.

Keywords: Microstructure; Geochemistry; Lime Mortar; Heritage Structure; Pore Fluid

Prof Amar Kumar Das, MIE
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Title of Paper: "Performance, Emission, Energy, and Exergy Analysis of CI Engine using Kaner Seed Pyrolysis Oil Blended Diesel". Environmental Progress and Sustainable Energy, 2019.

https://doi.org/10.1002/ep.13269

Co-authors : Narayan Gouda, Raghubansh K Singh, Achyut K Panda

Abstract: This work reports the engine performance, emission parameters, and energy-exergy characteristics of a twin cylinder four-stroke CI engine fueled with Diesel blended Kaner seed pyrolysis oil (KSPO). KSPO is obtained by the thermal pyrolysis of Kaner (Thevetia peruviana) seed at 600°C in a batch reactor and mixed with diesel in the ratio of 5, 10, 15, and 20%, to use in the engine. Brake thermal efficiency is marginally higher and brake specific fuel consumption is comparatively lower for KSPO-diesel blend as compared to pure diesel fuel operation. Low carbon monoxide emission and high hydrocarbon, oxides of nitrogen and smoke emission is observed with KSPO—diesel blend. In addition, energy and exergy values of KSPO-diesel with different blends at different loads are evaluated. Fuel exergy rate of the blended fuel is higher than pure diesel fuel where as exergetic efficiency of the blended fuel found is lower than pure diesel fuel. Moreover, the exergetic efficiency is increased with increasing engine load.

Keywords: Engine Performance; Exergy; Kaner Seed Pyrolysis Oil

Publication by Members

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Title of Paper: "Utilization of Thermal Industry Waste: From Trash to Cash". *Carbon-Science and Technology, International Conference on Advanced Materials for Energy Science and Technology, Department of Energy Engineering, NEHU, Shillong, Meghalaya, 26-28 February 2019, ISSN : 0974-0546, 11(2), 2019, pp 43-48.*

Abstract: Million tons of coals are being burned every year to meet the electric power requirement in India. Fly ash powder, a by-product recovered from the gases of burning pulverized coal in thermal power plants contains alumina, silica, iron oxide and other heavy metals as well and cause air, soil and water pollution. So, in this present study, attempt have been made to investigate the potential utilization of fly ash collected from north eastern region of India to make some valuable products which will be used in construction industry. Authors have adapted a green technology i.e. geopolymerization technology for making the same. Geopolymerization process is associated with the alkali activation of materials which are rich in amorphous alumino-silicate. In this present investigation, sodium hydroxide is used as an alkaline activator for the dissolution of fly ash powder. The geopolymerization process has been performed using 8M, 10M and 12M sodium hydroxide solution cured under artificial conditions. The mechanical property (compressive strength) was determined by using compression testing machine. Further, the strength data of the geopolymeric samples were co related with the results obtained from various characterization techniques such as scanning electron microscopy (SEM) and Fourier transforms infrared spectroscopy (FTIR).

Keywords: Fly Ash; Alkali Activation; Geopolymer, Construction Industry

Dr Ajay Kumar Kushwaha, AMIE
Assistant Professor, Dept. of Electronics and Telecommunication Engineering, Government Engineering College, Raipur, Chhattisgarh

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Title of Paper: "Sinusoidal Oscillator Realization Using Band-Pass Filter". *Journal of The Institution of Engineers (India): Series B, Springer , 100(5), 2019, pp 499-508.*

DOI : 10.1007/s40031-019-00408-w

Co-author : Ashok Kumar

Abstract: A second-order sinusoidal oscillator realization is presented using biquad band-pass filter. It uses non-inverting type of band-pass filter with unity-gain feedback to generate sinusoidal oscillation. The current-controlled differential difference current conveyor transconductance amplifier (CCDDCCTA) block-based band-pass filter is proposed to implement sinusoidal oscillation. The oscillator is found to posses both the voltage and current outputs simultaneously. It is also observed that the amplitude of the output current of the oscillator can be varied using bias current of CCDDCCTA. The feature of an oscillator like non-ideality has also been discussed for the proposed oscillator. The theoretical propositions have been verified through SPICE-based OrCAD 16.6 circuit simulator.

Keywords: Current-controlled Differential Difference Current Conveyor Transconductance Amplifier (CCDDCCTA); Analog Building Block (ABB); Band-pass Filter (BPF)

Publication
by Members

Mr Prashant D Banakar, AMIE

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Title of Paper: "Part Time Convertible Two Wheel Drive with Regenerative Braking". *International Journal for Research in Applied Science & Engineering Technology (IJRASET) ISSN: 2321-9653; 6(6), June 2018.*

Co-authors : Harish Vijayakumar Umarji, Laxmanrao S Patil, Naveen V Kalasapur

Abstract : The "Part time two-wheel drive with regenerative braking" is an innovative project which aims at reducing commuting costs incurred by people who travel on a daily basis and as well as aims to reduce the pollution caused by vehicles that are run by conventional fuels like Petrol and Diesel. In metropolitan cities like Delhi, Mumbai and Bangalore, rising levels of pollution is a menace for people living in these cities. Our project aims to reduce the pollution level by means of an electrical motor which draws energy from a cleaner source, i.e., electricity. If a situation arises, which forces the rider to use engine in case of low battery levels, HHO Kit makes sure that the pollution levels of the vehicle remain under harmless levels. A 2-stroke vehicle is being taken for the project in order to show a more drastic reduction in pollution levels, since the original emission of a 2-stroke vehicle is greater than that of 4 stroke vehicles. Through this project, we as engineers, take upon ourselves, the moral responsibility of reducing our carbon footprint on the planet. This project aims at achieving mainly 3 crucial things, i.e., reducing costs on fossil fuels, decreasing emissions caused by fuels and providing a backup for the commuter in case of fuel shortage or battery shortage

Keywords: BLDC Motor; HHO Gas Kit; Pulse Width Modulator; Emissions; Three Phase Controller; Secondary Throttle

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Title of Paper: "Application of Modified ALO to Economic Load Dispatch for Coal Fired Stations". *International Journal of Recent Technology and Engineering (IJRTE), 8(2), 2019, pp.2147-2152.*

DOI : 10.35940/ijrte.B2359.078219

Co-authors : N Rajeswaran, D Raja Reddy

Abstract : This manuscript explores the novel Modified Ant Lion (MALO) Optimization to resolve the load dispatch problem optimally. The primary role of Optimal Economic Load Dispatch (OELD) is to obtain an efficient and economical operation of a power system network. The main aim of performing the OELD is for minimizing the fuel cost of the real power generation when the losses are neglected. An Modified Ant Lion (MALO) Optimization is a narrative nature-inspired algorithm and apes the tracking mechanism of ant lions in life. The random walk of ants, building traps, entrapment of ants in traps, catching preys, and re-building traps are the five main steps involved in the hunting process. The principal objective of OELD is to curtail the total generation cost while honoring effective constraints of accessible generating resources. The anticipated Modified ALO technique is utilized on three and six unit test system to various load demands for solving the load dispatch problem economically. A statistical result clarifies that the anticipated MALO method has lowest fuel cost and superior in quality of solution than other optimization techniques accounted in most latest literature.

Keywords : Modified Ant Lion Optimization; Economic Load Dispatch; Fuel Cost; Different Load Demands; Real Power Generation; Coal Fired Station

Publication by Members

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Title of Paper: "Assessment of 3D Printed Steels and Composites Intended for Wear Applications in Abrasive, Dry or Slurry Erosive Conditions". *International Journal of Refractory Metals and Hard Materials, 86, January 2020.*

https://doi.org/10.1016/j.ijrmhm.2019.105126

Co-authors : Maksim Antonov, Ulrik Beste, Dmitri Goljandin

Abstract : The design of earth cutting and machining tools requires the application of several types of materials with different wear resistance. The production of such tools is complicated and not efficient (tool life depends on the interface bonding, brazed insert property, base material wear). The novel approach is to replace the steps of brazing/coating with similar wear resistant materials using the approach of additive manufacturing. The current research assesses novel AM-materials in several tribological conditions. Results report significant improvement in wear resistance of 3D-printed materials against Hardox 400 and AISI-316. The performance of AM-materials lies between WC-based bulk cermets and hardfacings.

Keywords: Additive Manufacturing; Wear Resistance; Abrasion; Dry and Slurry Erosion; Metal Matrix Composites; Vibenite

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Title of Paper: "Significance of Accuracy Levels in Cancer Prediction using Machine Learning Techniques". *Bioscience Biotechnology Research Communications (BBRC), 12(3), pp 648-654, July-Sept 2019.*

DOI: 10.21786/bbrc/12.3/16.

Co-authors: Rama Sushil, Arvind Kumar Tiwari

Abstract: Across the world, any cancer becomes a calamity for a person who is suffering from it, mainly women are facing a real challenge when it comes to breast cancer. Breast cancer can be diagnosed at an early stage to overcome the consequences at a later stage. In the field of Computer Science, Machine Learning (ML) techniques are competent enough to diagnose the stages of cancer. ML techniques work upon the data which are collected from hospitals of suspected patients. There are various ML techniques which can build a model in order to diagnose cancer on the basis of finding accuracy level. In this paper, we have discussed the significance of accuracy level for predicting the cancer. In previous works, it has been observed that 100% accuracy is found on data analysis by some researchers. Although 100% accuracy must have given perfect prediction but it is observed that prediction was not so, sometimes it gives incorrect prediction also. So, prediction technique is scaled up with inclusion of more parameters precision, recall, F1- measure, Receiver Operating Characteristics (ROC) area and Area Under Curve (AUC) score.

Keyword: Accuracy; F1-Measure; Machine Learning; Precision; Recall; Receiver Operating Characteristics; Area Under Curve

Publication by Members

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Title of Paper: "A Low-cost and Autonomous Tracking Device for Alzheimer's Patients". *Journal of Enabling Technologies, ISSN: 2398-6263, December 2019.*

Co-authors: N Hegde, S Muralidhara

Abstract: Alzheimer's is the most commonly occurring neuro-degenerative disease and progressive cognitive impairment is its major symptom due to which the patients tend to wander and get lost in unfamiliar places. This is a constant cause of worry for caretakers and a source of distress to the patients themselves. The paper aims to discuss this issue. This paper presents a low-cost, autonomous, embedded systems-based wearable device for real-time location tracking using GPS and the concept of geo-fencing. The system provides real-time updates in the form of a text message sent to the mobile number of a family member or care giver.

Keywords: GPS; Embedded Systems; Dementia; Assistive Wearable Device

Dr K S Raghuram, MIE
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Book Chapter: "Flexural Stress Analysis on Three-Point Bending of Aluminum Matrix Composite", *Lecture Notes on Multidisciplinary Industrial Engineering, Springer.*

https://doi.org/10.1007/978-981-13-7643-6

Co-authors : S Vemireddi, S S Alamanda

Abstract : Aerospace and automobile industries are using aluminum matrix composites (AMC's) in vast applications. The reason in using the AMCs to the maximum is these materials are giving more performance, economic advantages, and environmental benefits owing to properties like reduced weight, low cost, and high strength to weight ratio. Sand casting technique is one of the cheaper and conventional routes for manufacturing the particulate composites. For the applications of aircraft, turbines, and other structural components, the composite material is to be tested for flexural rigidity test using a three-point bending equipment. The present study is done to find the effective composition of aluminum and amount of reinforcement of the particulate material. 200 mesh micron-sized boron carbide is chosen as reinforcement material and aluminum is taken as the matrix material.

Keywords : Aluminum Matrix Composite; Specimen Flat Plate; Stir Casting; Percentage Reinforcement; Aluminum Matrix Particulate; Composite Material

Title of Paper: "Simulation of Heat Dissipation Behaviour in Grooved Heat Pipe". *International Journal of Innovative Technology and Exploring Engineering (IJITEE), ISSN: 2278-3075, 8 (11), September 2019.*

Co-authors : S N Padhi, P Harisha, S Balaji ,K Leela Kumar

Abstract: Having high and most effective thermal conductance value heat pipe is widely used for heat transformation. The heat pipe is having unique properties like compact size, light weight and indirect conductance. The heat pipe is used in the cooling of electronic components of computer applications, controlling of temperature in aerospace parts, excess heat recovery in exhaust gases of internal combustion engines. Heat pipes with rectangular cross section can be used for handling large heat transfer sections when weight and space are considered. The working medium that is entrapped in the heat pipe is under phase change from liquid to vapor and vice versa. The vapor condenses in the condenser region by removing heat to the sink and back to the evaporator passing through the porous wick using capillary pumping pressure for re-evaporation. There will be pressure drop in the wick and vapor channel volume. The simple theory of the heat pipe enumerates the capillary pressure in the wick should be more than the sum of the pressure drops in the vapor core and pressure drop in the wick.

Keywords: Thermal Conductivity; Heat Pipe; Rectangular Pipe; Capilliary Pump Pressure

Publication by Members

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Title of Paper: "A Secure Stop and Wait Communication Protocol for Disturbed Networks". *Wireless Personal Communications, Springer, September 2019.*

DOI: https://doi.org/10.1007/s11277-019-06760-w

Co-authors : A Chaturvedi, V Srivastava

Abstract : Secure data communication is the need of hour today specifically when the wireless communication channel is insecure. We are proposing a protocol which can be customized in variety of situations. We want to use steganography as a complementary tool for cryptography. The protocol utilizes the nature of communication protocol and it is even useful for places where data hiding and cryptography is illegal or can't be performed because of various reasons. We are giving a name to these kinds of networks as disturbed networks. The proposed peer to peer protocol is very useful for insecure channels and disturbed networks and we provide complete analysis to validate its utility. The method is a convenient stop and wait protocol which provides unbeatable security and suitable for mobile phones as well. At the same time, for intruder's perspective, there is no encryption involved which is a very important aspect.

Keywords: Disturbed Networks; Encryption; Man in the Middle Attack (MITM); Steganography; Wireless Communication

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Title of Paper: "Interaction of Water Soluble Polyacrylic Acid towards Mild Steel / Hydrochloric Acid Interface". *ICCRME 2018 IOP Conf. Series: Materials Science and Engineering 404 (2018) 012044.*

DOI:10.1088/1757-899X/404/1/012044

Co-authors : Sudhish Kumar Shukla, P K Bharti

Abstract : Many of the polymers such as polyanilines, polyanthranilic acids have been reported as one of the efficient corrosion inhibitors for mild steel in acidic media. In view of the major limitation of insolubility of polymers, we have taken water soluble polyacrylic acid for the corrosion inhibition process. The corrosion inhibition property of polyacrylic acid is demonstrated for mild steel in 0.5 M hydrochloric acid using electrochemical impedance spectroscopy, Tafel polarization and weight loss methods. All the results are found to be in well correlation and the inhibition efficiency shows upto 94% in 0.5 M hydrochloric acid for 3hrs duration. Surface studies are also done by scanning electron microscopy

Keywords: Polymer; Weight loss; Electrochemical Calculation; Inhibition

Publication by Members

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Title of Paper: "Challenges and Opportunities in the Recycling of Construction and Demolition Waste: A Case of Jaipur in India", *33rd Indian Engineering Congress, The Institution of Engineers (India) Udaipur, December 21-23,2018*

Abstract : The effective management of the construction and demolition waste (C&DW) is a big challenge for the cities in India where rapid urbanisation, industrialization and economic development brings so much of waste. Supreme Court ban on river sand and illegal mining of the stone. Recycled aggregates from the C&DW can be boon in the field of construction, which can replace a significant amount of natural aggregates as per the various research studies. In this study, collection of data takes place based on literature review, demolition sites visit and personal interviews of the demolition contractors. List Challenges and opportunities of recycling C&DW in Jaipur and present suggestions after analysis of the data

Keywords: Construction; Demolition; Recycle and Waste

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Title of Paper: "Recycling of Kotah Stone Quarry Waste and Manufacturing Normal Portland Cement : A Conceptual Technology of Future". *Journal of Chemical, Environmental Engineering and Biological Engineering, 3(2), 2019, NY, USA, pp 25-30.*

Abstract : The State of Rajasthan in India, has abundant reserves of Flaggy Limestone which yields Kotah Stone. It is very popular and widely known as best and most economical flaggy stone within country and abroad. The deposit of Kotah Stone is generally confined to 15mtr. in thickness. It is overlaid by a zone of non splittable limestone waste layers. This waste zone has increased from '0' in 1945 to present 40 – 45mtr, oue to dipping rocks @ 7 – 15%. To a general estimate, over the years of mining some 550Mill. Ton of such waste has piled up in entire belt in form of man-made mountains. This has caused serious environmental problem beside economic hazard arising from its disposal and management. Beside reduction, recycling and utilization of quarry waste is perhaps the only solution for industrial survival. A serious effort has been made to utilize by recycling this waste for manufacturing normal Portland Cement. This waste having low in CaO 38% and high in Silica 23% needed beneficiation. Exhaustive test and studies on wet beneficiation have established that it is technically feasible to enrich the CaO to 44% and reduce Silica to 12-33%, a feed product most suitable for manufacture of Ordinary Portland Cement of 53% grade. ACC Madukkarai cement plant had conducted beneficiation studies in 2004-17 on its low grade limestone containing 43% CaO and 18%Silica to use the concentrate as additive to normal raw material to cement plant. Present paper highlights the various activities of the project in manufacturing cement using concentrate after beneficiation of much low grade limestone. The technique suggested and cost of beneficiation vis-vis environmental merits of the project have been discussed.

Keywords: Kotah Stone; Quarry Waste; Recycling; Grinding; Beneficiation; Clinker; Portland Cement

Publication by Members

Dr S Baskar, AMIE

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Title of Paper: "A Survey on Detection, Recognition, Segmentation and Classification of Brain Tumor". *International Journal of Engineering and Advanced Technology (IJEAT), ISSN: 2249 – 8958, 8(2S2), January 2019.*

Co-author : P Harish

Abstract : In the human body the brain is the most significant organ as it controls all the functions of human. Due to few abnormal conditions, unhealthy and unrestrained growth of tissue occurs which is referred as an uncommon action. This sort of action which occurs in the brain is called as brain tumor. It is significant to detect this tumor in order to minimize the death of humans affected by tumor. Cancerous cells detection is the most complex and long term process in medical image processing. Magnetic Resonance Imaging (MRI) is a methodology widely utilized owing to its significant features. MRI provides plenty of information in the tumor detection. MRI image is segmented with high rate of accuracy then tumor is classified whether it is malignant or benign. Because of the complexity and changes in the characteristics of tumor like its shape and size. This paper elaborates the numerous researches for tumor recognition, segmentation and classification of previously proposed methods highlighting its strength and limitations. There is a scope for further to recognize tumor and good image quality. Processing medical images to find solution to different issues by a computer with new algorithms has been drawing a very significant focus of the researchers over last few decades. A literature survey about diagnosis of brain tumor presented in this paper provides critical evaluation of the survey which inhibits new research.

Keywords: MRI; Image Enhancement; Image Segmentation; Image Registration; Multi-resolution

Title of Paper: "Design and Implementation of Novel controllers in Digital Circuits Using GDI Technology". *International Journal of Recent Technology and Engineering (IJRTE), ISSN: 2277-3878, 7(5S3), February 2019.*

Co-author: L Prabhavathi

Abstract: A New model of an approach presents GDI full adder based on the reflected binary gray code design of multiplexer. The Weighted Code Approach has been Existed to generate Gray Code that Gray code is basically reflected binary code in which two successive values differ in only one bit. In general there are different methods of converting as a decimal number to Gray code is performed by converting decimal to binary and then binary to Gray code.. In this proposed Design and Implementation of Novel controllers in digital circuits using GDI technology is consist of three novel circuits one is gray code conversion of "multiplexer circuit" and other one is" logic circuit " and last one is" reflected binary code circuit" and all novel circuits produce gray code output. Low complexity of GDI technology to be suitable design for power-efficient as well as for power-delay products and also used to reduce power consumption in area of digital circuits .All simulations are done by Tanner using TSMC BSIM 0.25um technology. This approach is proposed for fast design, low power circuits, improve power characteristics.

Keywords : Gate Diffusion Input; Low Power; Shift Right; Operation; Delay; Digital Circuits; XOR-gate; AND- gate; OR-gate; Gray Code Conversion 2x1 MUX

Title of Paper : "A Novel Privacy Preserving Algorithm for Large-Scale MANETs". *International Journal of Recent Technology and Engineering (IJRTE), ISSN: 2277-3878, 7 (6S2), April 2019.*

Co-author: Maheswary A

Abstract: A mobile ad hoc network (MANET) satisfies the requirement of immediate network establishment without any central administration. MANET forms a network with the help of available neighbor mobile nodes within the transmission range of the network. Due to the dynamic nature of mobile nodes, MANETs are prone to security threats. To ensure secure data transmission in critical security applications like military war field communication there is a need to protect the confidential data from the hands of intruders. In order to improve the secured data communication an efficient encryption named as Tic-Toc-Toe (T3) encryption technique for ensuring the security during the data transmission from sender to receiver in MANET is introduced. Initially, the T3 symbol based approach is used to encrypt the information at the sender through secret key distribution. The receiver side also performs the same encryption, and then the encrypted bit is received successfully. This in turns attains the secured packet transmission without any malicious node in the MANET. Based on the encryption, the encryption and decryption time between the sender and receiver is measured for transmitting the data packet. Also, the AODV protocol is applied in T3 technique is implemented to improve the secured data communication between the source and destination in an efficient manner. The T3 technique conducts the simulations work on parameters including packet delivery ratio, throughput, communication overhead and end to end delay.

Keywords : Decryption; Encryption; MANET; Network Security

Publication by Members

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Title of Paper: "Continuous Electro Coagulation Process for the Distillery Spent Wash Using Al Electrodes". © *Springer Nature Switzerland AG 2020, P. M. Pawar et al. (eds.), Techno-Societal 2018*.

DOI https://doi.org/10.1007/978-3-030-16962-6_5

Co-authors : Pravin Dinkar Nemade, Pradeep Jadhav

Abstract : Electrocoagulation (EC) process involves a detailed study discriminating the effect of pH, current density, the concentration of effluent and operating time. Continuous EC process was carried out with and without recirculation of DSW. Experiments were carried out to remove the color and COD of DSW by the electrocoagulation (EC). The wide range of operating conditions was implemented such as initial pH (3.1–8.7), current density (3.25–10.75A/cm2), initial COD concentration (5803 mg/L), and operating time (0–400 min). High- performance liquid chromatography (HPLC) analysis confirms the degradation of DSW. The pair of aluminum electrode removes chemical oxygen demand up to 94.88% and color 78.65%. Sludge analysis was carried out by using XRD to explore the result.

Keywords: Electrocoagulation; Distillery Spent Wash; Chemical Oxygen Demand; High-performance Liquid Chromatography

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Title of Paper: "wound Healing using Acalyphaindicia and Mexican Mint Extracts; *International Advanced Research Journal in Science, Engineering and Technology*, 6(10), 2019 ISSN (online) : 2393-8021 ISSN (Print): 2394-1588, pp 49-54.

DOI 10.17148/IARJSET.2019.61008

https://iarjset.com/wp-content/uploads/2019/11/IARJSET.2019.61008.pdf

Abstract : Acalyphaindicia have been used widely in Indian Ayurvedic medicine for treating various ailments. A paste made from the leaves of Acaliphaindicia when applied on the affected skin areas it is useful for relieving skin conditions like eczema, scabies, sores and wounds because of its antibacterial properties. Acalyphaindicia are used as a remedy for relieving acne and pimples. Mexican mint extracts applied on skin has medicinal properties in treating various skin diseases and wounds. A bandage cotton fabric should be taken Mexican mint should be converted in to paste form then fabric can be finished using the extracts. The paste can be fixed on the fabrics using Mordant. The present project work highlights the traditional herbs like AcalyphaIndicia and Mexican mint in healing wounds and skin problems. A bandage cotton fabric is to be taken wherein the extracts of Mexican mint, caliph indicia extracts are applied. The Antibacterial properties of the fabrics are studied by conducting wound healing and Antibacterial test. Comparative study is also to be conducted to find out the effectiveness of both herbs in wound healing.

Keywords: Ayurvedic; AcalyphaIndicia and Mexican Mint; Chronic Wounds; Natural Herbs

Publication by Members

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Title of Paper: "Application of Bio-inspired Social Spider Algorithm in Multi-area Economic Emission Dispatch of Solar, Wind and CHP-based Power System". *Soft Computing, ©Springer-Verlag GmbH Germany, part of Springer Nature 2019, pp 1–14.*

https://doi.org/10.1007/s00500-019-04468-4.

Co-author : Shreya Adhvaryyu

Abstract : Concept of multi-area interconnection of power systems integrating nonlinear combined heat and power generators, wind, solar and conventional units, constrained by valve point effect, has been explored for the first time to ensure enhanced reliability. Bio-inspired social spider algorithm is used to simultaneously optimize cost of energy generation and emission of such system. Position of a spider on the web (search space) is the initial solution. Distance of a spider from food location is considered as its fitness. The spider is guided towards the food location by the target vibration through a random walk taken by putting a random dimension mask. Exploration of the search space by the algorithm is effectively controlled by tuning its three control parameters: attenuation rate control parameter (ra), probability of spider to change mask (pc) and probability of changing each bit of the mask vector (pm), if mask change is accomplished. Five test systems with different situations have been designed and tested considering three interconnected areas, and the objective of minimization of cost of production; transmission loss; and emission has been achieved reliably.

Keywords : Social Spider Algorithm; Multi-area Economic Emission

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Title of Paper: "Integration of Grey-Based Taguchi Technique for the Optimization of Process Parameters During the Turning Operation of 16MnCr5 Steel". *International Journal of Industrial Engineering & Production Research (2019) 30: pp 245-254.*

DOI: 10.22068/ijiepr.30.3.245

http://ijiepr.iust.ac.ir/article-1-893-en.pdf

Co-author : Wajahat Ali

Abstract : CNC turning is widely used as a manufacturing process through which extra unwanted material is turned to get a high degree of surface roughness. In this research article, Taguchi technique was coupled with Grey Relational Analysis (GRA) to optimize the turning variables, or turning parameters, for the simultaneous improvement of productivity, root mean square roughness (Rq), and average surface roughness (Ra). Taguchi technique L27 (34) orthogonal array was used in this experimental work. Depth of cut, feed, and speed were considered as the controllable process parameters. Root mean square roughness (Rq), average surface roughness (Ra), and material removal rate (MRR) were considered as the performance characteristics; according to TGRA results, the optimum combination in this study found A1B1C1 (Vc=400 rpm, f=0.06 mm/rev, and DOC=0.5 mm). The optimum values of Ra and MRR for this study were 6.86 µm and 20690.31 mm3 /s, respectively. Further, ANOVA was applied, and showed that depth of cut (DOC) had the most significant effect and followed in line by speed and feed for multi-response optimization. According to the results of Analysis of Variance (ANOA), the %age contribution of DOC (depth of cut), speed, and feed were 38.71 %, 11.89%, and 8.466%, respectively.

Keywords: ANOVA: Surface Roughness; Material Removal Rate; Grey Relational Analysis; Taguchi Technique

Publication by Members

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Title of Paper: "Safety Demo- Electrical Safety". *35th National Convention of Electrical Engineers & National Conference on Storing Energy for a Sustainable Future- Future Energy in any Isolated World, November 7-9, 2019, Chennai, Tamilnadu.*

Abstract : Almost everything at home or in a workplace setting today operates on electricity. Any form of energy, when not properly controlled can result in serious danger to those who use it. Whenever you work with power tools or on electrical circuits there is a risk of electrical hazards, especially electrical shock. Risk in electrical work is more than any other job even using household purposes, its needs some precaution. Any slippage has no excuse. We can assume that working in electrical system is similar to that of work in war field. Those who are involved in electrical job they should be alert for each and every second. Electricity is blunt and rude. Risk is also higher at work on electrical circuits when mishandled or not maintained. It is vitally important to take safety precautions when working with electricity. Safety must not be compromised.

Keywords: Electric Shock; Safety; Sub-Stations; OH Lines; Earthing; Safety Standards

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Title of Paper: "Effect of energy storage systems on automatic generation control of interconnected traditional and restructured energy systems". *International Journal of Energy Research, 43(12), 2019, pp 6475–6493, Wiley .*

DOI: https://doi.org/10.1002/er.4493

Abstract : During major disturbances in electric power system (PS) penetrated with renewable energy sources, primary and supplementary automatic generation control (AGC) strategies usually show inefficiency in mitigating the frequency and power oscillations because of sluggish control action. The frequency and power deviations should be controlled to retain the generation-demand balance, which reinforce the quality and stability of overall PS. The fast-acting energy storage systems (ESSs) having very small time constants like capacitive energy storage (CES) and redox flow battery (RFB) are utilised in this study to improve these dynamic responses. To conduct the analysis, initially, a two-area nonreheat thermal PS with extra generations from wind turbine system (WTS) and dish-stirling solar thermal system (DSTS) is explored extensively, and then to validate the efficacy of the method, the approach is tested on two-area nonreheat thermal system having governor deadband (GDB) nonlinearity, reheat thermal, and restructured multisource thermal gas systems. An imperialist competition algorithm (ICA) optimised fuzzy PID-filter-(1 + PI) controller named as FPIDF-(1 + PI) is utilised as supplementary controller, and its performance with CES/CES-RFB is compared with ICA-optimised FPIDF with/without CES and existing optimal PI/PID/PIDF/FPID controller without CES. Investigation of dynamic responses for sudden variation in power demand unveils the superiority of the control approach compared with others regarding settling time, peak undershoot, and performance index. Analysing the impact of ESSs on the responses divulges that the amalgamation of CES-RFB in PS imparts better system dynamics. The robustness analysis suggests that ICA-optimised controller with ESSs performs excellently and robustly for ±25% variation in PS parameters, random load disturbances, and nonlinearities.

Keywords: Capacitive Energy Storage; Dish-stirling Solar Thermal System; Frequency Control; Fuzzy Logic Controller; Redox Flow Battery; Wind Turbine System

Publication by Members

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Title of Paper: "Comparative Study of High Temperature Oxidation Behavior and Mechanical Properties of Wire Arc Sprayed Ni-Cr and Ni-Al Coatings, Engineering Failure Analysis, 106, September 2019, Elsevier, pp 1-16.

DOI: https://doi.org/10.1016/j.engfailanal.2019.104173

Co-Authors: Kumar S and Handa A

Abstract : In the present investigation, Nie20Cr and Nie5Al wires were used to deposit coatings on T22 and SA516 boiler steels for protection in high temperature environment. The microstructure, mechanical properties and high temperature oxidation behavior of the deposited coatings were studied. The coatings were found to have a uniform thickness (250–300 μm) and well intact with the substrate steels. The weight change study was conducted to ascertain the high temperature oxidation behavior of the coatings at 900 °C under laboratory conditions. The kinetics of oxidation was established using weight change values for the uncoated and the coated steels. The oxidation products of the coated and uncoated samples were analyzed using X-ray diffraction (XRD), scanning electron microscopy/energy dispersive spectroscopy (SEM/EDS) and X-ray mapping analysis. The results showed that Nie20Cr coating on SA516 steel reduced the weight gain by 99%, whereas the Nie5Al coating on T22 steel decreased weight gain by 83% than the bare steel. This higher oxidation resistance is due to the presence of a protective phases in the oxide scale (Cr2O3, NiCr2O4, NiO, and Al2O3), lower porosity (2%), and higher micro hardness of the coating.

Keywords: High Temperature Oxidation; Wire Arc Spray; Mechanical Properties; Ni-20Cr, Ni-5Al Coating

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Title of Paper: "Redesign of Palace Road Bengaluru as per TENDER SURE Guidelines". *International Conference on Innovative Trends in Civil Engineering for Sustainable Development (ITCSD, 2019), September 13-15, 2019.*

Co-authors : Krutika M Huragi, Madhav M P

Abstract : The urban roads nowadays have set an example for intense congestion of traffic due to the rapidly increasing population which in turn increase the number of motorized vehicle users. Bangalore being one among the fastest developing cities of our country is also experiencing the same problems and is yet to get worsened in the upcoming years. On the other hand the safety of pedestrians and cyclists is least neglected and as a result of this they are most oftenly prone to be the part of accidents. The Tender SURE Project which has been initialized in the present decade is an attempt to bring necessary changes in the urban roads execution by addressing various major problems related to traffic, pavement condition, travel lanes, footpaths, sub-terrain utilities, drainage, etc. The project is also concerned with the redesign of existing roads by providing wider and uniform travel lanes, providing enough space for bus bays and improving the geometric conditions of the existing roads and providing suitable street furniture. For the redesign of the present road AutoCAD Civil 3D software is made use as it provides an easy and effective design approach.

The project overcomes the issue of repeatedly digging the roads for repair and maintenance and thus arrives at an once for all solution. The motto of the project is to expend additional and right relatively than to expend much extra by investing for wrong numerous times. Thus, in return this project struggles for improving the condition of present urban streets and finally to improve the quality of lives of people, as good road networks provide a greater accessibility to all the basic and important needs of people improving their growth and life condition. White topping is one among the prominent methods of pavement rehabilitation which is in practice in these years. It can be taken as a permanent solution for the entire design life of the pavement as the once properly rehabilitated white topping pavement can serve as long as for 30 years. Keeping in view the construction and maintenance cost of laying a cement concrete overlay, thin white topping overlay can be effectively laid on the existing asphalt road. A detailed design procedure of thin white topping overlay is provided for the estimated amount of traffic and its future growth.

Keywords: TENDER SURE; Urban Roads Execution; Redesign

Technical Activities by Institutional Members

Moradabad Institute of Technology, Ramganga Vihar, Moradabad, Uttar Pradesh, Department of Electronics and Communication Engineering, organized the National Conference on "Emerging Trends in Engineering, Science and Technology (ETEST-2K19)" during September 06-07, 2019 in association with The Institution of Engineers (India). The Keynote Address was delivered by Dr Vinay Rishiwal, Rohilkhand University, Bareilly, on the topic "IoT Driven Agriculture (Challenges and Opportunities), which emphasized on the applications of IoT in the current agriculture sector and its challenges. Prof. Ramchandra, Indian Institute of Technology, Delhi, delivered a lecture on the significance of quality in research and its societal benefits.

For details you may contact Mr. Kumar Manu, Assistant Professor, Department of Electronics and Communication Engineering, Moradabad Institute of Technology, Moradabad, Uttar Pradesh.

Email:kumarmanu@mitmoradabad.edu.in

A M C Engineering College, Kalkere, Bangalore, Karnataka, Department of Electronics and Communication Engineering, organized the National Conference on "VLSI, Communication & Computer Networks-VCCN 6" during October 17-18, 2019 at their college premises in collaboration with The Institution of Engineers (India). Dr. Manjunath Ramanchandra, Principal Consultant, Wipro Technologies, Bengaluru spoke on the topic "Trends and Tricks in the usage of Emerging Technologies". In his speech, Dr. Ramanchandra discussed about the scope and issues related to Quantum Computing, Nano-scale Technology, Atomic Scale Integration, Cloud Computing, IoT Convergence of Technologies & AI Revolution.

For further details you may contact Dr. T. Kavitha, Professor, Department of Electronics and Communication Engineering, A M C Engineering College, Bangalore, Karnataka.

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Announcement

Contribution for Centenary Celebrations of
The Institution of Engineers (India)

The Institution of Engineers (India) has entered its next Century in September 2019 and we intend to celebrate this significant landmark in a befitting manner. Various International Seminars are being organized in India and Overseas on contemporary and innovative themes culminating in Global Engineering Congress next year. Also, IEI has launched a special outreach programme to induct new members into its' fold along with an image enhancement programme to project the Institution both nationally and globally.

For this purpose, an IEI Centenary Fund has been established and the finances accrued by way of donation/sponsorship would be utilized to organize various events in the Centenary Year.

The contribution made under this section is exempted as per Section 80G of the Income Tax Act 1961, if made by cheque/draft/NEFT.

Details of IEI Centenary Fund are as follows.

Name of the Fund	IEI Centenary Fund
Bank	HDFC Bank
A/c No	50100301303426
IFSC Code	HDFC0000469

Technical Activities by Institutional Members

National Seminar on "Application of Laser in Manufacturing"

to be organised by

GIET University

Gunupur, Rayagada, Odisha

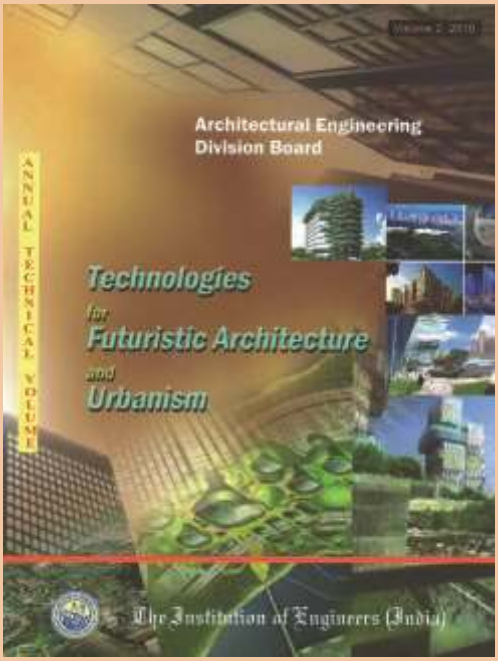
March 14-15, 2020

Mobile No.: 9861876251; Email: prabinapatnaik@giet.edu

Annual Technical Volumes of IEI are available online

[https://www.ieindia.org/webui/IEI-Publication.aspx#annual-technical-volume]

Architectural Engineering Division Board



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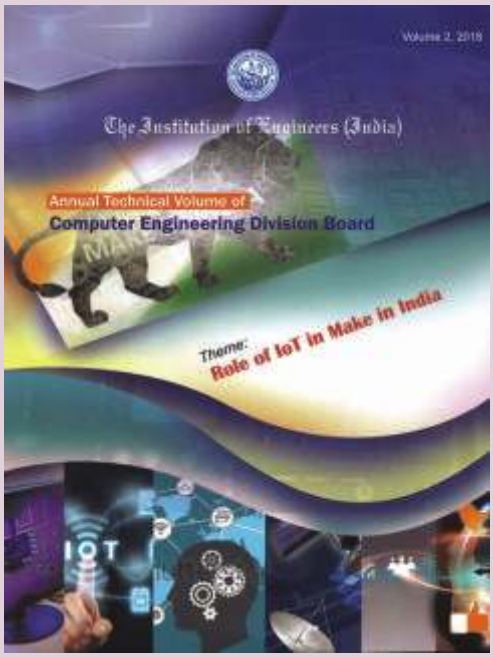

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