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**International Conference of Advance
Research and Innovation (ICARI-2017)
[www.ijari.org]**

Organized By

Delhi Technical Campus

(Affiliate to GGSIP University, Delhi) (Sunshine
Educational and Development Society) 28/1

Knowledge Park III

Greater Noida, (UP) India

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Venue

Institution of Engineers (India)

Delhi State Centre, (Engineers Bhawan)

2 Bahadur Shah Zafar Marg, New Delhi-10002

January 29, 2017

Message from Chairman Desk



It is a very great pleasure for me to welcome you on behalf of the Conference Committee, to this **International Conference Advance Research and Innovation (ICARI-2017)**. I am glad that we can have this multinational Conference on **29th Januray 2017** at **Institution of Engineers (India) Enginners Bhavan , 2 BS Zafar Marg in Delhi-02**. The call for papers had an overwhelming response. Many distinguished specialists from all over the world submitted more than 200 abstracts and the International Scientific Committee was forced to assesses and include them to 10 Divisions and their sessions. This book contains 125 abstracts of received manuscripts with ISBN number. The text of received manuscripts will be published by the Journal named-**International Journal of Advance research and Innovation** with ISSN number.

There is hope that the Conference Proceedings will serve as a comprehensive compilation of the present knowledge and experience and will be used by technocrats, entrepreneurs, architectures, managements and industries, who are concerned with the subjects presented at the International Conference ICARI-2017.

We are confident that your active participation in the Conference and its social events will enable you to take home one of the most precious commodities a meeting like this can offer, namely human contacts. For your convenience in meeting old friends and making new ones, and for your enjoyment, we have arranged Sunday for the noble cause.

On behalf of the Executive Committee of ICARI 2017, I wish to thank all the authors, invited lecturers, session chairman, members of the International Scientific Committee, National coordinators and numerous others who helped to shape the content of this conference. I would like to thank our sponsors especially Department and Science and Technology (SERB, Ministry of Science and Technology), DRDO (Ministry of Defense) from Govt. of India, with administrative and organizational works were the prerequisite and contribute for a successful conference.

Mr. Vipin Sahni
(Chairman, Sunshine Educational Development Society)

Message from Director General Desk



Yearning for knowledge, an insatiable desire to know the unknown, inordinate passion for the unlimited and an innate urge to improve- this is all that defines a curious mind. With this intellectual movement and an innovative move, I welcome you to the '**International Conference of Advance Research and Innovation (ICARI)-2017.**' As the theme specifies, it is a multidisciplinary dialogue, breaking both the barriers of content and boundaries of place as being international in scope.

Plagiarism should be strictly avoided and ethics of publication should be followed by every author. Addressing a comprehensive community of academicians, experts, researchers and students, this conglomeration of eminent scholars from diverse fields will highlight the importance of research and innovation and offer new insights for the future. The whole gathering will be a divine experience where the wisdom and experience of past stuffed with the advances and innovations of present will work for the bright future of the nation.

I congratulate the entire organizing team of this academic and research event who worked tirelessly and incessantly to make this event a great success. I believe that this conference will prove to be very enriching, enlightening and fulfilling for all the participants.

Hon'ble Justice Bhanwar Singh
(Former Judge, UP High Court)

Director General

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Message from Editor in Chief Desk



Dear Colleagues

When the goals are big and universal, when the scope touched the national and international boundaries, when the mind aspires for the unlimited, a Voice becomes the imperative need to pierce the ears. It gives me immense pleasure that ICARI-2017 has been graced with the presence of Chairman of SEDS, Chair Person SEDS and Vice Chairman. Respected DG Sir and Dr. RK Sharma encouraged, motivated and energized us with great enthusiasm. I am very happy that this time our sponsors showed a positive interest in our noble cause. I am thankful to **SERB, DST (Ministry of Science and Technology), DRDO (Ministry of Defense)** from **Govt. of India**, IES Master, Lelogix Design Solution Pvt. Ltd and VPL Infotech for their valuable academic and research support.

We got an overwhelming and very enthusiastic response from students, researchers and faculty and experts from reputed organizations. I thank GGSIP University for providing us such a wonderful platform to share knowledge and wisdom. Papers from more than seven countries were received and the book of Abstract with ISBN was prepared and distributed as conference proceedings. Papers from respective authors were presented in .ppt form, from India and abroad.

I am highly thankful to **Dr. Rajeev Sharma (Scientist D, DST)** for being our **Chief Guest**. **Dr. RK Pandey (Associate Professor, IIT Delhi)**, **Dr. S Maji (Principal, GBPEC Okhla/ Director DITE, Govt of NCT of Delhi)**, **Dr. SK Singh (Professor, DTU)**, **Dr. AK Mandal (HoD Pathology/Director Safdar Jung Hospital, Delhi)** and **Dr. Amitanshu Patnaik (Scientist D, DRDO)** were our **Keynote Speakers** and **Guest of Honors** and grace the occasion on 29th January 2017 with their experience, skill and knowledge.

Faculties from DTU, Dr. A Mandal, Scientist C-UGC, Dr. RS Misra, Dr. RC Singh, Dr. Rajeev Chaudhary, Dr. Ranganathan M Singari, Assistant Prof. Nand Kumar, Parinita Sinha students of DTU add the value in the successful complication of the event. Researchers, academicians, Scientists, Engineers, Technocrats from premier institutes and universities gathered on this grand event to exchange ideas and innovations from all corners of India and abroad.

Finally, Dr. Pranay Tanwar, Dr. Alka Srivastava with all faculties and students from Delhi Technical Campus showed a great enthusiasm in ICARI-2017.

I believe that ICARI-2017 will prove to be very beneficial, enriching and fruitful and also open new fronts and vistas for future research and innovation..

Dr. Bhupendra Singh Chauhan
HoD, MAE Department/Organizing Secretary ICARI-2017

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29th January 2017

Aim

International Conference of Advance Research and Innovation (ICARI-2017) is a premier international conference which aims at current challenges in science and technological advancements with research updates and innovations which is shaping the future of mankind. This conference welcomes all scientists, engineers, technocrats and researchers from all walks of society to share their knowledge and wisdom for exploring solution of current and future challenges. This platform provides an international forum for researchers to exchange of ideas in recent advances on various aspects of theories, analysis, experimentation and computational methods in science, technology and management etc.

Area of Interest

It is a **multi disciplinary conference**, which includes all areas of Science and Technology. Innovative original research papers on topics covered under following broad areas (but not limited to).

Mechanical engineering, energy engineering (renewable and non renewable energy), industrial engineering, production engineering, automotive engineering, marine engineering, automation engineering, applied sciences, architecture and building materials, bio-mechanical technology, chemical and material engineering, bio-medical engineering, fluid mechanics, thermal engineering, environmental and civil engineering, computer science & software, electrical system, instrumentation and electronics engineering, mechatronics, information technology, electronics and communication technology, metallurgical science, economic policies and issues, total quality management, optimization techniques, management, etc.

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Design and Simulation of Eighth-order Active-R Band Pass Filter using Multiple Feedback Topology

BA Atsuwe^{1,*}, GA Igwue², AN Amah³

¹Department of Science Education, University of Agriculture, Makurdi-Nigeria

²Department of Electrical/Electronics, University of Agriculture, Makurdi-Nigeria

³Department of Physics, University of Agriculture, Makurdi-Nigeria

Email:ella4mneuter@yahoo.com

Abstract: In this paper, an active Eighth-order R band pass filter is designed and simulated at centre frequency f_0 of 284 KHz and quality factor Q of 30. The filter is designed from given specifications of the filter. The architecture that will be used is the multiple feedback and the gain magnitude response is simulated using MULTISIM work bench version 11.0. The simulation shows that the bandwidth of the filter at stage 3 was most selected with Bandwidth of 7.65KHz and the roll-off of the filter with values approaching -60dB/decade instead of an Eight-order which is -160dB/decade and there was a shift in the centre frequency of the filter, which is only a slight shift. The filter had a high mid-band gain that increased with each stage 1 (40.14dB) to stage 4 (87.50dB).

Keywords: R-filter, Quality factor, Multi-sim, Band pass, multiple-Feedback

Screening Ethiopian Lentil (*Lens Culinaris M.*) for Salt Tolerance at Germination and Early Seedling Stage

Azene Tesfaye¹, Yohannes Petros², Habtamu Zeleke³

¹Biodiversity Research Centre, Arba Minch University, Ethiopia

²Haramaya University, Department of Biology, P.O.Box.138, DireDawa, Ethiopia

³Haramaya University, School of Plant Science, P.O.Box.138, Dire Dawa, Ethiopia

E-mail:azet567@gmail.com

Abstract To evaluate genetic variation among Ethiopian lentil, laboratory experiment were conducted to screen 12 accessions of lentil (*Lens culinaris M.*) for salt tolerance. Seeds of 12 Lentil accessions were grown at laboratory (Petri dish) condition with different levels of salinity (0, 2, 4, and 8 dSm⁻¹NaCl) for 4 weeks. The experimental design was completely randomized design (CRD) in factorial combination with three replications. Data analysis was carried out using SAS software. Average germination time, germination percentage, seedling shoot and root traits, seedling shoot and root weight were evaluated. The two way ANOVA for varieties revealed statistically significant variation among lentil accession, NaCl level and their interactions ($p < 0.001$) with respect to the entire parameters. It was found that salt stress significantly delays germination rate and decreases germination percentage, shoot and root length, seedling shoot and root weight of lentil accessions. The degree of decrement varied with accessions and salinity levels. Accessions Lent 12, Lent 1 and Lent 2 were better salt tolerant than the other accessions. As the result, it is recommended to be used as a genetic resource for the development of lentil accession and other very salt sensitive crop with improved germination under salt stress condition.

Key words: Accession, Germination, Lentil, NaCl, Screening, Seedling stage

Drastic Revolution in Supply of Renewable Energy and Astonished Energy Performance Technologies

Vinay Dua

Department of Physics, R.S.M. College, Dhampur (Bijnor) UP, India

Email: drvinaydua123@gmail.com

Abstract: Electricity consumption will comprise an increasing share of global energy demand during the next two decades. In recent years, the increasing prices of fossil fuels and concerns about the environmental consequences of greenhouse gas emissions have renewed the interest in the development of alternative energy resources. In particular, the Fukushima Daiichi accident was a turning point in the call for alternative energy sources. Renewable energy is now considered a more desirable source of fuel than nuclear power due to the absence of risk and disasters. Considering that the major component of greenhouse gases is carbon dioxide, there is a global concern about reducing carbon emissions. In this regard, different policies could be applied to reducing carbon emissions, such as enhancing renewable energy deployment and encouraging technological innovations. Two main solutions may be implemented to reduce CO₂ emissions and overcome the problem of climate change: replacing fossil fuels with renewable energy sources as much as possible and enhancing energy efficiency. In this paper, we discuss alternative technologies for enhancing renewable energy deployment and energy use efficiency. JEL Classification: D61, D62, H23, N50, O13, Q52, Q55

Keywords: - Energy resources, renewable energy, energy use efficiency, generation technology, carbon emission, green employment

Availability of Non-Conventional Energy Resources in India, an Overview

Jyoti Singh

Department of Applied Science, Bharati Vidyapeeth College of Engineering, New Delhi-110063

Email: tejaswa2003@yahoo.co.in

Abstract: Energy is one of the basic requirements of economic development. It is a primary and most universal measure of all kinds of work. Every work in this world is only the expression of flow of energy in either of its forms. As conventional energy sources are depleting day by day, utilization of alternative energy sources is the only solution. All sectors of economy i.e. agriculture, industry, transport, commercial and domestic need inputs of energy. The fossil fuel used for this energy requirement has an adverse effect both on the environment as well as the economy of the country. Energy consumption is steadily increasing and this trend is set to continue due to rises in the world's population and living standards. The demand for energy is predicted to increase by approximately 60% on current levels by 2030, with the developing world accounting for two-thirds of this increase. This has diverted the research towards the alternate energy sources. Thus an ever increasing power demand, depleting fossil fuel resources and growing environmental pollution has forced both the developing and developed countries to think seriously for other alternative sources of energy which can also address the critical issues of sustainability, renewability and pollution reduction. Renewable energy grid integration can transform the existing grid into a more efficient, reliable, safe and enable address sector challenges. Various forms of alternative energy sources are solar, wind, biogas/biomass, tidal, geothermal, fuel cell, hydrogen energy, small hydropower etc. Solution to such long-term energy problem will come only through Research and Development in the field of alternative energy sources

Keywords: Non conventional, Energy, fossil fuels etc.

Thermodynamic Functions of 2, 6- Di-bromo-phenol using Spectroscopic Data

SK Gupta, Aman Rohilla, Preeti Bhadauriya and Ajay Pal Indolia

Department of Applied Sciences (Physics), Delhi Technical Campus, Greater Noida

Email- drsatish2108@gmail.com

Abstract: Considering O-H group as a point mass, the vibration spectrum of 2, 6 di-bromo Phenol was analyzed and all the normal modes of vibrations were identified by assuming C_{2v} symmetry for the molecule with Z- axis passing through $C_{ring}-O$ bond and y axis perpendicular to the molecule.

Normal coordinate analysis was performed to compute the thermo dynamical functions using statistical methods. Variations of thermodynamic functions with temperature were plotted and trend discussed.

Keywords: 2, 6- Di-bromo-phenol, Thermodynamic functions

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Ecological Park as an Emerging Type for Sustainable City-A Need

Chandrakala Kesarwani

Department of Architect, Delhi Technical Campus, B-117, Sector 71, Noida

Email:chandrakesarwani@gmail.com

Abstract: Large parks are complex systems, and as such, parks with an area in excess of 500 Acres within contemporary metropolitan regions warrant special consideration and study. In particular, large parks pose specific challenges for long-term sustainability in terms of design, planning, management and maintenance, principally due to their actual and potential biodiversity coupled with the complexity inherent in their ecology and program. Indeed, "largeness" is a singularly important criterion that demands a different approach to design, planning, management and maintenance-oe that explicitly provides the capacity for resilience in the face of long-term adaptation to change, and thus for ecological, cultural and economic viability.

Keywords: Eco-park, Sustainable landscape, Ecology

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Real Estate Investment Trends in Unauthorised Colonies of Delhi, A Case Study of Sangam Vihar, New Delhi

Christopher Paul

School of Architecture, Delhi Technical Campus, GGSIP University

Email: ar.christopher.paul@gmail.com

Abstract: In recent years, Delhi has had an explosive growth in terms of economic development and population growth. Major contributor being, In-Migration of poorer sections of society coming to Delhi for better employment opportunities. Hence there is a growing shortage of housing in the city. The apex body DDA, has not been able to provide planned and legal housing options for the people, especially the poorer section. This study is an investigation to unravel the Real estate market in the colonies wherein such sections of society has opted to build their houses, however it being in an illegal manner.

The study is based on the parameters of investment, such as, Size of investment, plot sizes, Liquidity of buying and selling period, Lock-in period for the investment, and the FAR built-up in these colonies. Other parameters include Net Annual income (rental) Type of accommodation available for rent, duration of stay of the tenants, size of investment- post purchase. The Average rate of return based on the lock-in period and the size of investment.

These parameters along with the advantages have pronounced these UACs as a very good investment option among small and medium investors, besides being a good housing option

Keywords: Unauthorized, Real Estate, Investment Trends, Housing, Return

Impact of Globalization in Teacher Education with Reference to ICT

Kapil Dev

Department of Education, CRS University, Jind, Haryana, India

Email: kdev61981@gmail.com

Abstract: The concept of globalization has resulted in dissolution of boundary and the world shrinks to a global village. The happening in one part of the world affects the life of people living in the other part of the world i.e. the world has become highly cohesive and interconnected and life in insulation has no meaning.

The present century is undergoing a major revolutionary change where technology has intervened in all works of life to make it social, economic, political or cultural. Education is no exception to be adversely affected by the intervention of technology and it has also seen many appropriate changes that has brought a totally new look to the concept of education in modern times. With the technologically advanced world, the teacher should be aware of the new technologies and the way to integrate them in education so as to enhance learning in their students which is the major aim of education. Teachers of all levels of education should be able to incorporate new technologies and their impact lessons through latest trends that will affect at the cognitive domain of the learner to greater extent.

Keywords: teacher, education, globalization etc.

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Revitalizing Neighborhood through Sustainable Waterfront Development

Tanya Gupta

School of Architecture, Delhi Technical Campus (GGSIU), Greater Noida

Email: tanya.archi@gmail.com

Abstract: Water gives birth to human life and civilization; accordingly, a unique fascination emanates from the riverfront. Many famous cities all over the world are generally located at the junctions of rivers and seas. These last two features allow for convenient transportation and multi-cultural integration, which imparts its unique charm to these cities.

The waterfront development provides a unique opportunity for developing a strong city image along with providing an opportunity to scientifically design systems for recharging ground water from the only large natural resource of the city.

An environmentally conscious approach for integration of the river into the urban fabric development has been devised. There has been an appropriate consideration of the natural potential of the land for developing into a biodiversity zone for conserving the natural heritage of the river basin as well as the local and transient requirements of facilities at the city level, like large level city greens of varying nature along with some recreational facilities.

Keywords: Waterfront, riverfront development, environment

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Personality Correlates of Facebook Usage and Satisfaction

Nidhi Verma

Department of Psychology, Ch. Ranbir Singh University, Jind, Haryana, India

Email: nidhi.nv2006@gmail.com

Abstract: The purpose of the present study was to examine the personality correlates of facebook use and its satisfaction. For this, a sample of 100 PG students of various departments of Ch. Ranbir Singh University, Jind were taken with the age range from 22-30 and the mean age of 26 years. The participants were administered with the Facebook scale by (Sheldon, 2008) and NEO-FFI by Costa and Mc Crae (1995) to assess personality traits. The results were analysed by using Pearson's product moment correlation. Results revealed that out of the five factors of NEO-FFI, Openness to experience is found to be highly correlated with facebook usage and satisfaction followed by Introversion and Neuroticism. Larger sample is required in order to generalize the results.

Keywords: Personality, Facebook Use, Satisfaction etc.

Overlooking the Matter of Sustainability: A Dangerous Trend

Reema Chaudhary¹, Rajiv Chaudhary²

¹Applied Sciences Department, Bhagwan Parashuram Institute of Technology (BPIT), Delhi

²Mechanical Engineering Department, DTU Delhi 110042, India

Email: reemachaudhary@rediffmail.com

Abstract: In past current few years the world has recorded new levels of achievements, by virtue of innovations, new devices and developments in almost every field. It was good to enhance the effectiveness of the existing systems with new ideas and innovations, but a holistic approach would have been better as these were to take care of all the important aspects associated with Sustainability.

But, it was not so with all the new propositions. Some of them could be realized only by over-extraction, exploitation, some kind of manipulation, as these some were achieved by overlooking some very important aspects, which were very relevant to the environment. In the process we have been very busy in harnessing natural resources, manufacturing, and adopting methods and means which are not environment friendly and also threatening to life in general.

This paper various such threats and dangers have been identified, which are very alarming also and are falling against the principles of sustainability. Also some measures have been suggested so that such trends may be discouraged at various levels and matter of sustainability may be ensured.

Keywords: Sustainability, Environment, Exploitation, Extraction, Natural Resources

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Evaluation of Efficiency of Automobile Manufacturing Companies in India using DEA

Nand Kumar, Ankur Satya

Department of Applied Science, Delhi Technological University, Delhi, India

Email: nand.dce@gmail.com; satya.ankur@gmail.com

Abstract: This study seeks to measure and evaluate the efficiency of Automobile manufacturing companies in India using Data Envelopment Analysis (DEA) methodology. DEA is a methodology for evaluating and measuring the relative efficiencies of a set of decision making units (DMUs) that use multiple inputs and outputs. DEA provides management with information regarding the most efficient Automobile manufacturing companies in the observation set and identifies the relatively inefficient companies by comparison with the most efficient ones. Also, it indicates the magnitude of these inefficiencies.

Keywords: DEA; Efficiency; DMU; CCR model

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Importance of Informal Learning over Formal Learning in 21st Century

Radhika Mahajan

Department of Applied Science, Institute of Information Technology & Management Janakpuri, Delhi-58

Email: radhika.mahajan79@gmail.com

Abstract: We now accept the fact that learning is a lifelong process of keeping abreast of change. And the most pressing task is to teach people how to learn. The term "learning environment" suggests place and space – a school, a classroom, a library. And indeed, much 21st century learning takes place in physical locations like these. But in

today's interconnected and technology-driven world, a learning environment can be virtual, online, remote; in other words, it doesn't have to be a place at all. Perhaps a better way to think of 21st century learning environments is as the support systems that organize the condition in which humans learn best – systems that accommodate. Experts say 21st century learning must take place in contexts that "promote interaction and a sense of community [that] enable formal and informal learning." Informal learning means up gradation of human ware. Need to develop attitude through skill monitoring.

Keywords: informal learning, formal learning, library etc.

Adverse Effect of Demonetization in India

Anurag Varshney

Principal Scientist, Yuvraj Research Center Pvt Ltd., Ghaziabad- India

E-mail: yuvrajexportind@gmail.com, Mo.: +91-9582050678

Abstract: Demonetization in India is adverse effected Indian economy. It assumes that in long run it will be positive for economic growth, development and GDP. Black Money market will be finished and Indian currency value will be increased at International level. India faces a big revolution change in economy as aversive or supportive. Predictions & problem could be study but only Future can shoe the right result. Indian economy has to have stood very strongly at world level Economic Growth. The study is defining the adverse effect on economy during Demonetization Period.

Keywords: Economic Factors, GDP Growth, adverse demonetization effects in India, economy during Demonetization Period, Future of Indian Economy

ICARI-AS-17-01-15

Biodegradability of Laundry Detergent Surfactants

Divya Bajpai Tripathy¹, Anuradha Mishra¹, Anjali Gupta², Alpa Yadav¹

¹Department of Applied Sciences, Gautam Budhha University, Greater Noida-201310 (UP), India

²Department of Applied Sciences, Galgotias University, Greater Noida-201312, (UP), India

Email: divyabaj@gmail.com

Abstract: The use of surfactants is increasing day by day. The byproducts of surfactants harm our atmosphere. Biodegradable surfactants are displacing conventional soaps and surfactants to control the harmful effects of uses of surfactants. This review paper describes the biodegradability of laundry surfactants. The main objective of this paper is to discuss the biodegradability of different type of surfactants approved by analytical data. This paper also discusses different analytical methods to tests the biodegradability of surfactants

Keywords: Surfactants, anaionic surfactants, cationic surfactants, biodegradability, biodegradability tests.

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Developing Methodology for Strategic Environment Assessment for Urban Transportation Policy: A Case of Ahmadabad City

Abhinav Garg

Department of Architecture Science, Delhi Technical Campus (Guru Gobind Singh Indraprastha University) G Noida UP, India

Email: ar.abhinavgarg@gmail.com

Abstract: The last two decades have witness controversial yet rapid development of the environmental policy agenda. It is considered more important to improve environmental performance and environmental awareness in decision-making. Nowadays Strategic Environment Assessment (SEA) is the most accepted term for the environmental assessment of impacts of proposed policy or plan, for ensuring full inclusion of environmental concern. SEA appropriately addresses the environmental, social and financial consideration at the earliest and appropriate stage of decision-making.

This work is an attempt to formulate SEA process which could be helpful in formulating plan/ policy for urban transportation system, thereby ensuring that economical, social and environmental considerations are taken at planning stage itself.

It was found out that the proposals should consider the city's morphology into account before arriving at any decision. More stress should be given on decreasing the total passenger-Km by innovative land-use planning; concern should be toward controlling motorization and encouraging non- motorized movement in the city. The increasing trend to travel by vehicle will put extra economical burden on the economical weaker section of society. Hence it is concluded that for long term Sustainability there is a need of integrated land-use and transportation planning.

Keywords: Environment Impact Assessment, Strategic Environment Assessment, Sustainable Transportation

Calculations of Atomic Parameters of Highly Charged Fe ions for Interpreting Astrophysical Spectra

Gajendra Singh^{1*}, A K Singh¹, Basu Kumar² and Anil Kumar²

¹Department of Applied Sciences, MSIT, affiliated to USICT, GGSIPU.

²Jai Prakash Vishwavidyalaya, Chapra, Bihar.

Email: gpskmc@gmail.com

Abstract: Study of physical processes in astrophysical and fusion plasmas consists of detail analysis of high resolution atomic spectra obtained from such plasmas. The X-ray spectra from iron K-shell and L-shell ions are particularly important for astrophysics as they are in wavelength range covered by telescopes on board space observatories like Chandra and XMM-Newton. To conduct the astrophysical plasma diagnostic studies of Active galactic nuclei (AGN), solar corona and other similar astronomical entities, a large number of accurate transition data both from theory and experiment are indispensable. Here we have calculated similar atomic data in use for these studies by multi-configuration Dirac-Fock (MCDF) formalism used in Grasp2K code. Calculations consists of ground and few low level excited states in He-like and Li-like Fe ions and some important transitions connecting these levels.

Keywords: Astrophysics, Atomic Data, Plasma Diagnostics

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Fabrication of thin/thick Targets and their Applications in Doppler Tuned Spectroscopy

Basu Kumar¹, Shamsheer Husain¹, Gajendra Singh², AK Singh², Anil Kumar¹

¹Department of Physics, J. P. University, Chapra, Bihar, India

²Department of Applied Sciences, MSIT, Janakpuri, Affiliated to USICT, GGSIPU, New Delhi, India

Email: basu@vigyanacademy.org

Abstract: Thin film target of carbon has been fabricated by using heat resistivity method under high vacuum condition of order of 10^{-6} mbar, whereas thick absorber foils of Ti, V, Ni, Cu & Sn have been prepared by rolling technique under gradually increasing pressure. They have been used in Beam foil spectroscopy followed by high resolution MCDTS to carry out measurements on Life time and transition energy of highly charged Ti and Cu ions. Thin Carbon foil was helpful in study of various charge states formed by the processes of MEC (mechanical electron capture)& REC(radiative electron capture). These highly charged ions produce Doppler shifted X-rays which we have investigated with the help of thick absorber foil of known absorption edges. With this type of experiment it is possible to highlight the advantages of MCDTS over the traditional crystal diffraction spectroscopy in terms of cost, efficiency and accuracy. It may eventually lead to fabrication of low cost high resolution table top spectrometer, as well. Irradiation of thin and thick targets by highly charged ions will also find applications in the field of material science/engineering. Theoretical analysis of the experiment, which will be presented in detail, requires wide applications of computational mathematics. In short, the present study covers a wide range of diverse fields of current interest.

Keywords: spectroscopy, energy, electrons etc.

Emerging Perspective of Energy Loss in Ion-Atom Collision Spectroscopy of Astrophysical Importance

Shamsher Husain¹, Basu Kumar¹, Gajendra Singh², Anil Kumar¹

¹Department of Physics, JP University, Chapra, Bihar, India

²Department of Applied Sciences, MSIT, Janakpuri, Affiliated to USICT, GGSIPU, New Delhi, India

Email: science.husain@gmail.com

Abstract: Thin film target of carbon has been fabricated by using heat resistivity method under high vacuum condition of order of 10^{-6} mbar, whereas thick absorber foils of Ti, V, Ni, Cu & Sn have been prepared by rolling technique under gradually increasing pressure. They have been used in Beam foil spectroscopy followed by high resolution MCDTS to carry out measurements on Life time and transition energy of highly charged Ti and Cu ions. Thin Carbon foil was helpful in study of various charge states formed by the processes of MEC (mechanical electron capture) & REC (radioactive electron capture). These highly charged ions produce Doppler shifted X-rays which we have investigated with the help of thick absorber foil of known absorption edges. With this type of experiment it is possible to highlight the advantages of MCDTS over the traditional crystal diffraction spectroscopy in terms of cost, efficiency and accuracy. It may eventually lead to fabrication of low cost high resolution table top spectrometer, as well. Irradiation of thin and thick targets by highly charged ions will also find applications in the field of material science/engineering. Theoretical analysis of the experiment, which will be presented in detail, requires wide applications of computational mathematics. In short, the present study covers a wide range of diverse fields of current interest.

Ion atom collision spectroscopy technique is continuously playing major role in study of nature and natural phenomena, especially those related to Astrophysics of outer space plasma. Slow and fast moving ions, when pass through thin solid targets, suffer energy loss due to multiple collisions inside the material, resulting into Energy loss as well as Energy loss straggling. The phenomenon of energy loss has two components arising from the surface effect and the bulk effect. In case of fast ions collisions with atomic nuclei inside the target plays important role, whereas electronic collisions dominate at low energy end. Interplay of these two phenomena lead to Energy loss straggling whose different aspects will also be presented in the meeting. In this work, we will present the theoretical calculations using, SRIM and TRIM codes of various parameters of energy loss of keV as well as MeV ions incident upon a number of thin solid bi-layer targets. The concept of collective plasm on excitations will be invoked to account for the Wake field effect on the process of energy loss straggling.

Keywords: Spectroscopy, atom, electron etc.

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Self Synchronizing Variable Length Codes: T-Codes

Sushil Kumar

Department of Mathematics, Rajdhani College, University of Delhi, New Delhi, India

Email: skazad@rajdhani.du.ac.in

Abstract – This paper describes a new class of variable length codes that have exceptional tendency toward self-synchronizing, called T-codes. Variable length codes (VLCs) are used to develop an efficient source code that is generated by a discrete source. One of the major problems in the digital communication through different channel is the Loss of synchronization. During the communication through channel, the information usually goes through compression JPEG standards and others which use variable length coding. During this communication through channel, a single bit error can cause the decoder to lose synchronization. Thus, one requires the VLC with the property that data may resynchronize automatically after an error occurs in a minimum delay. It is observed that T-codes give better synchronization performance when compared to Huffman Codes with some sacrifice in compression efficiency.

Keywords— HUFFMAN codes; T-codes; PSNR

Religious Violence and the Conspiracy of the Secular West

Vhuyashi Das

Department. of Applied Sciences, Delhi Technical Campus, Greater Noida

Email: das.vibha88@gmail.com

Abstract: Religion has a dangerous tendency to condone, propagate and even promote violence. This idea is so deeply rooted in both Eastern and Western social and political psyche that it is almost impossible to separate religion and politics from their policies and institutions. However, I will challenge the validity of this thought in this paper. Firstly, I will try and prove that dividing institutions and ideologies into separate watertight compartments is not possible and when done becomes incoherent and arbitrary. Secondly, this division just seems to ignore some varieties of violence are while others are condemned. Finally, this paper will try to prove these two hypotheses and bring home the conclusion that, while religion has to extent instigated violence, it has usually done so in alliance with secular, political and economic forces with a very 'worldly' end in mind.

Keywords: Religion, violence, conspiracy etc.

ICARI-AS-17-01-23

Writing Technical Report to make it more object Oriented, Effective, Communicative and Purposeful

Reema Chaudhary¹ and Rajiv Chaudhary²

¹Applied Sciences Department, Bhagwan Parashuram Institute of Technology (BPIT), Delhi

²Mechanical Engineering Department, DTU Delhi 110 042, India

Email: reemachaudhary@rediffmail.com

Abstract: There are various ways of making the Technical Communication possible amongst practicing engineers. There may be different forms of technical communication like, making reports, preparing proposals, writing scientific papers, as well as drafting electronic messages etc. Although all these writings convey something to others, but it is also worthy to know, how the communication could be made even more effective and successful. It is very important to realize that if the problem/case could be communicated effectively, the similar or better would be its response/execution. Otherwise if the communication would be improper, there are possibilities of mistakes, even if suggesting right thing but conveyed wrongly.

In this paper various such elements have been identified and discussed, which can make the Technical communication more Object oriented, Effective, Communicative and Purposeful. It will also improve the communication skills, resulting in successful communication in other domains of life too.

Keywords: Communication, Objective oriented, Response, Skills and Execution

ICARI-AS-17-01-24

Whatsapp Marketing and Monetization: Effects and Benefits

Ramani Swarna

Department of Applied Science, Delhi Technical Campus, Greater Noida

Email: ramaniswarna@gmail.com, Ph: +918527149777

Abstract: The marketing scenarios are changing in the contemporary times. An attempt will be made to focus on the marketing tool which is easily available to all. The Digital Marketing has conquered all domains of the social media-text messaging, Face Book, LinkedIn, YouTube, etc. However, popular means to be connected to each and every person is through Whatsapp-irrespective of the space and time. In this paper, the hypothesis is "Monetization had Severe Effects on Whatsapp Marketing". This will be contradicted in a logical argument and anti-hypotheses will be proved with sufficient data. The research methodology adopted for this is descriptive and statistical by nature. In the end, it will be concluded that the whatsapp marketing seems to be the most desired tool for marketing purposes.

Keywords: Whatsapp, marketing, monetization, effects, benefits

Equation of State and High Pressure Behavior of Earths Lower Mantle Minerals

Preeti Bhadauriya, Aman Rohilla, SK Gupta, Malvika Chaudhary and Ajay Pal Indolia

Department of Applied Sciences (Physics), Delhi Technical Campus, Greater Noida

Email- dr.preetibhadauriya@gmail.com

Abstract:- Geochemical and geophysical evidences indicate that the composition of Earth's lower mantle is primarily (Mg,Fe)SiO₃ perovskite with a little dissolved Al₂O₃, (Mg,Fe)O magnesiowustite, and a few percent CaSiO₃ perovskite. The high pressure behavior of lower mantle minerals are studied up to the wide range of compressions ($V=V_0=1.0$ to 0.70) using Birch-Murnaghan, Rydberg-Vinet, Shanker, generalized Rydberg, Keane and Stacey equation of states. The values of pressure P, bulk modulus K and its pressure derivative K' have been calculated for the Earth's lower mantle minerals. The present study concludes the agreement between the equations of state with compressions.

Keywords:- Equation of state, bulk modulus, lower mantle minerals

ICARI-CS-17-01-01

Deregulation of Power System in India: A Review

Sumit Kumar Maitra¹, Mathewos Lolamo¹, Umakanta Choudhury²

Institute of Technology, Computer Engineering Department, Wachemo University, Hossana, Ethiopia
Department Electrical Engineering, Delhi Technical Campus, Greater Noida, Delhi

Email:sumit.maitra@gmail.com, matilolamobir@yahoo.com, ukchoudhury2015@gmail.com

Abstract- World-wide, many countries and jurisdictions are advancing down the road of electricity privatization, deregulation, and competition. As the deregulation process develops questions are often raised about design of existing markets. Studies and descriptions of market designs are common but it is more difficult to discover the success or failure of initiatives in other countries and markets. Indian power industry restructuring with a limited level of competition, since 1991, has already been introduced at generation level by allowing participation of Independent Power Producers (IPPs). It is felt that the prevailing conditions in the country are good only for wholesale competition and not for the retail competition at this moment. A suitable model is suggested based on the current and future market participants.

Keywords -Deregulation, power system restructuring, power pool, generation, distribution

ICARI-CS-17-01-02

Software as a Service (SAAS), Future of Information Technology & Business

Ravindra Kumar

Department of Computer Science Engineering, Delhi Technical Campus, Greater Noida, India
Email:ravindrakumarchauhan@gmail.com

Abstract:- Software as a service, or 'SaaS', is a software application delivery model by which an enterprise vendor develops a web-based software application, and then hosts and operates that application over the Internet for use by its customers. Customers do not need to buy software licenses or additional infrastructure equipment, and typically only pay monthly fees for using the software. SaaS applications provide customers with centralized, network-based access to data with much less overhead as compared to using a locally-installed application.

Keywords— Software as a service; Cloud Computing; Risk Factors; SAAS infrastructure; Lowered cost of implementation and upgrades

ICARI-CS-17-01-03

Simulation of Network with Cloud Servers Using Opnet Modeler

Vijaya Lakshmi Singh*, Dinesh Rai

School of Engineering and Technology, Ansal University Gurgaon, Haryana, India

Email: vijayalakshmingh@ansaluniversity.edu.in

Abstract: A multi-hop network consists of wired nodes. In this paper multi-hop wired network setup with multiple subnet and cloud internet connections would be simulated using OPNET Modeler. There will be four servers named File server, HTTP server, Email server and Database server. Also performance of this network will be analyzed.

Key words: Cloud computing; OPNET Modeler; performance metrics; performance parameters.

ICARI-CS-17-01-04

Determinants of New Agricultural Technology Adoption by Small Holder Farmers in Ethiopia

Gemechu Bekana Fufa

Department of Statistics, Faculty of Natural and Computational Science, Mettu University, Ethiopia. Email: gemechu.bekana@yahoo.com

Abstract:- Agricultural technologies are seen as an important route out of poverty in Ethiopia. However the rate of adoption of these technologies has remained low in most of this country. This study aim at shedding some light on the potential factors that influence agricultural technology adoption in Ethiopia. It does so by reviewing previous studies done on technology adoption. From the study technological, economic, institutional factors and human specific factors are found to be the determinants of agricultural technology adoption. The study recommends the future studies on adoption to widen the range of variables used by including perception of farmers towards new technology.

Keywords: Technology, Adoption, smallholder

ICARI-CS-17-01-05

Socioeconomic Impacts of Adopting New Agricultural Technology on Farmers, in Southwest Ethiopia

Gemechu Bekana Fufa

Department of Statistics, Faculty of Natural and Computational Sciences, Mettu University, Ethiopia **Email:** gemechu.bekana@yahoo.com

Abstract:- This study was undertaken to assess the socio-economic impact of adopting new agricultural technology on the livelihoods of the farmers, in southwest Ethiopia. The major objectives of this study is to assess the socio-economic impact of adopting agricultural technologies on producers in terms of education, frequency of feeding and ability to finance. A random sample of 323 farmers were selected using multistage random sampling from the study area. Multiple regression Models, Logistic regression models, test hypothesis: Z-test, t - test and coefficients of determination methods of data analysis were used in this study. Comparisons were made between agricultural technology adopters and non-adopters using the Z- test and regression analysis. This study defines agricultural technology adopters as those who use agricultural technology. If the producers not adopt the agricultural technology, he/she is considered as non-adopters. The ability of the household to feed the family was also seen in terms of the frequency of feeding the children and the adult. The percentage of farmers having corrugated iron sheet roofed houses, the percentage of farmers having separate kitchens other than their living rooms for cooking and the percentage of farmers having separate structure for livestock other than the living room were used to assess the impact of agricultural technology adoption on the housing conditions of the farmers. It was found that technology adopters are better off than the non adopters in terms of sending children to elementary school, housing conditions and ability to finance their families' food requirements. The impact of father's education, number of children and livestock ownership on the improvements in the livelihoods of the farmers and the problems facing the farmers were also emphasized. After all analysis, it can be concluded that adoption of agricultural technology enables the farmer to send children to school, have improved housing conditions, and food secured than the non-adopters. Finally, the results were recommended as creating the awareness about the uses of education, business awareness and advising the producers and non-producers of agricultural technology adoption.

Keywords: Agricultural Technology, Farmers, Adoption, Ethiopia and Education etc.

Data Modeling Techniques for Data Warehouse

Sona Kumra

Department of Computer Application, Bharatiya Vidhyapeeth, Paschim Vihar, New-Delhi **Email:** sonakumra1992@gmail.com

Abstract: - The conceptual Entity-Relationship (ER) diagrams are extensively used for database design in relational database environment, which emphasized on day-to-day operations. Multidimensional (MD) data modelling, on the other hand, is crucial in data warehouse design, which targeted for managerial decision support. It supports decision making by allowing users to drill-down for a more detailed information, roll-up to view summarized information, slice and dice a dimension for a selection of a specific item of interest and pivot to re-orientate the view of MD data. When designing a MD model regardless whether it is a star or snowflake schema, it involves the identification of a fact, dimensions and measure attributes. This paper will explore on how the Multidimensional model can be used as the solution of data warehouse design instead of ER Model.

Key Words: Data modeling, data ware house, multidimensional etc.

ICARI-CS-17-01-07

Application of Hybridization of Fuzzy Logic and Rough sets in Data Mining Field

Megha Kumar, Deepika Garg, Megha Joshi

Department of Computer engineering, Delhi Technical Campus, Greater Noida (UP), India

Email: meghakumar245@gmail.com, deepikarastogi17@gmail.com, megha21.joshi@gmail.com

Abstract—Rough set theory is a method that handles vague and uncertain data for decision making. This theory helps in extraction of valid rules from data. In this paper the concept of rough sets and its hybridization with fuzzy sets is discussed along with its applications in data mining field. The hybridization is used in handling uncertain and vague data so as to help in making meaningful decisions.

Keywords— Fuzzy logic, rough sets, Fuzzy rough sets etc.

ICARI-CS-17-01-08

Testability Analysis for Object Oriented Systems

Megha Joshi, Deepika Garg, Megha Kumar

Department of Computer Engineering, Delhi Technical Campus, G Noida (UP), India

Email: meghakumar245@gmail.com, deepikarastogi17@gmail.com, megha21.joshi@gmail.com

Abstract: In last few decades object oriented software design approach is widely chosen by programmers to design any large and complex system. As the complexity of object oriented software increases, testing becomes a costly and tedious task for these systems. The performance of testing is also a major concern. Therefore to make the task of testing more effective, smooth, and reliable, we need for the concept of testability. Testability of the large object oriented systems is a big issue. Testability can be applied during the design time as well as run time but both have its own concerns. This paper discusses testability analysis to enhance the testability of object oriented systems.

Keywords: Design for testability, design time establiity, object oriented systems, run time testability, testability

Graphical User Interface for Persian Synonym, Antonyms Using Corpus

Sima Rezaeipourfarsangi, Hannaneh Rasouli Vosough, Parvaneh Khosravizadeh

¹Computational Linguistics, Language and Linguistics Center, Sharif University of Technology

²General Linguistic MA at Faculty of Foreign Languages and Literature (FFLL), Islamic Azad University, Science and Research Branch, Tehran, Iran

³Language and Linguistics Center, Sharif University of Technology, Iran

Email: Sima.rezaeipour@gmail.com, hana_r_v2006@yahoo.fr, khosravizadeh@sharif.ir

Abstract: Computer visualization devices have been used to present and browse data in many fields. The GUI allows searches in the corpus entry fields and presents synonyms and antonyms of that entry together as (directed) graphs. You can easily see synonyms and antonyms of each word by simply clicking over it and it is able to show relevant lexical relationships. By using this application we can see the relation of each word with its synonym and antonym, in a visual environment.

Key words: Graphical user interface (GUI), lexical relations, data visualization, synonym, antonym

A Proportional Learning on Cloud Platforms

Krishan Tuli

Department of Computer Science, CGC, Landran, Mohali

Email: mca.krishantuli@gmail.com

Abstract: The cloud Computing is an emerging paradigm which believes in providing various services (hardware and software both) as a service to the user. Various benefits are associated with cloud environment such as reliability, scalability, security etc. this paper illustrates various service models and cloud platform provided for the user's requirement. This paper is basically divided into four sections: Section 1 gives a brief introduction about Cloud Computing, section 2 explains various service models deployed on cloud, section3 illustrates various platforms of cloud. The section 4 concludes the summary about difference between various platforms of cloud.

Keywords: Cloud computing, IaaS, SaaS ,PaaS, Platforms

Automatic Vehicle Identification using Coarse-to-Fine Strategy of Edge Detection Technique and Neural Network

AnantAshutosh Sharma, Aditya Gupta

Department of Computer Science Engineering, Delhi Technological University, Delhi-42, India

Email: anant.sharma.18@gmail.com

Abstract: In India, with the ever exponential increase in traffic per annum, Automatic Vehicle Identification (AVI) can have many applications in Traffic System. This AVI System can be applied in the fields for Electronic Toll Collection (ETC), Traffic Rules enforcement etc.

Vehicle registration plate recognition (LPR) is one form of AVI, which while counting and recognising the vehicle also distinguishes them a unique. LPR has many applications in traffic monitoring fields. It can save time and alleviate congestion by allowing motorists to pass toll plazas or weigh stations without stopping. It can save money by collecting and processing vehicle data without human intervention. It can also improve safety and security by helping control access to secured areas or assisting in law enforcement.

In this study, a Coarse-To-Fine Strategy of Edge Detection Technique is presented for registration plate extraction from vehicle and a smart algorithm is presented for the extraction of characters from the registration plate. For extracting the plate region an elaborate edge detection technique is used. Edge detection of an image significantly reduces the amount of data and filters out useless information, while preserving the important structural properties in an image. For extracting the characters from the plate region, machine learning technique of Neural Networks has been implemented. The performance of the proposed algorithm has been tested on real images. Based on experimental results, our algorithm shows superior performance in car registration plate recognition using an elaborate edge detection technique and neural networks.

Keywords: Neural Network, traffic system, vehicle identification etc.

Predicting the Potential Value of Pre-Owned Cars (Used Cars) using Machine Learning Techniques

Anant Ashutosh Sharma, Aayush Arora, Aditya Gupta

Department of Computer Science Engineering, Delhi Technological University, Delhi-42, India

Email: anantdpsrpk@gmail.com

Abstract: In India, the market of used cars is on a rising trend. The flow of used cars in the secondary market is not smooth and this leads to wastage of national resources. This potential value prediction would further enhance the acceptability as well as bridge the trust deficit in the second hand market besides facilitating the decision making of the buyer.

In this paper we have applied supervised machine learning techniques. The predictions are based on data of 370,000 cars collected from ads. We have used techniques like multi variate linear regression analysis, K Nearest Neighbours and Naïve Bayes. A seemingly easy problem turned out to be indeed very difficult to resolve with high accuracy. The predictions by various techniques are compared (including comparison of mean errors) and the one with highest accuracy is selected.

Keywords: Used car, machine learning technique, secondary market etc.

Use of C&D Waste as Aggregate in Smart and Sustainable Infrastructure

Rakesh Sabharwal

AMIE (India), PGD (HR), Retired Engineer from DDA, New Delhi, 26/92, West Patel Nagar, New Delhi-110008.

Email: rakeshsabharwal@yahoo.com, Ph: 9868215695

Abstract: Central Pollution Control Board has estimated current quantum of construction & demolition waste generation in India to the tune of 12 to 15 million tons per annum, out of which 7 to 8 million tons are concrete and brick waste. But, waste generated from construction and demolition is not put in use in construction except for filling low lying areas. It is the need of the hour to use the construction and demolishing waste (C&D-Waste) for developing smart and sustainable infrastructure. Presently, the construction industry is using more and more natural resources for procuring coarse aggregate for cement concrete. We have huge quantity of demolition debris, recycling of these as aggregate can offer not only the solution of waste disposal problem, but will also help to conserve natural resources and environment. The idea of paper is to explore the possibilities to utilize debris and other waste such as stones, concrete, glass, rubber, wood, dust, steel slag, fibers etc. in effective manner so as to give proper strength to cement concrete. It is observed that recycled concrete aggregates (RCA) and fibers used in conventional concrete improve strength, serviceability, durability etc. and has number of other properties that make it a very favorable aggregate. It may be costly only at the initial stage but not in terms of end results, This paper tries to generate awareness with the aim of understanding the behavior of recycled aggregate and fibers in concrete for use in new structures. We need a mass movement for spreading the knowledge of use of RAC and take studies of long term properties of RAC. Recycling of C&D Waste will support three major campaigns of Govt. of India – Clean India, Made for India and Smart Cities of India.

Key words: C& D Waste; sustainable infrastructure; recycle etc.

Use of Cement Treated Granular Base and Sub-Base in Construction of Flexible Pavement

Apurv Ashutosh Sharma, Prachi Singhal, Agrima Singh, Aryan Sagar

Department of Civil engineering, delhi technological University, Delhi-42 India

Email: apurv.sharma03@gmail.com

Abstract: Rapid industrialization and large scale road infrastructural development in India, has resulted in huge scarcity of construction materials. There is a thrust to investigate the methodology to reduce the thickness of pavement crust to conserve the conventional construction materials viz. soil and aggregate. This is possible by using chemically (cement) stabilized material in base and sub-base layers of road pavement. To investigate this, cement stabilized layers can be used on one side and the usual road building materials on the other in order to compare the performance of cement stabilized road vis-s-vis conventional construction.

The New Technology of Cement Treated Base (CTB) and Cement Treated Sub-Base (CTSB) have been implemented in NH-2 package from Barwa-Adda to Panagarh Bypass. The Cement Treated Granular Base and sub-base layers have been constructed at Reconstruction stretches along the Project. The New Technology for the first time has been implemented on National Highway Project for the full length of Reconstruction stretches and Service roads. The Service road crust thickness of CTSB is 250 mm, CTB is 100 mm, Aggregate layer is 100 mm and Bituminous concrete layer is 40 mm.

Quality of construction was evaluated during and after construction by plate load test and roughness index. Pavement performance observation was carried out by visual inspection.

The result from plate load test indicated that settlement of stabilized layer is less than conventional layer for the same loading stress. It was concluded that stabilized layer has good riding quality in comparison to unsterilized conventional layers as roughness value is less of former section.

Hence, it was concluded that performance of stabilized and unsterilized sections were comparable even after reduced total thickness of stabilized pavement section.

Keywords: Cement, Flexible pavement, concrete etc.

A Study on Green Energy Generation from Speed Breakers

Sanjeev Misra

Department of Mechanical Engineering, Delhi Technological University, Delhi

Email: sanjeev.dtu@gmail.com

Abstract: Now I am throwing some light on the new and innovative concept which is known as Green Energy generation. Green energy generation from speed breaker is a new concept that is fully developed and tested successfully. In this project we are using a double sided rack and pinion arrangement to generate energy. Rack and Pinion arrangement is a mechanism which is used to convert the reciprocating motion to rotary motion. Whenever a vehicle will pass over the breaker, it will push it down. So rack will move downward and will rotate the gears. A gear train is used to increase the speed ratio at shaft of generator. Then the springs will push the breaker upside to its initial position and again it will rotate the gears.

To increase the power generation capacity we have used a double sided rack and pinion arrangement. It will double our energy generation. As the shaft of D.C. generator starts rotating, it produces electricity. This electricity is stored in a battery. The benefits from this idea is to generate electricity for the streetlights and hoardings and then for other use. In this project we want to make use of such energy in order to produce "Electrical Energy". This project will work on the principle of "Conversion of Mechanical Energy into Electrical Energy" Mechanical energy can be thought of as energy stored within a physical system. Now during daytime electricity is not needed for lightening the street lights so we are using a control switch which is manually operated. This control switch is connected by wire to the output of the battery. The control switching mechanism which allows the current to flow when needed.

Keywords: Green energy source; double sided rack and pinion arrangement; Gear train; Translatory motion; Rotary motion; Power generation; Speed Breaker; Rack and Pinion.

ICARI-EC-17-01-02

A 0.18 μm Low Power, High Speed Ternary Content Addressable Memory

Ankaj Gupta, Ankit Gambhir

Department of Electronic Engineering, Delhi Technical Campus, Greater Noida, UP, India

Email: ankajgarg87@gmail.com

Abstract: Ternary content addressable memory or associative memory has their primary application in Network Router. In today's all web based search engine TCAM memory is employed. But power consumption is a major issue with a TCAM. In this paper a low power ternary content addressable having very low leakage is proposed. Simulation results show upto 30% reduction in power. The circuit has been designed and implemented in 0.18 μm CMOS technology. The circuit dissipated a maximum 10.5 nW of power and is suitable for low power application.

Keywords: Power dissipation, leakage, speed, TCAM.

ICARI-EC-17-01-03

Adaptive Soft Frequency Reuse in LTE-A

Reena Parihar, Srinjoy Ganguly

Department of Electronic Engineering, Delhi Technical Campus, Greater Noida (UP)

Email: probity.parihar@gmail.com

Abstract: - Today the major drawback faced by the LTE technology due to frequency reuse is that of the inter-cell interference faced by cell edge users. Various schemes have been proposed for optimal power allocation and resource block allocation to overcome this issue. In this paper Authors are going to present a technique called Adaptive Soft Frequency Reuse (ASFR) by the help of Genetic Algorithm. This techniques coordinates with the BSs of other adjacent cells and dynamically allocates resource blocks from the adjacent cells to enhance the throughput, thereby reducing the inter-cell interference.

Keywords :- Adaptive Soft Frequency Reuse(ASFR), Base Station(BS), Inter-cell Interference(ICI), Genetic Algorithm(GA), Resource Block(RB).

Single OTRA based Low Voltage Square Root Circuit

Gaurav Aggarwal, Harsh Garg, Nishank Bansal, Pranav Gangwar, Rajeshwari Pandey

Department of Electronic and Communications Engineering, Delhi Technological University, Delhi

Email:gauravaggarwal_2k14ec070@dtu.ac.in,harshgarg706@gmail.com,

nishankbansal_2k14ec103@dtu.ac.in,pranavgangwar_2k14ec116@dtu.ac.in, rajeshwaripandey@gmail.com

Abstract-This paper presents an analog square root circuit using single Operational Transresistance Amplifier (OTRA). This circuit does not use any external passive component and hence is suitable for integration. Complete mathematical analysis of the proposed circuit is presented in the paper. The proposed structure is verified with the help of SPICE simulations using 0.18 μ m CMOS parameters. For verification the dc and transient analyses are carried out. The simulation results are found to be in accordance with theoretical propositions. Square root circuits are often used in the field of communication, instrumentation and measurement. The proposed circuit can be a potential candidate for determining the square root of the low input voltage.

Keywords: amplifier, square root circuit, input voltage etc.

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OTRA Based First Order Universal Filter

Sirish Oruganti, Neeta Pandey, Rajeshwari Pandey

Department of Electronics and Communications Engineering, Delhi Technological University, Delhi, India

Email:sirishoruganti@ieee.org, neetapandey@dce.ac.in, rpandey@dce.ac.in

Abstract: The Operational Trans-resistance amplifier (OTRA) is current mode building block which offers advantages like higher slew rate and a bandwidth almost independent of closed-loop voltage gain as against the conventional voltage mode opamp. Owing to the advantages of OTRA, a new universal first order filter using OTRA has been proposed in this paper. The proposed structure uses a single OTRA, two resistors, two capacitors and two switches. The Filter can act as a Low-Pass Filter (LPF), High-Pass Filter (HPF) or an All-Pass Filter (APF) based on the position of the switches. Thus, many modes of operation can be achieved with just a single circuit. The proposed circuit is simulated on Cadence Virtuoso for functional verification. The simulated results are in close agreement with the theoretical propositions.

Keywords: universal filter, amplifier, input voltage etc.

ICARI-EC-17-01-06

Two New Single-Resistor-Controlled Quadrature Sinusoidal Oscillators using CDBAs

Jitender Pathak

Department of Electronic Engineering, Delhi technical campus, G Noida, UP, India
Email: pathak.jitender@gmail.com

Abstract –Two new single resistor–controlled quadrature oscillator (SRCQO) circuits using only two current differencing buffered amplifiers (CDBAs) as active elements and only five passive elements (three resistors and two capacitors) are presented. One of the proposed circuits uses all input terminals of the CDBA to exploit full capacity of the CDBAs, offers better sensitivities with respect to active parameters and has wide frequency range of operation. The second proposed circuit provides very good low frequency performance with respect to total harmonic distortion. Separate single resistors can control both oscillation condition and the oscillation frequency of the proposed quadrature oscillator circuits independently. PSPICE Simulation results based upon commercially available AD844 ICs, to construct the CDBAs, are included which confirm the practical workability of the new proposed quadrature oscillator circuits.

Keywords: Quadrature Sinusoidal Oscillators, capacitor, amplifier etc.

MHD Power Plant Co-Ordination with Thermal Power Plant

Anchal Srivastava

Electrical and Electronics Engineering, Inderprastha Engineering College, Ghaziabad (UP), India

Email: wakeanchal24@gmail.com

Abstract: In the existing scenario, most of the electricity produced throughout the world is from steam power plants and also a lot of gaseous waste is generated which is discharged into the atmosphere after a predefined treatment. However this flue gases can be used directly to feed a MHD power plant. An isolated MHD power plant is generally found to be highly economic. Its co-ordination with thermal plant will help in reducing the overall cost of system to a great extent. According to recent studies, a Hybrid MHD plant is co-ordinate with steam plant, such that the waste generated from MHD plant is used in the Economizer and Pre Air Heater of steam plant in order to increase the efficiency of steam plant but it is not much efficient according to economic point of view. The objective of the paper is directed towards co-ordination of MHD plant with steam plant in which, the waste generated from steam plant will be used as a fuel for MHD plant.

Keywords: MHD power plant, HYBRID MHD plant, steam plant

ICARI-EE-17-01-03

Review of Bidirectional DC-DC Converters

M.Ejas Ahamed, S Senthilkumar

Department of EEE, Bannari Amman Institute of Technology, Sathyamangalam, Erode, Tamil Nadu, India

Email: ejas600@gmail.com

Abstract: There is a growing importance in bidirectional dc-dc converters for interface battery with energy source. This paper provides a comprehensive review of non-isolated bidirectional dc-dc converter topologies. The classification and explanation of each type of converter is based on the features and applications. This review paper is intended as a convenient reference to future bidirectional dc-dc converter users. The most promising converters in terms of their simplicity, flexibility, and high efficiency are singled out.

Keywords-dc-dc converter; bidirectional converter; buck-boost converter; non-isolated

ICARI-EE-17-01-04

Mathematical Modeling of Unified Power Quality Conditioner for Distribution Power System

Megha Khatri^a, Atul Kumar^a, UK Choudhary^b

^aSchool of Engineering and Technology, Ansal University, Gurgaon, Haryana, India.

^bDepartment of Electrical Engineering, Delhi Technical Campus, Greater Noida (UP), India Email: meghakhatri@ansaluniversity.edu.in, Phone No--+91-9540071221

Abstract: This paper deals with the structure of unified power quality conditioner (UPQC), which is used to eliminate power quality problems such as supply voltage and current harmonics, compensate reactive power, voltage sag/swell compensation on distribution system. The performance of the inverters depends on the control strategy used to generate reference signals for its operation. The mathematical analysis of UPQC is done to see its characteristic performance in the distribution system. This analysis is very useful for the selection of device rating and placement based on its particular application area in the power system.

Key words: Power Quality, UPQC, Voltage Source Inverter, Mathematical Model.

Fault Analysis on Three Phase Transmission Lines and its Detection

Akshit Sharma, Ankit Nirwan, Ajay Singh Shekhawat

Department of Electrical Engineering, Poornima College of Engineering, Jaipur, Rajasthan, India

Email: akshitpce013@poornima.org, ankitpce174@poornima.org

Abstract: The Electric Power System is divided into many different sections. One of which is the transmission system, where power is transmitted from generating stations and substations via transmission lines into consumers. Both methods could encounter various types of malfunctions is usually referred to as a "Fault". Fault is simply defined as a number of undesirable but unavoidable incidents can temporarily disturb the stable condition of the power system that occurs when the insulation of the system fails at any point. Moreover, if a conducting object comes in contact with a bare power conductor, a short circuit, or fault, is said to have occurred. The causes of faults are many, they include lighting, wind damage, trees falling across transmission lines, vehicles or aircraft colliding with the transmission towers or poles, birds shorting lines or vandalism. In this study, the causes and effects of faults in the overhead transmission lines were the focus of the research. Some of the many causes of faults and some detection methods will be discussed. These faults lead to substantial damage to the power system equipment. In India it is common, the faults might be LG (Line to Ground), LL (Line to Line), 3L (Three lines) in the supply systems and these faults in three phase supply system can affect the power system.

Keywords— Fault Classification, Fault Detection, Transforms, Fundamental Component

Optimal Location of TCSC Using Newton Raphson Method for Power Flow Analysis

Nikhil Kumar Nigam, Ishta Garg

Department of Electrical Engineering, Delhi Technical Campus, Greater Noida,

UP **Email:** er.nikhil2007@gmail.com

Abstract: With the increase in development of power networks, the economical operation of power system has become a concern. The maximum capability of power systems can be exploited by means of FACTS devices. Currently, development of power electronics switches causes reduction in the cost of FACTS and therefore application of FACTS devices especially in distribution networks is more economical. But economic considerations limit the installation of FACTS controller in all of the buses or the lines. There are several methods for finding optimal locations of FACTS devices in power systems. In this paper power flow analysis using Newton Raphson method has been proposed to determine optimal location of Thyristor Controlled Series Compensator (TCSC) in a system. The paper concentrates on the development of the power flow software package using MATLAB and the steady-state modeling of the series FACTS devices TCSC. The configuration of a typical TCSC from a steady-state perspective is the fixed capacitor with a thyristor controlled reactor (TCR). The effect of TCSC on the network can be modeled as a controllable reactance inserted in the related transmission line. The TCSC modeling equations illustrate how the flexibility of the software environment in use allows the easy combination of different objective functions, different sets of variables and different formulations of functions. Case studies demonstrate the operating regions of the series FACTS devices and their effectiveness in increasing the MW power transferability of a particular network.

Keywords - Thyristor controlled Series Capacitor, FACTS devices, Newton Raphson method, Power Flow analysis

Study of Temporary Over Voltages in 110/13.8/6.6KV Power Substation

Ishta Garg¹, Mohd Tayyab Saeed², Nikhil Nigam¹

¹Delhi Technical Campus, Guru Gobind Singh Indraprastha University, Delhi

²Al-Jazirah Engineers and Consultants, Kingdom of Saudi Arab

Email: er.nikhil2007@gmail.com

Abstract: Over voltages, be it of any magnitude, shape or amplitude adversely affect the smooth working of power substation and may prove to be fatal in many cases. In this paper study of insulation coordination of temporary over voltages (TOV) has been carried out in 110/13.8/6.6 kV substations. The factors determining the calculation of over voltages are considered in details and results are presented for over voltages induced in transformers, Gas Insulated Substations, surge reactors and surge arresters. These observed over voltages can be further used to determine the overall overvoltage rating of the station. Determining over voltages in the system help us to ensure whether the existing protection devices are sufficient to handle extreme situations without overshooting their energy ratings or some changes are required.

Keywords: Over voltages, Faults, Load rejection, Substation

Forecasting of Power System Blackouts

Sushil Kumar Gautam, UK Choudhury, Shivam Gupta

Department of Electrical Engineering, Delhi Technical Campus. G Noida (UP), India

Email:sushilsushil07@gmail.com

Abstract— increasing electrical energy demand, modern Lifestyles and energy usage patterns have made the world fully dependant on power systems. This instigated mandatory requirements for the operators to maintain high reliability and stability of the power system grid. However, the power system is a highly nonlinear system, which changes its operations continuously. Therefore, it is very challenging and uneconomical to make the system be stable for all disturbances. Blackouts of electric power often result in huge economic losses to power grid enter prices and society. To indicate the losses of accidents, this paper introduces the concept of the accident cost of distribution network failure, analyzes the various factors affecting it. In this paper we use power simulator to forecasting for power system black out. Simulation performed on bus system.

Keywords— increase in load, blackout; removal of line etc.

Study of Road Vehicle Non-Exhaust Emission: A Neglected Source of Pollution

Chirag Luthra, Gautam Aggarwal, Amit Ranjan, Harsh Yadav, Naman Dwivedi, Anunay Gour

Department of Environmental Engineering, Delhi Technological University, Delhi India

Email:chiragmathers996@gmail.com

Abstract: Non-exhaust traffic emissions are an important source of particulate matter in cities, however current researches on this source of pollution is scarce. Moreover, air quality modeling studies typically doesn't consist of these kinds of emissions. The main reason is the difficulties associated with the estimation and the spatial distribution of such emissions for modeling. Due to the current PM₁₀ discussions, it is very important to understand PM₁₀ emissions caused by traffic. PM emissions as a result of the combustion in the motor are well known. As motor technologies are improving, the influence of non-exhaust PM₁₀ particles on air quality, originating from abrasion of tires, road wear, brake shoe, brake lining and re-suspension of road dust is increasing. Currently there are various approaches to consider these emissions. However, the quantification of these emissions is quite uncertain. Hence it is necessary to improve the quality of the emission factors and to validate and verify them.

Tire-wear and brake wear are an important source of PAHs, elemental carbon (EC), trace metals and organic carbon (OC) into the atmosphere. The emissions of these pollutants have been studied in an experimental set-up. This work represents the importance of non-exhaust particulate emissions in cities from the developing and developed countries both. It also urges the environmental authorities to control this source of pollution and encourage the scientific community to improve existing methods to estimate and validate these emissions.

Keywords: Non-exhaust emission, Tire-wear, Brake-wear, PAHs, Re-suspension etc.

A Study on Ground Water Pollution at Ghazipur Landfill Site, Delhi, India

S Kapoor, A Gour, A Mandal

Department of Environmental Engineering, Delhi Technological University, Delhi-110042

Email:nilg2009@gmail.com

Abstract: The paper puts forward an evaluation of ground water quality in and around Ghazipur landfill site located in East Delhi. An analysis over a period of one year has been undertaken for three seasons viz. rainy (August 2015), winter (December 2015) and summer (May 2016). A total of thirty samples were collected from ten sampling locations during the year 2015-16. A sample of raw leachate was also collected during the summer season which corresponded to high levels of metallic contaminants. Physico-chemical parameters such as pH, EC, TDS, DO, Cl and heavy metals such as Zn, Cd, Pb, Ni, Fe and Cr were determined and compared to permissible limits prescribed by APHA, WHO and BIS. The result shows contamination of groundwater in many of sampling locations around the landfill. Dissolved Oxygen and pH level were found to be in normal ranges at most of the sampling locations whereas in TDS, EC and Cl violated the prescribed limits. Metals such as Cd, Ni and Fe concentration levels were also found to be high. The study reports that groundwater in this area is unfit for drinking and utility purpose and calls for coordinated efforts for mitigation of ground water pollution in this area.

Keywords: landfill site, water pollution, ground water etc.

Formulation of Air Index using Pm1 and Carbon Monoxide as Air Pollution Parameters

A Sharma, M Gupta, NBajaj, A Mandal

Department of Environmental Engineering, Delhi Technological University, Delhi
Scientist 'C', UGC, Environmental Engineering, Delhi Technological University, Delhi

Email: a.mandal@delhitechnicalcampus.ac.in

Abstract: Carbon Monoxide and Particulate Matter of size less than or equal to $1\mu\text{m}$ are one of the major sources of indoor air pollution and are known to cause short term and long term diseases such as heart disease, chest pain, toxicity of Central Nervous System. In the study, an investigation was done for the contribution of these pollutants on indoor air pollution across various locations in Delhi and subsequently calculated their impacts on the health of the target group by measuring the Average Daily Dose of these pollutants inhaled by the target groups, with consideration of multiple factors such as exposure frequency, age group, exposure duration, type of work (sedentary and heavy), body weight and inhalation rate. The instruments used for monitoring were EPAM 5000 and gas detector, with an average sampling time of 4 hours for each pollutant. On the basis of the observed readings, an air pollution index was formulated and the quality of air was classified for different locations.

Keywords: Air Pollution, Average Daily Dose, Particulate Matter, Exposure Frequency, Exposure Duration, Carbon Monoxide, Carboxy Haemoglobin, Air Sampler

ICARI-EN-17-01-05

Revival of Water Bodies: A Case Study

Paridhi Rustogi, PSK Singh

Department of Environmental Engineering, Delhi Technological University, New Delhi 110042, India

Email: paridhirustogi@gmail.com

Abstract: Urban Indian cities are facing a water crisis due to loss of watershed, increasing pollution levels, deteriorating water balance, encroachment, illegal constructions and a dire lack of groundwater recharge. Although there are sufficient polices and acts for protection and restoration of water bodies they remain insufficient and ineffective in the face of such complexities. To meet the rising demand for water augmenting and improving the health of water bodies is of utmost importance. Revival and rejuvenation of water bodies in cities is especially important from a public health perspective as they provide various ecosystem services that are required to manage microclimate, biodiversity and nutrient cycling. This paper looks at Najafgarh Lake, in South-West Delhi that occupied more than 300 km^2 in the 1960s and was a biodiversity hotspot. Currently it stands as a topographical depression brimming with overgrown grass and garbage. The lake's disappearance has stolen a chunk of Delhi's culture and its use as a dumping ground has raised health concerns for the local population. This can be countered by rejuvenating the Najafgarh Lake through rainwater harvesting and bio-intensive farming. Most of Delhi's precipitation falls during the monsoon in July and August and can be harvested using simple, locally adoptable and eco-friendly low-cost technologies such as creation of ponds. Implementation of community water management schemes with maximum people's participation is crucial to mitigate the ill effects of drought and urbanisation. Similar studies across India and the world lay precedent for such practices and can ameliorate the water shortages faced at a micro level.

Keywords: Rain water harvesting, Ecosystem services, Water quality, Groundwater recharging, Wetlands, Revival, Integrated water resource management (IWRM)

Major ions Chemistry of Surface Water in Bhindawas Wetland

Vandana Shan, SK Singh, AK Haritash

Department of Environmental Engineering, Delhi Technological University, Bawana Road, Delhi **Email:** vandanashan@dce.ac.in

Abstract: Ten surface water samples were taken from different locations in Bhindawas wetland during summer season for analyzing major ion chemistry of surface water and its suitability for irrigation and domestic purpose. Along with some major ions, other general water quality parameters like temperature, pH, TDS, EC and Total Hardness were also analyzed. Irrigation quality parameters, Sodium Absorption Ratio (SAR), Soluble Sodium Percentage (SSP), Residual Sodium Carbonate (RSC), and Kelly's Ratio (KR) were also investigated. The study was carried out in the month of May; 2016. The results showed that majority of samples were suitable for domestic purpose due to low and medium hardness. The values of pH ranges from 6.5 to 7.4, indicating slightly acidic to alkaline nature of surface water. Total dissolved solids ranges from 166 to 344 mg/l. All the sampling locations have SAR value and KR value below 10 and below 2 respectively, which indicates excellent water quality of lake for irrigation. Also the values of SSP at each sampling locations is below 50 indicating good and safe water for irrigation. Also RSC value for all the samples range below 2.5 and also suitable for irrigation. Present study found that all the parameters were found within the permissible range and suitable for irrigation and domestic purpose.

Keywords: wetland, ion chemistry, ph value

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Optimal Site Selection and Efficiency for Solar PV Power Plant

Aditya Sharma, Geeta Singh

Department of Environmental Engineering, Delhi Technological University, Delhi, India **Email:** sharma.aditya880@gmail.com ; geeta_s76@yahoo.co.in

Abstract: Solar energy is one form or another is the source of all energy on the earth. World widely peoples are also harness the sun's energy in many other different ways. For example, fossil fuels, plant matter from a past geological age, is used for transportation and electricity generation and is essentially just stored solar energy from millions of years ago. Wind energy is used for hundreds of years to provide mechanical energy or for transportation, uses air currents that are created by solar heated air and the rotation of the earth. Today wind turbines convert wind power into electricity as well as its traditional uses. Even hydroelectricity is derived from the sun. Hydropower depends on the evaporation of water by the sun, and its subsequent return to the Earth as rain to provide water in dams. Photovoltaics (often abbreviated as PV) are a simple and elegant method of harnessing the sun's energy. PV devices (solar cells) are unique in that they directly convert the incident solar radiation into electricity, with no noise, pollution or moving parts, making them robust, reliable and long lasting as well.

Keywords: Solar Energy, Photovoltaic, Hydropower, Hydroelectricity

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Solid Waste Management in DTU – A Case Study

Nikhil Bhattacharjee, Rishab Chatterjee, Anwasha Sharma, Mayank Goel, Anubha Mandal

Department of Environmental Engineering, Delhi Technological University, Delhi, India

Email: anubha_mandal10@yahoo.co.in

Abstract: Due to rapid urbanization and growth in Delhi, the problem of Solid Waste Management (SWM) has become critical. Semisolid food wastes and municipal sludge is also included in municipal solid waste. The problem of solid waste management (SWM) is also prevailing in the urban environment of DTU Campus. Therefore the present study was taken to find out the problems and prospects of solid waste Civil Block, DTU. A detailed investigation was made regarding the methods of practices associated with sources, quantity generated, collection, transportation, storage, treatment and disposal of solid waste in Civil Block, DTU Campus. The data concerning to SWM in DTU Campus was obtained through individual field visit. This study reveals that the present system of SWM in DTU is not satisfactory Solid Waste Management.

Keywords: Solid Waste Management, urban environment, Civil Block, treatment, disposal

Real Time GPS for Railway Automation System

Rahul Dhote, Dinesh Rojatkar

Department of Electronics and Telecommunication, Gondwana University, Govt. College of Engineering, Chandrapur, Gadchiroli, Maharashtra, India.

Email: dhote444@gmail.com

Abstract: The concept of the paper idea is to automate the railways system. We are using the idea of Global Position system(GPS) for tracking every trains and a proposed system by which every trains are personally monitored and passing necessary messages to the individual trains .The train with the GPS Module and GSM module on board. This would enable passenger can simply query the location of a train via SMS from his mobile phone but will also enable us to provide real time train tracking system. It is developed with a goal to reduce the waiting time of the passenger. The train units will response to the user mobile with the GPS coordinates of the present location of trains. There is a base station where the train movement will be displayed on a screen. The motivation for the paper came from due to the lack of control over railways in India as we hardly get to know the exact position of the train while standing at the station. The method of Metro implements modern techniques to control the railways motivates us to design a system for the complete railway system.

Keyword: GPS, GPRS, Railway Automation etc

A Study on Automatic Railway Gate Control System

Shubham Shrirao, Dinesh Rojatkar

Electronics and Telecommunication Engineering Department, Government College of Engineering Chandrapur.Gondwana University, Gadchiroli, Maharashtra, India

Email:shubhamshrirao5@gmail.com

Abstract: The Railroad related accidents are more dangerous than other transportation accidents in terms of impurity and death rate etc. Therefore more efforts are necessary for improving safety and security. There are many railways crossing which are unmanned due to lack of manpower needed to fulfill the demand signal is sent to the control room and the gate is closed and stays closed until the train crosses the gate and crossing side sensors. The main aim of this paper is to manage the control system of railway gate using microcontroller and various types of sensors. The proposed model has been designed using x-bee sensor and microcontroller to avoid railway accidents occurs, an unattended railway gates if implemented detection of train approaching the gate can be sensed by means of two sensors placed on either side of the gate. This work depends on the two sensors placed on either side of the gate. This work utilizes two powerful magnetic sensors is fixed at incoming and similarly the other magnetic sensor is fixed at outgoing side of the train direction. Sensors are fixed on both sides of the gate. We call the sensors along the train direction as foreside sensor and the other as after side sensor. When foreside sensor gets activated the sensed side sensor activated and the signal about the departure is sent to the microcontroller motor turns in opposite direction and gate opens and motor stops automatically.

Keywords: Railway, control system, railway crossing etc.

LI-FI Technology: A New Revolution in Wireless Technology

Ajay Shende, Dinesh Rojatkar

Department of Electronic and Telecommunication Engineering, Government College of Engineering, Chandrapur. Gondwana University, Gadchiroli, Maharashtra, India

Email: ajayshende9871@gmail.com

Abstract: The communication plays a very important role in our modern life. The peoples always require accurate information at any place with a very high speed internet. The peoples prefer wireless network instead of wired network for fast communication. In last few years researchers have developed some new wireless technology. Li-fi is a new wireless technology which provides better efficiency, bandwidth, availability and security with very high speed connectivity. This study aims to discoverable this amazing new Li-fi technology and detailed study of it with other wireless communication technologies.

Keyword: Li-FI (light fidelity), VLC(visible light communication), wireless etc.

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A Study on Communication Based Train Control System

Shriansh Rasekar, Dinesh Rojatkar

Electronics and Telecommunication Engineering Department, Government College of Engineering, Chandrapur. Gondwana digital university, Gadchiroli, Maharashtra, India.

Email: shrianshrasekar123@gmail.com

Abstract: Railway telematics applications are presently attracting interest and are under intense study. Suitable railway telematics applications increasingly set to require a subsidiary means to help existent control system make train operation safe and better. Since 2006, train-to-train communication has been studied to respond to such necessity. A main characteristic of train-to-train communication is that operation control to stop possible accidents is conducted among trains without help of a base station. This paper suggests a train-to-train communication in a physical layer depending on multihop and cooperation, taking a high-speed railway propagation channel into credit. The mechanism of this model, lie in the idea that a source train use trains on another tracks as relays to transmit signals to destination train on the same track.

Keywords: control system, train, communication etc.

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A Survey on Transferring Standards of GSM-R in Railway Sector

Nikhil Korde, Dinesh Rojatkar

Department of Electronics and Telecommunication, Government College of Engineering, Chandrapur, Gondwana digital university, Gadchiroli, Maharashtra. India.

Email: nikhilkorde76@gmail.com

Abstract: GSM-Railways (GSM-R), which is evolutionary railway mobile communication technology, is gradually replacing analogue radio systems. Although GSM-R is an impossible achievement in terms of European railway interoperability, from a telecommunication point of view, it is successive technology.

This paper looks at the transfer of a telecommunication standard to another railways and it studies whether the adoption of an upgraded version of the GSM standard (GSM-R) turned out to be an efficient choice. The transfer and deployment of GSM-R is technically importance to the success of another European railway project. The introduction of the new signaling system rests on achieving interoperability in radio-communication. The study will focus on the GSM-R part of the ERTMS system and its interworking with ETCS.

Keywords: 'GSM-R', Railway sector, signals etc.

Wire-EDM: A Potential Manufacturing Process for Gamma Titanium Aluminides in Future Aero-engines

S Anurag

Department of Mechanical Engineering, The University of Alabama, AL USA

Email: sanurag@eng.ua.edu

Abstract: Intermetallic TiAl-based alloys represent an important class of light weight and high temperature structural materials, ideal for future aircraft engines, and can replace the extensively used Nickel based super alloy Inconel 718. However, due to their improved strength, the manufacturing of components from conventional machining processes is nearly impossible and results in high tool wear. Advancements in wire electric-discharge-machining (wire-EDM) technology has made it possible of machining hard materials with accuracy, confirming to quality standards, meeting production targets, in a flexible and inexpensive manner. In Germany, recent research on wire-EDM of Inconel 718 has shown negligible white layer and an acceptable fatigue performance, for fir tree slot production in jet engines. This study analyzes the feasibility of wire EDM as the machining process for gamma Titanium aluminides for future jet engine components.

Keywords: Titanium Aluminides, TiAl, Machining, Wire-EDM, Broaching

The Analysis of the Throttle Body of the Intake System in the Engine through CFD

Chang Chun Xu¹, Bhupendra Singh Chauhan², Haeng Muk Cho^{1*}

¹Division of Mechanical and Automotive Engineering, Kongju National University, 275, Budaedong, Cheonam-si, Chungcheongnam-do 331-717, South Korea

²Department of Mechanical and Automation Engineering Delhi Technical Campus, Greater Noida (UP)

Email: xccgh78006@naver.com; bhupendradce@gmail.com, hmcho@kongju.ac.kr

Abstract: In the Spark ignition engine, in order to improve the air intake power and intake fuel efficiency, we use the important device of the intake system is Throttle Body. The amount of the air entering the engine is controlled by the Throttle Body. However, the throttle body could control the air stream, restriction the air flow into the engine. We could through the device to control the air flow to make different Equivalent ratios in the Spark ignition engine. Through this method can find the best position of the throttle valve angle to improve the engine performance to decrease the exhaust emission. For this reason, we can find the best position of the throttle angle through the analysis program that is ANSYS Fluent.

Keywords: Throttlebody, throttle valve angle, ANSYS FLUENT, air flow, air intake system

Mechatronic System Design: An Approach to Make Electronic Transformation of the Mechanical Systems

Rajiv Chaudhary¹, Ramesh Chandra Singh¹, Alok Kumar Singh²

¹Mechanical Engineering Department, DTU Delhi 110042, India

²Electronics & Communication Engineering Department, DTU Delhi 110 042, India **Email:** rajivchaudharydce@gmail.com

Abstract: Starting from the initial period of Civilization, we have passed through various phases of development in all walks of life. We can also find the basic elements of science and technology in one form or another in various fields of application in different periods.

Diversity in applications and the rapid rate of change through innovation can be easily observed after the phase of Mechanization and Industrial revolution. If we talk in the current context, the Mechanical systems itself, has undergone lot much change, by incorporating elements of Electronics, Computer and Information Technology, which upgrades the Mechanical systems into an advanced, smart and Intelligent category of Engineering systems, which can be called as Mechatronic systems. Finding its application improvising and successful in almost every field, a new domain of design has emerged, which may be called as Mechatronic System Design. In this concept design process is followed including advanced technical options of command and control from the field of Electronics, Computer and Information Technology. In this paper an effort has been made to discuss the principles and elements of Mechatronic System Design which can be adopted with the better design prospects.

Keywords: Mechanronics, system design, technology etc.

Role of Fatigue Consideration for Mechanical Design:A Critical Review

Sanjay Kumar

Mechanical Engineering Department, Delhi Technological University, Delhi

Email:sanjaydce2008@gmail.com

Abstract: When machine component is subjected to variable loading then failure of machine component is occurred at stress lower than yield strength or ultimate strength of material. Design of component for this type of loading is based on endurance limit. The evaluation of endurance limit by experimental method and role of different derating factors have been discussed. The fatigue failure starts from crack present in material due to its machining /discontinuity/material defects in components. The design of components subjected to combined loading is based on three approach Goodman's approach, Soderberg's approach and Gerber's approach. The Minor's rule which is used, when machine components are subjected to different stresses with different cycles has been discussed.

Keywords: Endurance limit, Goodman's approach, Soderberg's approach, Gerber's approach, Minor's rule

Tribological Study of Single Point Cutting Tool: A Review

Anurag Sharma^{1,*}, Ranganath MS², R. C. Singh²

¹Department of Mechanical Engineering, GB Pant Institute of Technology (Govt. of NCT OF Delhi), Delhi, India

²Department of Mechanical Engineering, Delhi Technological University (Govt. of NCT OF Delhi) Delhi, India

Email: ranganathdce@gmail.com

Abstract: The researchers are involved in search of superior cutting materials, fabrication process and developing better cutting greener environment due to international tough norms and global demand. Single Point cutting tool (SPCT) is widely used in industry for manufacturing of object on lathes, boring machines, planning and shaping machine etc.. During machining operations by SPCT, the cutting parameters, wear, lubrication and coefficient of friction play a very important role for required surface roughness of work piece. The various physic-mechanical properties of machined work piece depend on the surface roughness and material of the object. A review have been conducted for a proper selection of tool material, tool geometry and a required quality of cutting fluid meant for machining. Many scientists observed that the nano particles in coolant and nano tubes on surface of the cutting tool reduce tool wear and provide better surface roughness to the work piece and save energy.

Keywords: Single point cutting tool, coefficient of friction, wear, lubrication, work piece material, tool material, cutting fluid, tribology etc.

Performance and Emission Characteristics of a Diesel Engine Fueled with Waste Animal Fat and Jatropha Biodiesels

Harveer Singh Pali^{1,*}, Sharad Pratap Singh¹, Naveen Kumar²

¹ Noida Institute of Engineering & Technology, Greater Noida (India)

²Delhi Technological University, Delhi (India)

Email: harvirpali@gmail.com, phone +91-9971695452

Abstract: Biodiesel is a renewable alternative to mineral diesel used in compression ignition (CI) engine. Two B100 biodiesel samples were prepared by patented routes from the oils extracted from Waste animal fat biodiesel (WAF100) and Jatropha oil biodiesel (JO100). The fuels complied with ASTM D-6751 and European Standard EN 14214 specifications. Test results showed that both B100 biodiesels outperformed mineral diesel in terms of hydrocarbons (HC), carbon monoxide (CO) and smoke emissions, with slight penalty on NOx emissions. Among the two biodiesels, merits of WAF100 were established over JO100 in terms of NOx emissions and specific fuel consumption. WAF100 may be considered as a promising alternative fuel for diesel engine which can be produced sustainably through production of the biodiesel using waste animal fat as culture medium, obviating thereby concerns around land use competition for food and fuel.

Keywords: Diesel engine, Emission, Jatropha oil biodiesel, Performance, Waste animal fat biodiesel.

Integrated Kano Model and QFD in Designing Passenger Car

Mahesh Kumar Shukla

Department of Mechanical Engineering, Gyan Ganga College of Technology, Jabalpur, MP,

India **Email:** mkshukla21045@gmail.com

Abstract: Now a days cars are necessity of everybody's life and are not luxury. The growing economy of the country has increased tremendous demand of vehicles particularly passenger car. The competition in car market has been rockted up resulting customer satisfaction become a key factor for business success. Q.F.D. starts with customer needs in order to achieve their optimum satisfaction. Q.F.D. is co-relating data about customer's attribute and technical attribute. The integration of Kano Model supports Q.F.D. towards innovation and improvement of the product. It helps to adopt changes in view to achieve satisfaction and delight the customer. The Kano Model also helps to understand the types of the customer expectations and satisfaction.

Keywords: QFD, kano Model, Passenger car etc.

Finite Difference Solver for Couette Flow with Applied Pressure Gradients

Mrudang Mathur, Nehal Amit Jajal, Raj Kumar Singh

Department of Mechanical Engineering, Delhi Technological University, Delhi-42.

India **Email:** rajkumarsingh@dce.ac.in

Abstract: A finite difference scheme was used to obtain solutions to a two dimensional Couette Flow problem with applied pressure gradients. The solution to the non dimensioned Couette Flow problem was then obtained via implicit methods and the results were subsequently validated with the analytical solution of the same problem.

Keywords: coquette flow, finite difference, pressure gradient etc.

Mechanical and Micro Structural Effect of Ultrasonic Welding: Review

Abhishek Rajput¹, Arun Panchal¹, Ravi Butola² Jitendra Kumar¹

¹Department of Mechanical Engineering, GB Pant Government Engineering College, Okhla Industrial Estate, Okhla Phase III, New Delhi, Delhi-20

²Department of Mechanical Engineering, Delhi Technological University, Shahbad Daultapur, Bawana Road, Delhi-42

Email: arunpanchal23@gmail.com

Abstract: Different aspects of Ultrasonic welding is studied, ultrasonic spot welding is widely used under special cases of dissimilar elements, it is a much more efficient, less time consuming and an alternate for Friction stir spot welding(FSSW), ultrasonic spot welded joints are studied for different aspects. Thermal measurements at the interface of ultrasonic spot welding are studied; mechanical performance and grain structure is studied with EBSD examinations. Mechanical properties of Ultrasonic assisted underwater wet welding joints are studied such as bending testing and hardness distribution. Ultrasonic spot welding of Mg alloys and Tin-alloys and temperature measurement at weld interface. A series of ultrasonic spot welding experiments of Mg alloys are studied for weld quality, weld strength and fracture morphologies. A review is done on these following observations studied on Ultrasonic Welding and its various aspects.

Keywords: Ultrasonic assisted underwater wet welding, Ultrasonic spot welding, Aluminium Alloy, Mechanical Properties, Bending Angle

To Study the Optimization of Machining Parameters in CNC Turning of Hybrid Metal Matrix Composites Using Different Techniques: A Review

Vaibhav Sharma, Ravi Butola

Department of Mechanical Engineering, Delhi Technological University, Bawana Road, New Delhi-42

Email: vaibhavsharma.rabv@gmail.com

Abstract: Metal Matrix Composites is a subject of interest from last 6 decades and it is finding wide applications in many fields like Aerospace, Automobile, Spaceship, Piston and Sports Equipment etc. Adding a new element in the Metal Matrix Composite makes it Hybrid. HMMC's provide better machinability and tribological properties. In CNC turning process, Surface Roughness and MRR are two main parameters. The Objective of the present paper review is to determine the optimum machining parameters in CNC turning of HMMC using different algorithms and techniques. This can be achieved by finding the optimum cutting parameters by Minimizing the Surface Roughness and Maximizing the Metal Removal Rate. For this we have reviewed Taguchi's Design experiment. The main cutting parameters considered are Cutting Speed, Feed rate and Depth of Cut. Also we have reviewed Response Surface Methodology and Grey-Fuzzy Algorithm.

Keywords: Analysis of Variance (ANOVA), Metal Removal Rate (MRR), Taguchi Design.

A New Heuristic Method i.e. RPW Method and Genetic Algorithm Techniques (Hybrid Method) for Evaluating Multi Product Assembly Line Balancing – A Case Study

Ashutosh Kumar, Hukam Singh

Department of Mechanical Engineering, Krishna Engineering College, Ghaziabad, UP, India Email: ashume2007@gmail.com

Abstract: Assembly line production is one of the widely used production systems. The problem of Assembly Line Balancing deals with the distribution of activities among the workstations which lead to the maximum utilization of Human Resources and facilities without disturbing the work sequence. The problem is motivated by a vehicle-sequencing problem at an Automobile company, Gurugram. A new Heuristic Method i.e. RPW Method and Genetic algorithm techniques(hybrid method) for the Type-I of Multi Product of Assembly Line Balancing Problem(MALBP) have been used. The hybrid method has been developed which is based on the heuristic rules and formulae. The programme is coded in C#(C Sharp). In this problem, precedence constraints between the tasks have been considered. The results of assembly line balancing using this heuristic are recommended to the company for implementation. The hybrid method was gave good solutions for straight line balancing problem. The present work of case study provided new knowledge to develop a better tool of assembly line balancing to solve real world problems more efficiently at the shortest possible time. The new developed approach of assembly line leads to increase line efficiency and production rate by reducing the number of workstations and also reducing balance delay and smoothness index. The developed hybrid method was applied in an automotive assembly line for improving the performance. After implementing the hybrid method it was possible to reduce the number of workstations to 71 (a reduction of 4 workstations) considering the same number of tasks with the same cycle time. Further, productivity improved from 81.20% to 85.75%.

Keywords- Assembly Line, Assembly line Balancing Technique, Heuristic Method of Assembly line Balancing, Multi Product Assembly line Balancing, Genetic Algorithm

Study of Concentrated Solar Power and Their Application in Metro Stations

Hukam Singh^{*1}, Shailesh Kumar Singh¹, Ashutosh Kumar Rai², Rangnath MS²

¹Department of Mechanical Engineering, Krishna Engineering College, Ghaziabad India-201007 ² Department of Mechanical Engineering Delhi Technological University, Delhi India 110042 Email: hukambij@yahoo.com

Abstract: The inadequate supply and the shortage of water has been taken centre stage in recent times. High expansion of population coupled with rapid industrial development in Indian subcontinent resulted in shortage of clean drinking water for people living in rural areas and remote villages especially in desert. Main components of concentrated solar power can be used in the form transparent cover, Absorber Plate, Heat transport system including fluid and Insulating Material. Besides these, tilt angle and direction with respect to Sun is also very important. Different materials available for all these components must be compared for their properties and configurations in various designs. Present study is review of various component material options improvement techniques. Current study deals with the concentrated solar power application with a case study in a metro station.

Keywords: Concentrated solar power; Case study; Metro station

Effects of Young's Modulus in a Compliant Respiratory Tract

Rakesh Kumar Shukla¹, Hukam Singh¹, Avnish Kumar Shukla¹, Ashutosh Kumar Rai²

¹Department of Mechanical Engineering, Krishna Engineering College, Ghaziabad

²Department of Mechanical Engineering, Delhi Technological University, New Delhi

Email: akeshshukla07@gmail.com

Abstract—The present work is focused on computational study of a compliant human respiratory tract using Computational Fluid Dynamics (CFD). The computational study of third-to-sixth generation simplified respiratory tract model is carried out using the Fluid-Structure Interaction (FSI) method. The Young's modulus of elasticity is varied from 5.8 MPa to 1 MPa in order to capture the flow physics in compliant human respiratory tract. Velocity contours and total deformation has been computed to see the difference in flow characteristics between rigid airway and compliant airway. The simulated results show that total wall deformation decreases with the rise in elasticity.

Keywords—Compliant respiratory model, Computational Fluid Dynamics (CFD), Fluid-Structure Interaction (FSI), Young's modulus of elasticity

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Thermodynamic Analysis of Gas Turbine Tri-Generation System for Combined Production of Power Heat and Refrigeration

R S Mishra, Aftab Anjum

Department of Mechanical, Production, Automobile & Industrial Engineering, Delhi Technological University Bawana Road, Delhi-110042

Email: professor.radheyshyammishra@gmail.com

Abstract: This paper relates a trigeneration system with combined production of power, heat and refrigeration. From thermodynamic point of view, the combination of gas turbine with absorption chilling machine in these trigeneration systems proves to be highly efficient. The flue gas from heat recovery steam generator is used as a heat source for vapor absorption refrigeration. The exergy modeling of the solar-trigeneration system is conducted considering three modes of operation: solar, solar and storage, and storage modes. The exergy modeling of this system is carried out gas turbine tri-generation system by varying the ORC evaporator pinch point temperature, ORC pump inlet temperature, and turbine inlet pressure. Overall exergy destruction modeling is conducted under the selected baseline operating values.

Keywords: Trigeneration, ORC Cycle, Waste heat Recovery, Exergy Modeling

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Effect of Tool Materials and Tool Geometry on Friction Stir Welding/ Processing of Aluminium Alloy

Shambhavi Ratnapriya , Tanusha, RS Mishra

Department of Mechanical Production & Industrial and Automobiles Engineering, Delhi Technological University Delhi-110042

Email: professor.radheyshyammishra@gmail.com

Abstract: The main objective of this research paper is to study the effect of various tool geometries and tool materials on the friction stir processing and welding of Aluminum and its alloy used in Automobiles industry. This study also correlates the effects of process parameters on temperature distribution in the work piece during welding and processing. The effect of micro structural studies for finding the effect of various parameters on the grain structure of aluminum and its alloys have been studied in detail. The effect of FSP and FSW (i.e. Tool rotation speed, Tool traversing speed, Tool pin dia,) have a significant effect on for improving mechanical properties in terms of tensile strength, micro-hardness, yield strength and strain rate of Aluminum and its alloys.

Keywords: Friction stir welding/processing, microstructure improvement, Al alloys

Flow of Material and Micro Structural Changes After Friction Stir Processing

RS Mishra, Tanusha, Preeti Rani, Shaambhavi

Department of Mechanical Production & Industrial and Automobiles Engineering,
Delhi Technological University Delhi-110042

Email: professor.radheyshyammishra@gmail.com

Abstract Friction stir processing (FSP) is a process of changing the properties of a metal through strong, localized plastic deformation. The tool used consists of non-consumable tool having a pin and shoulder of defined diameter. The tool is revolved in a stirring motion and translator motion is provided to the tool. FSP can be performed in single pass and multiple pass (up to 5 passes). Multi-pass FSP has a certain number of overlap generally half the diameter of the pin between successive passes which is required for large contact areas. It leads to localised heating and softening of the work piece till plastic state due to friction between the tool and the work piece. During the process, the material encounters excessive plastic deformation which leads to grain refinement. The average size of the grains decreased significantly thereby enhancing mechanical properties such as tensile strength and fatigue strength. Moreover, the advantage of FSP is that it does not change the physical state of the material while changing the physical properties. Material flow and micro structural changes in Friction stir processing have been studied by many scientists. Different studies have been considered consisting of different parameters such as tool geometry, tool rotational speed, width and depth of the tool, axial load etc. Friction stir processing can be applied to aluminium, copper and manganese. Friction stir processing improves mechanical properties like tensile strength, fatigue strength, ductility and corrosion resistance. It also increases the hardness of the material and wear resistance of the material. Hence Friction stir processing is a new sustainable field of study.

Keywords: FSP/FSW, Microstructure Modification, Aluminium Alloys, Automobiles Industries

Influences of Process Parameter and Micro Structural Studies in Friction Stir Welding of Different Alloys

Hassan Mehdi, RS Mishra

Department of Mechanical Engineering, Delhi Technological University, New
Delhi Email: professor.radheyshyammishra@gmail.com

Abstract: Friction stir welding (FSW) is a relatively new solid state joining process that uses a non-consumable tool to join two different materials without melting the work piece material. Heat is generated by friction between the rotating tool and the work piece material. This joining process is energy efficient, environment friendly and versatile. Friction stir welding (FSW) was developed for microstructure modification of metallic material. This review article provides an overview of effect of FSW/FSP mechanism responsible for the formation of weld, microstructure refinement, wear of FSW tool and mechanical properties. The mechanical properties of welded joint by friction stir welding are largely dependent on the combined effect of both the composition of alloying element and processing parameter, there for, the mechanical performance of friction stir welding joint should be evaluated accordingly. It was observed that s FSW is a potential welding process to achieve defect free joint. Welding parameter such as tool rotation, transverse speed and axial force have a significant effect on the amount of heat generated and strength of FSW joints. Microstructure evaluation of FSW joints clearly shows the formation of new fine grains and refinement of reinforcement particles in the weld zone with different amount of heat input by controlling the welding parameter.

Keywords: Process Parameter Microstructure Studies Friction Stir Welding

Use of Green Technology (FSP/FSW) for Improving Mechanical Properties of Alloys

RS Mishra, Tanusa Sharma, Shambhavi Ratnapriya

Department of Mechanical Engineering, Delhi Technological University, New Delhi

Email: professor.radheyshyammishra@gmail.com

Abstract: Normally two types of friction stir processing on alloys are considered in the present studies (i.e. NFSP and SFSP) and its effect on microstructures and mechanical properties improvement is also studied in detail. It was observed that the temperature enhances from low temperature as the pin moves and reaches the highest value when the pin arrives at the measured position, and then decreases with the departure of the pin. After FSP, the ultimate tensile strength increases while the elongations improve significantly. Normally two types of friction stir processing on alloys are considered in the present studies (i.e. NFSP and SFSP) and its effect on microstructures and mechanical properties improvement is also studied in detail. It was observed that the temperature enhances from low temperature as the pin moves and reaches the highest value when the pin arrives at the measured position, and then decreases with the departure of the pin. After FSP, the ultimate tensile strength increases while the elongations improve significantly.

Key Words: Green Engineering, Green Technology, FSP/FSW

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An Experimental Study to Achieve Minimum Surface Roughness While Machining P20 Tool Steel Using Wire EDM

Anmol Bhatia^{a*}, Gagan Vijay Singh^a, Anmol Madaan^a, Akansha Bhatia^b

^aDepartment of Mechanical Engineering, The NorthCap University, Gurugram, Haryana, India

^bDepartment of Mechanical Engineering, Rawal Institute of Engineering and Technology, Faridabad, Haryana, India

Email: anmolbhatia@ncuindia.edu Phone No--+91-9953797615

Abstract: There is a rapid increase in the usage of hard materials. The conventional machining process has been left behind by complex and intricate part machining. Such complex machining of hard materials via conventional machining methods does often lead to poor quality characteristics such as low surface roughness. This study highlights a research analysis on parametric optimization of Wire EDM process while machining P20 tool steel. It deals with the optimization of parameters namely Pulse on time, Pulse off time, Peak current and Wire Tension so as to obtain low surface roughness. Taguchi's design of experiments and Analysis of Variance (ANOVA) has been used for the optimization purpose and L₉ orthogonal array has been used for the same. Furthermore, it was found that Pulse off time and Peak Current were the most significant factors, followed by Pulse on time and Wire Tension.

Key words: Wire EDM, Taguchi, ANOVA and Orthogonal Array

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Application of Theory of Constraints in Service Type Organization

Sumit Chawla, Radha Kant

Department of Mechanical and Automation, Delhi technical campus, Greater Noida UP, India,

Email: chawlasumit4@gmail.com; mradhakant07@gmail.com

Abstract: Theory of constraints given by Goldratt is widely used in manufacturing industries to identify and remove the constraint/ bottleneck due to which the industry is unable to achieve its goal and enough productivity and profitability which is implemented by different tools like DBR, SDBR.

The constraint can be identified by collecting the production data or rejection data within the process flow by making different bar charts, scatter charts etc. Generally, TOC approach is applied for manufacturing sector but we have applied this approach in service organization and we find out the different benefits by implementing TOC in service type organization. In this paper we carried out study on health care clinic and we identify the restrictions in organization's stability and provide better treatment and better throughput.

Keywords: constraints, organization, productivity etc.

Biogas-An Alternative Fuel for Distributed Generation

Neha Gupta^{a,*}, Sunil Kumar Mahla^b

^aDepartment of Mechanical Engineering, Shri Venkateswara University, Amroha, UP, India ^bDepartment of Mechanical Engineering AIET, Faridkot, Punjab, India
Email: guptaneha2207@gmail.com; Phone No--919313479644

Abstract: The electric energy sector is facing problems of fuel scarcity such as coal shortage, average losses of power transmission, distribution rise, insufficient or poor infrastructure and connectivity in distribution lines etc. Renewable energy sources are considered as clean sources of energy and when use optimally, these resources minimize environmental hazards, produce minimum secondary wastes and are sustainable based on future energy demands. Since Internal combustion engines are developed more than a century ago, IC engines are the most common of all distributed generation technologies. In this paper a review has been done on use of biogas as an alternative sustainable fuel to be used in internal combustion engine for distributed generation. The main objective of this paper is to investigate bio-gas generation, its properties, desired characteristics and factors affecting the biogas generation from organic wastes by the anaerobic digestion. The biogas primarily comprises of methane, which is used for combustion. Use of methane reduces harmful engine emissions, and keeps the environment clean. It is economical and slurry can be used as organic manure. The main aspect of stationary internal combustion engines for electrical generators use is for isolated farms and rural areas.

Key words: Biogas, Electrical generators, Electrical energy, Distributed generation

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Effects of Dual-Fuel at Different Engine Parameters

Hukam Singh^{*1}, Shailesh Kumar Singh¹, Ashutosh Kumar², Rangnath MS²

¹Department of Mechanical Engineering, Krishna Engineering College, Ghaziabad India-201007 ²Department of Mechanical Engineering Delhi Technological University, Delhi India 110042 **Email:** hukambij@yahoo.com

Abstract: Rapid depletion of fossil fuels is urgently demanding an extensive research work to find out the viable alternative fuel for meeting sustainable energy demand without any environmental impact. Looking at the twenty first century, it seems that cleaner and greener form of energy in complete congruence with environment are the only hope for a sustainable future. In the current investigation CNG is used with Jatropa oil methyl ester (JOME) in a dual fuel mode for complete combustion of charge present inside the combustion chamber, and for the reduction of emissions associated with CI engines. The engine trials were conducted on a stationary air cooled constant speed agricultural direct injection diesel engine by increasing load from 0-100%. The effects of the pilot charge on various performance and emission characteristics were evaluated on all range of load. While comparing the results with diesel an increment in Brake Thermal Efficiency (BTE) and reduction in the emissions i.e. CO, HC, smoke were found with the dual fuel mode of CNG-JOME in CI engine.

Keywords: biodiesel, dual fuel engine, CNG-JOME, emission parameters etc.

Effect of Skin-Core Delamination on Inter Laminar Stress Distribution in Sandwich Composites

Avnish Kumar Shukla*, Ashutosh kumar, Hukam Singh, Rakesh Kumar Shukla, Pawan Mishra

Department of Mechanical Engineering, Krishna Engineering College, Ghaziabad India-201007

Email: shukla13011avnish@gmail.com

Abstract: Sandwich honeycomb panels are used in wing-fuselage fairings, rudder and elevator surfaces, and the leading and trailing edge of wing panels etc. It consists of thin face sheets with high stiffness and a thick core with high shear strength, between them. It is advantageous due to high strength to weight ratio. Interlaminar stresses are developed due to mismatch of elastic moduli and fibre orientation angle between the layers, which causes delamination. The possibility of delamination growth is more when even a small delamination is present in the sandwich panel. In this study, the effect of delamination between core and face sheet on interlaminar stresses is analyzed. Ansys 14.0 software was used to perform the finite element analysis. A uniform transverse load is applied on the top face sheet. The interlaminar stresses along the circumference of selected concentric rings, around the delamination are observed. The variations in interlaminar stresses, along three concentric rings, due to the presence of delamination of different sizes are presented.

Keywords: Interlaminar stress, Sandwich, Composites, Face sheet, core, Laminate, FEM, Flexural stiffness, Fibre Orientation Angle

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A New Heuristic Method i.e. RPW Method and Genetic Algorithm Techniques (Hybrid Method) For Evaluating Multi Product Assembly Line Balancing – A Case Study

Ashutosh Kumar*¹, Hukam Singh¹, Ashutosh Kumar Rai², Avnish Kumar Shukla²

¹Department of Mechanical Engineering, Krishna Engineering College, Ghaziabad India-201007

²Department of Mechanical Engineering Delhi Technological University, Delhi India 110042 Email: ashume2007@gmail.com

Abstract: Assembly line production is one of the widely used production systems. The problem of Assembly Line Balancing deals with the distribution of activities among the workstations which lead to the maximum utilization of Human Resources and facilities without disturbing the work sequence. The problem is motivated by a vehicle-sequencing problem at an Automobile company, Gurugram. A new Heuristic Method i.e. RPW Method and Genetic algorithm techniques(hybrid method) for the Type-I of Multi Product of Assembly Line Balancing Problem(MALBP) have been used. The hybrid method has been developed which is based on the heuristic rules and formulae. The programme is coded in C#(C Sharp). The hybrid method was gave good solutions for straight line balancing problem. The present work of case study provided new knowledge to develop a better tool of assembly line balancing to solve real world problems more efficiently at the shortest possible time and it leads to increase line efficiency and production rate by reducing the number of workstations and also reducing balance delay and smoothness index.

Keywords: Assembly Line Assembly line Balancing Technique, Heuristic Method of Assembly line balancing

A Review on the Optimization of Parameters of Gas Tungsten Arc Welding of Aluminium and Aluminium Alloys

Neha Bhadauria, Swapnil Verma, Sidharth Singh, Shubham Govil

Department of mechanical Engineering, Krishna Institute of Engineering and Technology, Gaziabad
UP Email: swapnil.verma969@gmail.com, +91-9454060949

Abstract- Gas Tungsten Arc Welding (GTAW) is one of the most popular welding techniques for aluminium alloys. The accuracy and efficiency of the joint largely depends upon the type of power supply (DCEP/DCEN/AC), welding speed, type of shielding gas used. This paper deals with the review of various parameters on which weld quality depends and researches carried out to analyze the weld quality obtained, defects encountered, effects of welding parameters on weld bead profile and mechanical properties etc. for TIG welding of aluminium or aluminium alloys. It consists of the amalgamation of effects of various parameters and the techniques suggested and adopted for their optimization to obtain a better-quality joint with reduced crack sensitivity, improved mechanical strengths and stronger Heat Affected Zone (HAZ).

Keywords- Gas Tungsten Arc Welding, Aluminium alloy, Tensile Strength, Welding Current, Helium-Argon Shielding Gas, Welding Polarity.

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Porous Radiant Burner for Domestic Cooking Purpose (A Review)

Vijay Kumar, KeshwarEqbal Khan, Harpreet Singh Bitta

Department of Mechanical Engineering, BCET Gurdaspur, Punjab-143521

Email: harpreet.s.bitta@gmail.com

Abstract: For cooking, liquefied petroleum gas (LPG) is one of the most commonly used fuels in India and many other countries. LPG being a clean fuel burns with no soot and has high calorific value than kerosene and wood. In India, as the living standard of the people is improving the number of LPG consumers is also increasing. The total domestic consumption of LPG in India is almost comparable with other petroleum products used in industrial applications. The thermal efficiency of the current LPG cooking stoves available in the Indian market are in the range of (60-65) % and at the same time the CO and NO_x emissions levels are above the world health organization standards. Considering the energy conservation, environment issues and increase in demand of LPG in the near future. The present review paper summarizes the recent modification in the design of free flame conventional LPG burner by using porous materials and highlights its potential.

Keywords: Porous Media, Combustion, Porous Radiant Burner, Efficiency

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Performance Enhancement of Solar Water Heater Using Phase Change Materials (PCM): A Review

Paras Sachdeva

Department of Mechanical Engineering, BCET Gurdaspur, Punjab-143521

Email: harpreet.s.bitta@gmail.com

Abstract: Solar water heater (SWH), one of the most popular solar thermal systems, accounts for 80% of the solar thermal market worldwide. This review paper presents the previous work on solar water heater using phase change material. PCM had been used in different part of heating networks including shell and tube type collectors, flat pate collectors and evacuated tube collectors. Recent findings about the effects of phase change material on various solar collectors are discussed. This review highlights the need for further research in improving the solar water heater using materials for latent heat storage.

Keywords: Solar water heater (SWH), Phase change material (PCM)

Impact of Clearance Contact on the Performance of Hydrodynamic Journal Bearing System

Harpreet Singh Bitta¹, Gobind Pal¹, RK Awasthi², Manjeet Singh Minhas¹, Davinder Singh², Navneet Singh², Vijay Kumar¹, Keshwer Equbal Khan¹

¹Department of Mechanical Engineering, BCET Gurdaspur, Punjab-143521

²Department of Mechanical Engineering, ST. Soldier college of Engineering and Technology, Jalandhar. Punjab

Email: harpreet.s.bitta@gmail.com

Abstract: The paper presents the analytical study of the impact of clearance contact on hydrodynamic journal bearing system's static performance. The governing model of hydrodynamic lubrication i.e. the non-dimensional Reynolds equation is solved with using Galerkin's FEM approach along with appropriate boundary conditions. A cavitation zone, which is unknown priori is established using Reynolds boundary condition through iteratively. A clearance parameter is described and its influence on fluid-film pressure and static performance parameters of hydrodynamic journal bearing is studied for a commonly used range of sommerfeld number. The static performance parameters include maximum pressure, load carrying capacity, attitude angle, and coefficient of fluid-film friction etc. The results of the study are useful to the bearing designer from the view point of static performance parameters as the effect of sommerfeld number has been used for commonly used clearance parameter.

Keywords: Hydrodynamic journal bearing, static characteristics, finite element method

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Computational Fluid Dynamics Analysis of Hybrid Cooling Tower

Mohammad Zunaid

Department of Mechanical Engineering, Delhi Technological University, Bawana Road, Delhi-42, India Email: mzunaid3k@gmail.com; Phone No--91-9891851069

Abstract: The hybrid cooling tower is the combination of both wet and dry cooling tower. The computational fluid dynamics of the hybrid cooling towers has performed by the help of Ansys FLUENT solver. The simulated results are validated from experimental data and establish that the differences in the cooling capacity and pressure drop in between the CFD and experimental measurement in the hybrid mode were less than 4% and 6% respectively for the uniform air flow distribution. Results show that hybrid cooling tower reduces the water evaporation loss, so less amount of makeup water required in the hybrid cooling tower, and relative humidity of air coming from wet region decreases significantly which nearly ends the problem of the plume.

Key words: Hybrid cooling tower; Ansys FLUENT; CFD

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Numerical Analysis of Cold Spray Process

Mohammad Zunaid

Department of Mechanical Engineering, Delhi Technological University, Bawana Road, Delhi-42, India Email: mzunaid3k@gmail.com; Phone No--91-9891851069

Abstract: Cold spray is the coating process which enables the production of metallic and metallic ceramic coating. In this process, the coating is applying by exposing the metallic substrate to the high-velocity jet of small particle accelerated by the supersonic jet of compressed gas. The convergent-divergent nozzle used for producing high-speed jet. The geometry of convergent-divergent nozzles was drawn by the help of Ansys Design Modeler, after meshing and setup it is simulated by the Ansys FLUENT solver. Inlet, outlet and throat diameter and of the nozzle are 20 mm, 10 mm, 03 mm respectively. The length of the convergent and divergent portion of the nozzle is 60 mm and 120 mm respectively. Five cases at different injector length i.e. 15 mm, 25 mm and 35 mm have investigated. The result shows that as injector length increases particle temperature at the outlet of nozzle decreases, result also show that velocity of particles initially increases up to 25 mm length of injector after that it will be decreases simultaneously.

Key words: Cold spray; coating; Ansys FLUENT; CFD

Study of Active Brake System for Automobile

Roop Lal, RC Singh, Vaibhav Sharma, Vaibhav Jain

Mechanical Engineering Department, Delhi Technological University, Delhi
42 **Email:** rooplalrana@gmail.com

Abstract: There are many situations where the driver's response is not fast enough to apply brakes to stop and control the vehicle during emergency. So in such cases, there is an urgent need for an active brake system. Brake assist is an active vehicle safety feature designed not only to help drivers come to a stop more quickly during an episode of emergency braking but it automatically applies brakes in case the car in front of car comes too close. There are many sensors along with camera which continuously determines the speed of car in front of our car. If both cars come too close to each other, then brake assist first warns the driver and then apply 20% to 40% of braking capacity automatically and if still driver does not respond it activates emergency brake assist which applies 100% of braking power. During this ABS and EBD (sometimes ESC and TRACTION CONTROL) also comes into play which provides easy manoeuvre control to driver over vehicle.

Keyword: Brake, assist, sensors, ABS, EBD, and Traction, Manoeuvre.

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Study of Automatic Tyre Inflation while Vehicle in Motion

Roop Lal, RC Singh, Sohan Kumar, Souvik Samadder

Mechanical Engineering Department, Delhi Technological University, Delhi 42
Email: rooplalrana@gmail.com

Abstract: In tyres, tyre pressure has a great role in smooth running of tires on road surfaces. As certain amount of decrease in tyre pressure result in the reduction of tyre life, decrease in gas mileage and vehicle performances. So the under inflated tyres increases the risk of overheating, tyre burst, leading to tyre failure, adversely affecting handling and tread life. So in such cases, there is a need of an automatic self-inflating tire system that ensures that tyres are properly inflated at all time. In this design there is use of a portable compressor having pressure gauge fitted on it, for measurement of pressure, portable compressor will supply air to all the tyres via hoses and a rotary joint fixed between the wheel spindle and wheel hub at each wheel. The rotary joints provide a passage for air to be enter to the tyres without the tangling of hoses. With the recent oil price hikes, cost of tyres and growing concern of environmental issues, this system addresses a potential improvement in gas mileage, tyre wear reduction, tyre life, and an increase in handling and tyre performance in diverse conditions.

Keywords: Inflation, Portable compressor, Rotary joint, and tyre.

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Design of Poppet Engine Valve for Enhanced Mechanical Properties

Roop Lal, RC Singh, Trisha Kumar, Nitish Mathpal

Mechanical Engineering Department, Delhi Technological University, Delhi
42 **Email:** rooplalrana@gmail.com

Abstract: In the recent times, engineers and scientists in national laboratories and corporate R&D centers are pursuing research to increase mechanical efficiencies and fuel economy in the IC Engines used in a wide range of vehicles. Engine valve is a vital component effecting mechanical efficiencies and fuel economy of the IC Engine. It blocks gas flow ports and controls the exchange of gases inside the cylinder by continuously opening and closing according to the valve timing diagram. Poppet engine valve is currently the most preferred design for IC Engine valves. Existing difficulties with poppet valve is that it tends to fail due to fatigue after executing about 10^9 operating cycles. Thus, this paper aims to device a link between the myriad materials and geometric parameters, and mechanical properties of poppet engine valve to improve its fatigue life.

Keywords: IC Engine, Poppet Valve, Fatigue Life, Geometric Parameters.

A Review on Design and Flow Simulation in an Axial Flow Hydro Turbine

Ajay Singh, Dwesh K Singh, Pranay Tanwar

Department of Mechanical and automation Engineering, DTC Greater Noida, India,
201306 **Email:** singhdwesh@gmail.com

Abstract: Turbines are the most important part in a hydro power plant because here fluid energy is extracted from water and is converted into mechanical energy. Most of large hydro energy sources are already in use at present time so we need to concentrate on small sources to utilize their energy capacities. Axial turbines are best suited for low head power plants than other type of turbines in terms of performance. To extract the highest possible amount of energy from water, turbines should be designed to have maximum efficiency. There should be a better flow distribution inside the turbine space to have its increased efficiency. Flow behaviour inside turbine space largely depends on geometry of runner and distributor blades. In this paper a brief review of different design criteria and flow simulation techniques used for hydro turbines has been presented.

Keywords: Flow simulation, hydro turbine, water etc.

Comparative Analysis of Biodiesel as an Additive with Pure Diesel in Single Cylinder Four Stroke Diesel Engine Processes

**Ashutosh Kumar¹, Hukam Singh¹, Avnish Kumar Shukla¹, Pawan Mishra¹,
Ashutosh Kumar Rai²**

¹Department of Mechanical Engineering, Krishna Engineering College, Ghaziabad India-201007 ²Department of Mechanical Engineering Delhi Technological University, Delhi India
Email: shume2007@gmail.com

Abstract: At present, the demand of energy resources is increasing while their stocks are decreasing with high rate. Bio-diesel is an energy source which is renewable and would help in controlling the demand and supply of fuel but also in the reduction of pollution. Bio-diesel is simple to use and easy to transport. Different ratios of bio-diesel and diesel were mixed to prepare blends which showed viscosity, heat content, density, efficiency closer to diesel. The performance of various blends was tested on four stroke single cylinder compression ignition engine. Testing showed that partial substitution of diesel by bio-diesel can result in increase performance of engine. The results conclude that bio-diesel would be a better alternative to diesel in coming days. In this investigation we were planned to investigate fuel consumption, power in different loading condition, break specific fuel consumption, break mean effective pressure from bio-diesel (Blend of 5% Growdiesel + HSD, 2% Growdiesel + HSD, 1% Growdiesel + HSD, .5% Growdiesel + HSD) with HSD. Planned to take 10 hr trials in cache combination and comparison of data and valuable findings related cost. Results shows that the performance of high percentage blends and pure bio-diesel doesn't fit the engine due to their viscosity and low thermal efficiency.

Keywords: Assembly Line, Assembly line Balancing Technique, Heuristic Method of Assembly line Balancing

Performance Comparison of Cuboidal Box type Solar Still with Different Feed System

Abhinav Malaiya, Akhilesh Arora, BB Arora

Department of Mechanical Engineering, Delhi Technological University, Delhi-42
Email: aroraakhilesh@yahoo.com

Abstract: The need for pure drinking water in dry and remote areas is very acute particularly in Rajasthan, Kuchchh etc. The dry areas however have no shortage of solar energy which is available in plenty. Solar desalination is a technique to curb this problem in dry areas. The work presented in this paper relates to a cuboidal type solar still. The solar still is designed and a sheet of porous material (jute sack) is deployed on plane basin profile and saline water is fed by two different means. First still was fed by a reservoir kept at higher elevation and second one was fed by capillary action from reservoir kept at elevation lower than still. On this vary design, experimentation has been performed to compare the performance of cuboidal box type solar still with different feed systems and different parameters are measured in this process. The results are obtained at an inclination angle of 24° which is best suited for Rewa Madhya Pradesh (coordinates 24.53°N, 81.3°E). In this performance comparison the measurement of productivity and temperatures at different points on solar still.

Keywords: Cuboidal box type solar still, capillary feed system, elevated reservoir feed

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Utility model- the Necessity to Nourish Indian Small and Medium Enterprises

Rakesh Kumar

Department of Mechanical Engineering, Delhi Technological University, Delhi-42
Email: rakeshtech1@gmail.com

Abstract: Indian Small and Medium Enterprises (SMEs) are also leaders in innovation and creativity that drive job creation and economic growth in the global marketplace. They need strong protection of their intellectual property rights (IPR), particularly because they are often highly vulnerable to infringement of their IPR. Though utility model protection would be of great help to many, India, at present does not offer protection under utility model. At present, technological innovations can only be protected in India under patents. SMEs in general manufacture the products having short life cycle, and the life cycle of the invention is also short and, the profits are not able to cover patenting costs, thus utility model is the solution to nourish Indian SMEs in the global market.

Keywords: Enterprises, intellectual property; small scale enterprises etc.

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A Study of Turning of Steel: An Overview

Navriti Gupta

Department of Mechanical Engineering, Delhi Technological University, Delhi, India
E-mail: Navritigupta22@gmail.com

Abstract: Turning is one of the machining process which is versatile in nature. Manufacturing Industries are constantly thriving on newer processes but turning holds unique place among them. Steel is one of most widely used engineering material. Its large scale usage calls for faster manufacturing processes. Turning is undergoing various value based modifications for example in the tooling required, in MQL techniques, in automation etc. The tooling industry today can boast of modern and rapidly changing materials as Nano materials and poly composites as potential tool bits. Carbide, Nitride coated tools changed the scene of tooling industry. Similarly environmental constraints are forcing us to adopt MQL techniques of machining/turning. As a result tooling materials is a area of constant research. Mass Production has changed the whole scene of production. Previously job and batch production holds their significance which is now conveniently been replaced with mass, continuous and flow production. Faster rate of production means rapid and fast machining speeds and very high temperature reaching in the machining process without using lubricants too. Chip breakers too are integrated with tool bits. Carbide tool bits, CBN, Nano material coatings, etc. have conveniently replaced older generation of H.S.S Tools.

Keywords: Nanomaterials, turning of steel, manufacturing, etc.

Performance Comparison of Cubical Box Type Solar Still Deployed With Different Basin Profiles

Abhinav Malaiya, Akhilesh Arora, BB. Arora

Department of Mechanical Engineering, Delhi Technological University, Delhi-42
Email: aroraakhilesh@yahoo.com

Abstract: The need for pure drinking water in dry and remote areas is very acute particularly in Rajasthan, Kuchchh etc. The dry areas however have no shortage of solar energy which is available in plenty. Solar desalination is a technique to curb this problem in dry areas. The work presented in this paper relates to a cuboidal type solar still. The solar still is designed and a sheet of porous material (jute sack) is deployed on different basin profiles placed inside the still and saline water is externally fed. On this vary design, experimentation has been performed to compare the performance of cuboidal box type solar still with different basin profiles and different parameters are measured in this process. The results are obtained at an inclination angle of 24° which is best suited for Rewa Madhya Pradesh (coordinates 24.53° N, 81.3° E). The process of performance comparison comprises the measurement of productivity and temperatures at different points on solar still.

Keywords: Cuboidal Box type Solar still, basin profiles, porous material, desalination

Study of Fuel Oil Handling System in Thermal Power Plants

Rajesh Kumar, Roshan Kumar, PV Ramkumar

Department of Mechanical Engineering, Delhi Technological University, Delhi-42
Email: rajesh2008dce@gmail.com

Abstract: Study of fuel oil handling system (FOHS) in thermal power plants is intended towards achieving the goal of designing fuel oil handling system in thermal power plants. Designing & process parameters have been proposed in this study analysis. The overall system consists of three stages i.e. Fuel oil unloading, storage & forwarding. All the three stages required heat tracing to make the heavy density fuel oil properties suitable to flow through pipes for process requirement in thermal power plants with the help of pumping media. Theoretically, it was found that the proposed Design of fuel oil handling system using electrical heat tracing shows better result as compared to steam heat tracing. The basic idea behind this conception is to make existing system of FOHS more refined which is maintenance free and more reliable

Keywords: fuel oil, thermal power plant, flow through pipes etc.

Thermodynamic Analysis on Steam Injected Gas Turbine Cycle

PV Ram Kumar

Department of Mechanical Engineering, Delhi Technological University, Delhi-110042, INDIA
Email: pvrnce@rediffmail.com

Abstract: This paper presents thermodynamic methodology for the performance evaluation of steam injected gas turbine(STIG) cycle. The effects of pressure ratio, turbine inlet temperature and specific mass flow rate of steam per kg of air used in the thermodynamic analysis of steam injected gas turbine(STIG) cycle on thermal efficiency of the cycle, specific work output and specific fuel consumption have been investigated. From the results obtained in graphs it is observed that thermal efficiency of steam injected gas turbine(STIG) cycle increases and net work output increases and specific fuel consumption decreases as pressure ratio increases; thermal efficiency of steam injected gas turbine(STIG) cycle and specific work output increases with increase in turbine inlet temperature. Results also show that STIG cycle efficiency is always greater than simple gas turbine cycle for same pressure ratio and turbine inlet temperature and for wide range of parameters STIG cycle is superior to simple gas turbine cycle. In STIG cycle as specific mass flow rate per kg of air increases cycle efficiency and net work output also increases.

Key words: gas turbine cycle, steam injection, energy analysis.

Production of Biodiesel from Mahua Oil by Mechanical Stirring and Its Performance Testing on a Diesel Engine

Ankit Malviya, Ankur Kumar Bera, Manish Dev Pandey, Lucky Gupta, Praveen Gautam, Ashok Kumar Yadav

Department of Mechanical Engineering, Raj Kumar Goel Institute of Technology, Ghaziabad, 201003 **Email:** ashokme015@gmail.com

Abstract: Biodiesels are fuels that are made from renewable oils that can usually be used in diesel engines without modification. These fuels have properties similar to fossil diesel oils and have reduced emissions from a cleaner burn due to their higher Oxygen content. The current and impending energy and environmental crises have revitalized the need to find more viable renewable resources. The present work investigates the production of biodiesel from mahua oil by mechanical stirring method at different molar ratio and reaction time. After that engine performance were evaluated, operated with blends of mahua biodiesel and diesel.

Key words; Mahua oil, Biodiesel, Transesterification Process, Diesel engine performance

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Gap Analysis of Value Stream Mapping Tool Implementation in Manufacturing Operation Using Fuzzy Topsis

Kamal Sachdeva, Vasu Kumar, AKS Chaudhary

Department of Mechanical Engineering, MRIU, Faridabad India,
Email: vasu.dtu@gmail.com; kamalsach@gmail.com; aksingh.fet@mriu.edu.in

Abstract: In today's world, technology plays a vital role demanding productivity improvements, downtime reduction in manufacturing operations industry. Depending upon the strategy and lean methodology organizations follow and apply VSM and JIT in their respective fields. The present research work discusses the methodology to determine the gap analysis of VSM tool implementation in manufacturing operation in a different set of companies using fuzzy topsis. The algorithm and methodology determines the prioritization of various factors that can and will play an important role in implementation of VSM Tool across different organizations. The methodology will determine the ranking of organization based on the closeness coefficient.

Keywords: VSM, Fuzzy, Lean, Manufacturing, Operations

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Performance Analysis of PV Cell under Uniform and Non-Uniform Illumination

Aman Khurana, PV Ram Kumar

Department of Mechanical Engineering, Delhi Technological University, Delhi-110042
Email: amankhurana1602@gmail.com; pvrce@rediffmail.com; Phone No: 9654189668

Abstract: First electrical behavior i.e. short circuit current and open circuit voltage (I-V curve) is observed. The effects of different temperature and insulation on I-V and P-V curve are studied considering uniform illumination. The study shows that open circuit voltage and short circuit current increases with increase in the insulation. By multiplying these two the power curve is drawn. As the cell's working temperature increases short circuit current increases and open circuit voltage decreases and accordingly the power is obtained.

Then the effect of non-uniform illumination on PV cell with variable shape factor is studied and temperature variation with the non-uniformity is observed. By approaching uniform illumination on PV cell mean temperature decreases and accordingly the current output with the variation of shape factor is obtained.

Keywords: Photo-Voltaic Cell, Temperature, Insulation, Uniform illumination, non-uniform illumination

Structural Design and Optimization of an Unmanned Aerial Vehicle Wing for SAE Aero Design Challenge

Harsh Raj Chauhan, Harsh Panwar, Vikas Rastogi

Department of Mechanical Engineering, Delhi Technological University, New Delhi-110042, India
Email: harshchauhan1995@gmail.com; Phone No-+91-9818886652; harshpanwar788@gmail.com;
Phone No- +91-9891197447

Abstract: Aircraft design is a multi-disciplinary iterative design process which follows a Systems Engineering approach and Unmanned Aerial Vehicle design follows one such design methodology. This paper is an attempt to formulate the structural design process for a UAV wing and subsequent optimization for SAE India Aero Design Challenge 2017. The design starts with the identification of structural design parameters and challenge requirements in the Pre-design/Conceptual Design phase. Based on the engineering values, a mathematical interface is coded in MATLAB to calculate the mechanical equivalents for the wing at individual sections and to prepare an internal structural layout adhering to the selected material properties. The structural design of the wing is then modeled in Solid works and final mass is calculated in the Preliminary Design phase. For initial estimates, the static structural analysis of the layout is performed theoretically. The final design of the wing is then fed in ANSYS Finite Element Solver for Static Structural analysis. Now, successive iterations are performed for the optimization of a critical structural parameter with bound constraints directly affecting the mass of the structure using MATLAB in the Detailed Design phase. The optimized version is then finally validated.

Keywords: UAV, Structural Design, Optimization, MATLAB

Study of Mechanical Property of Hardness of Biomaterials (Bones)

Rajiv Chaudhary, Ramesh Chandra Singh, Ranganath M. Singari

Department of Mechanical Engineering, Delhi Technological University, New Delhi-110042, India
Email: rch_dce@rediffmail.com

Abstract: The human body gets shape, support and kinematics of motion with the help of the skeleton, which is an agglomerate of several joints, connecting different bones, with each other and ultimately providing a structure shape to the body.

In addition to facilitating kinematic motion as well as stability to the body, it also sustains all external forces applied over it while interacting with the other bodies. With this viewpoint the assessment of the strength characteristics of bones become very important. Different types of loadings will be causing different kind of internal resistance resulting in specific type of stress. For this purpose, the study of various mechanical properties becomes very important in case of the biomaterials like Bone. Mechanical properties of bone may be ascertained, as it is done with metallic materials. Out of various mechanical properties like strength, compressive strength, toughness etc, hardness has a specific role to play. Any harder object may hurt the bone if applied inappropriately. So, mechanical behavior of hardness of the bone needs to be ascertained, in order to ensure its safety from any such situation. In this paper the important aspects of hardness of bone has been studied, and propositions have been made so that bone may be protected under any such condition.

Keywords: Mechanical Property, Biomaterial, Hardness, Kinematics, Stress

Welding of Dissimilar Metal –An Overview

Adhirath Mandal¹, Ashish Shukla², Vaibhav Verma³, Nitesh Kumar Aghari¹

¹Department of Mechanical and Automation Engineering, Delhi Technical Camus, Greater Noida

²Departments of Mechanical Engineering, Delhi Technological University, Delhi

³Departments of Mechanical Engineering, TATA Consultancy Services, Bangalore **Email:** a.mandal@delhitechnicalcampus.ac.in

Abstract: Joining of dissimilar materials is one of the challenging tasks facing modern manufacturers. Dissimilar joining technologies find applications in many sectors including microelectronics, medical, optoelectronics and micro systems. The tiny geometry of the joints and the different optical and thermal properties of the materials makes laser welding one of the most suitable production methods. This paper concentrates a study of three different welded joints produced by electron beam welding dissimilar materials. The junctions were obtained between copper plates and three different austenitic stainless steel plates. The thermal stress analyses were performed in the tungsten inert gas (TIG) welding process of two different stainless steel specimens in order to compare their distortion mode and magnitude. The growing presence of non-conventional stainless steel species like duplex family generates uncertainty about how their material properties could be affected under the welding process. This paper presents the review of the different types of welding used so far for dissimilar welding and the advantages of using them.

Keywords: Welding, Dissimilar Welding, TIG, Laser Welding, Different Material

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Tensile Strength Analysis of Copper with Stainless Steel Using GTAW

Mandal Adhirath¹, Wattal Reeta²

¹Department of Mechanical and Automation Engineering, Delhi Technical Camus, Greater Noida

²Departments of Mechanical Engineering, Delhi Technological University, Delhi

Email: a.mandal@delhitechnicalcampus.ac.in

Abstract: In heat exchangers, tubing is required for the passage of the working fluid throughout the heat exchanger circuit. The requirement of the tubing inside the heat exchanger is of high heat transfer rate, thermal conductivity and ductility. For this purpose, Copper tubes are being used in the industry because they serve the above requirements optimally. But due to economic constraints their usage throughout the heat exchanger circuit is not profitable. For the rest of the tubing outside the heat exchanger, Stainless Steel tubes are used because of economic considerations and good corrosion resistance. Therefore replacement of copper components by stainless steel can be an attractive way to overcome the difficulty.

GTAW offers many advantages such as it is relatively inexpensive; it offers an inert gas atmosphere at the weld using argon gas, which protects the weld pool from reacting with oxygen. These results in a more successful weld, the welding process is compatible with most product designs and so it offer flexibility. The equipment is relatively easy to use. The above reasons led to attempt weld copper with stainless steel using the GTAW.

Keyword: GTAW, Tensile strength, stainless steel etc.

Laser Direct Metal Deposition (LDMD) –An Overview

Vaibhav Verma¹, Adhirath Mandal², Ashish Shukla³

¹TATA Consultancy Services, Bangalore

²Department of Mechanical and Automation Engineering, Delhi Technical Camus, Greater Noida ³Departments of Mechanical Engineering, Delhi Technological University, Delhi

Email: a.mandal@delhitechnicalcampus.ac.in

Abstract: Laser Direct Metal deposition(LDMD) is an additive manufacturing process, it is used to manufacture complex 3D objects directly from CAD files. Laser creates melt region on surface of substrate and powder material blown on to the laser-induced melt pool to form a layer. After a layer deposition, nozzle and laser assembly raised vertically upward by calculated small increment. Next layer is built on previous one, thus a 3D part is built layer by layer. Different FEA Tools were used like COMSOL, ANSYS, ABAQUS etc, and finite element models are developed to numerically simulate heat transfer and coupled thermal phenomena to analyze the influence of various parameters on thermal history. Thermal cycles experienced at different locations and thermal gradient at mutually perpendicular directions are studied. Influence of thermal loading on the model's distortion is analyzed.

LDMD process finds potential application in rapid tooling, prototyping, precision repair work, and manufacture of complex, intricate components with varying compositions, work on challenging materials like Titanium alloys, super alloys etc. Applications are repair of molds, dyes, motor, gear component etc, work on challenging material (Titanium alloys, super alloys), fabrication of dissimilar metals etc.

Keyword: LDMD, COMSOL, ANSYS, ABAQUS, Super alloys, Titanium, Manufacturing, Additive Manufacturing, Rapid Prototyping

A Study of Factors Affecting the Weld Ability of Dissimilar Metals and Applications and Need of Joining of Dissimilar Metals

Nitesh Kumar Agrhari, Adhirath Mandal

Department of Mechanical & Automation engineering, Delhi Technical Campus, Greater Noida **Email:** n.agrhari@delhitechnicacampus.ac.in, adhirath.mandal@gmail.com

Abstract: Joining of dissimilar metals have very limited use as there are only few welding techniques are available to obtain good surface finish & desired strength on the surface of dissimilar work pieces. We need to join dissimilar metals mostly in the field of the power generation, chemical, petrochemical plant, nuclear and electronics industries worldwide etc.

Atomic diameter, crystal structure and compositional solubility in the liquid and solid states play an important role in defining the Weld ability of dissimilar metals. Diffusion in weld pool often results in the formation of different phases of intermetallic compounds and poor diffusion may produce hard & brittle joints which may cause some heavy damages.

In case of joining of dissimilar metals diffusion in the weld pool plays influential role because of presence of different atomic diameter & crystal structure of different work pieces.

Currently Laser Beam techniques, Electron Beam welding & friction welding are widely being used in joining of dissimilar metal workspace.

In this paper a brief introduction has been given on use of joining of dissimilar metals by using different welding techniques & factors affecting the weld ability of dissimilar metals.

Keywords: Welding. Dissimilar metals, work piece etc.

Study on Some Advanced Techniques to Produce Biodiesel from Non-edible Oils

Osama Khan ^a, M Emran Khan^a, Ashok Kumar Yadav^b, Saurabh Kumar Gupta^b

^aDepartment of Mechanical Engineering, Faculty of Engineering & Technology, Jamia Millia Islamia, New Delhi – 110025

^bDepartment of Mechanical Engineering, Raj Kumar Goel Institute of Technology, Ghaziabad, 201003 **Email:** ashokme015@gmail.com; Tel.: +91 8285423046

Abstract: This paper reviews various technologies that have been used for biodiesel production till date, with a view to comparing commercial suitability of these methods on the basis of available feed stocks and associated challenges. Homogeneously catalyzed processes are the conventional technologies. However, their large-scale applicability is compromised due to their characteristic challenges. Batch processes and continuous processes are used for industrial purposes and heterogeneous catalysis may be sustainable for the continuous processes. Heterogeneous catalysts from renewable sources may be both environmentally and economically viable. Reactive distillation has the major advantage of combining the reaction and separation stages in a single unit, thereby significantly reducing capital costs and increasing opportunities for heat integration. This paper is a comprehensive overview of current technologies and appropriate options for scale-up development, providing the basis for a proposal for the exploitation of heterogeneous catalysts from natural sources to optimize biodiesel production.

Keywords: Biodiesel; Homogeneous catalyst; Heterogeneous catalyst; Production techniques.

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A Review on Recent Research Development on Electric Discharge Machining (EDM)

Rachit Khanna, Raghav Maheshwari, Anish Modi, Shivam Tyagi,
Anupam Thakur, Ramakant Rana

Department of Mechanical Engineering, Maharaja Agrasen Institute of Technology, Delhi-110086

Email: rachitkaka@gmail.com; raghav.may13@gmail.com; modianish11@gmail.com;

anupamthakur@hotmail.com; 7ramakant@gmail.com

Abstract: Out of all the machining processes used worldwide, Electrical discharge machining (EDM) is one of the most commonly used processes for material removal from a surface. It is a process for shaping hard metals and forming deep holes by subsequent erosion, which can be done in all kinds of materials which can conduct electricity. In this process, erosion occurs when electric discharge takes place in a small gap between the work piece and the electrode; this removes the unwanted material from the parent metal through melting and vaporizing in presence of dielectric fluid. In recent years, researchers have explored a number of ways to improve Electrical Discharge Machining process parameters such as Electrical parameters, Non-Electrical Parameters, Tool based parameters & Powder based parameters. This paper reviews and outlines the research work carried out in the recent years and also discusses the scope for future research work in the field.

Key words: EDM, Parameters, MRR, Dielectric, Powder, Performance, Spark Gap.

Development of Wireless Robotic Vehicle for Metal Detection

**Ankit Khurana, Vishal Jha, Vivek Porwal, Ankit Deswal, Mayank Gupta,
Surabhi Lata, Ramakant Rana**

Department of Mechanical Engineering, Maharaja Agrasen Institute of Technology, Delhi-110086

Email: 7ramakant@gmail.com

Abstract: Detection and removal of antipersonnel landmines in infested fields is an important worldwide problem. Landmines, cluster munitions, explosive remnants of war (ERW) and improvised explosive devices (IED) are an enduring legacy of conflict. These devices can remain active for decades. These land mines are too detected for the human safety. A high mine-clearance rate can only be accomplished by using new technologies such as improved sensors, efficient manipulators and mobile robots. This research work discusses the design and development of a robot that can sense metals ahead of it on its path similar to sensing land mines. The robot is controlled by a Bluetooth application. The Bluetooth device transmitter acts as a remote control while the receiver end Bluetooth device is fed to the microcontroller to drive DC motors via motor driver IC for necessary work. A metal detector circuit is mounted on the robot body. As soon as the robot senses the metal it generates an alarm sound. This is to alert the operator of a possible metal ahead on its path. The robot designed is a car type robot which is moved with the help of the DC motors.

Keywords: Explosive Remnants of War (ERW), Improvised Explosive Devices (IED), Sensors, Manipulators, Robots

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CFD Analysis on Different Shapes of winglet at Low Subsonic Flow

Shivam Kapil Ahluwalia, Vaibhav Negi, Nayan Anand, Varun Goyal, Raj Kumar Singh

Department of Mechanical Engineering, Delhi Technological University, Delhi,

India Email: rajkumarsingh@dce.ac.in

Abstract: This paper focuses on aerodynamic characteristic of aircraft wing with and without winglet at low subsonic flow. NACA 65₃-218 profile was applied on four models including elliptical, semicircular and straight winglet. CFD analysis was performed to compare the lift to drag ratio in these models. Spallart All marus turbulence model and 3D unstructured tetrahedral mesh was used to compute the flow around the winglet prototype. It was found that elliptical winglet gave maximum lift to drag ratio.

Keywords: Airfoil, Winglet, Induced Drag, Wingtip Vortex, Lift and drag coefficient

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A Review on Rehumanizing Talent Through Talent Management Practices

Rekha Mewafarosh

Department of management science, SCGIMT, Kashipur, Uttarakhand, India

Email: rekha.arya17@gmail.com

Abstract: In today's world where things are changing with fast pace and pressure is on business world companies to add new capabilities to their businesses. To be in arena, organizations need to reconsider their various practices and to take proactive approach talent management. People make up an organization. These individuals and their unique characteristics are human capital and can be identified as real assets and valuable resources. Talent management is the process of acquiring, optimizing and retaining the best talent by implementing processes and systems matched to the organization's underlying business objectives. Talent management practices are found to be important for modern organizations because of several reasons diversity at workplace; new generations entering the workforce and cut throat competition. The need of an hour implies new ways of managing talent. Various companies adopt different approaches and practices towards managing talent like career planning, training and development etc. The paper is an attempt to investigate talent management practices and how companies should work with talent management in order to sustain in this challenging environment.

Keywords: Management practice, business, planning etc.

Impact of Academics and Experience on the Motivation & Satisfaction Level of Management Faculties: A Case Study

Manish Kumar Agrwal¹, Kewal Kumar¹, Pranay Tanwar²

Department of Management Science, SCGIMT, Kashipur, Uttarakhand, India

Department of Applied Science, Delhi technical Campus, G Noida, UP India

Email: ewalkumarksp@gmail.com; manish.imtk@gmail.com; pranaytanwar@hotmail.com

Abstract: In the present milieu, organization thrives and survives on human resources. The behavior, attitude, perception and values of employees very much influence their performance so that they become able to realize individual as well as organizational goals, which are almost depends on self motivation , self discipline & self satisfaction implies the level of satisfaction agreement between job expectation of a worker and the reward that the job provides. The different demographics traits such as age, education, working hours, position at work place and years in service have significant impact on job satisfaction. The aim of this study is to measure the level of satisfaction among employee and the impact of different parameters on the job satisfaction of employees. The different parameters include the general working conditions pay, promotion, Boss-subordinate relationship, Age, Education, Skills & abilities.

Keywords: Motivation, Level of Satisfaction, Job

Measures for Innovating Classroom Teaching Methods

Manpreet Kaur Bhatia

Department of Management Science, Institute of Innovation Technology and Management,

Guru Gobind Singh Indraprastha University, New Delhi, India

Email: kaurbhatia.manpreet@gmail.com

Abstract: The term “learning environment” suggests place and space – a school, a classroom, a library. And indeed, much 21st century learning takes place in physical locations like these. But in today's interconnected and technology-driven world, a learning environment can be virtual, online, remote; in other words, it doesn't have to be a place at all. Perhaps a better way to think of 21st century learning environments is as the support systems that organize the condition in which humans learn best – systems that accommodate .Experts say 21st century learning must take place in contexts that promote interaction and a sense of community [that] enable formal and informal learning. Informal learning means up gradation of human ware. Need to develop attitude through skill monitoring. *Many of the successful organizations that we see around us today attribute their success to employees who are empowered to learn and innovate at great speeds.* The internet has caused an explosion of access to information on a global level, sparking the need for a paradigm shift in the way educational organizations function. In the era where almost everything is being supported by latest technology, we cannot continue with outdated methods of teaching and still expect to produce a work force which is ready to face the future challenges. .the rapid globalization, accelerating technology changes, massive demographic shifts demand change in education systems to a more modern format which is more learner friendly. We need to take advantage of developments in technology to secure an education that is relevant and responsive to the needs of society as it evolves. The purpose of this paper is to suggest various measures to improve the current methodology of teaching focusing mainly on classroom education

Keywords: Case-study, digital infrastructure, effective learning, multimedia tools, skill development.

A Review on Self helps Groups Bank Linked Micro Financing: Problems and Challenges

Kewal Kumar, Manish Kumar Agrwal, Atul Gambhir

Department of Management Science, SCGIMT, Kashipur, Uttarakhand, India

Email: kewalkumarksp@gmail.com

Abstract: Economic development and growth should be inclusive, sustainable and real. Development mean positive changes at the grass root level in the field of primary education, health and qualitative food for poor. Micro financing (SHGsBLMF) this model has proved its effectiveness in improving the real life of rural poor. Self help group is a concept emerged in the direction of helping rural poor forming groups so that; they will improve their living conditions through voluntary participation in thrift and credit. The core objective is flexibility, transparency and autonomy with sensitiveness and responsiveness of the participants. This model of financing has outraced moneylenders and village sahumars in providing credit to rural sector. Repayment position is above the satisfactory under this system as group collectively takes responsibility to pay. No system is free from problems and challenges. MF is also not the exception. Here authors have made an attempt to reveals the various problems and drawbacks of this system of financing faced by borrowers, facilitators and agencies. A review on overall working and role played by SHGsMF have discussed as well as a list of suggestions has also provided for corrective actions for system strengthening and effective implementation in future.

Key Words: Economic Development, Inclusive and Sustainable Real Development, Moneylenders and Village Sahukar, Exorbitant Rate of Interest, RBI

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Statistical Tools, Techniques Methods and Tests Adopted in Medical Lab Technology Applications

Bibha Chaudhari¹, Reema Chaudhary²

¹Department of Pharmacology, HIMSAR Jamia Hamdard, Delhi, India

² Applied Sciences Department, Bhagwan Parashuram Institute of Technology (BPIT), Delhi Email: bibhachaudhari@gmail.com

Abstract: The field of the Medical Lab Technology encompasses various tools, techniques as well as technical and infrastructural facilities needed to conduct various Medical Investigations required to support, substantiate and propagate the course of the Medical treatment or research in proper direction with purpose. It is our privilege that very sophisticated Medical lab facilities has been developed which has taken the field of Medical research to new heights.

Obviously, the matter of quality assurance becomes very important in order to claim Reliability in the field. Ensuring quality in the field of medical laboratory applications involve many tools like manuals of the procedure, calibrations, program of quality assurance, maintenance schedules as well as time to time training schedules. The process of quality control is generally based on statistical process, which is used for monitoring and evaluating the laboratory investigations that produces investigation results. In this paper a compilation has been done of the various statistical tools, techniques and tests, which are the basis of the statistical analysis followed in the field of Medical Lab Technology.

Keywords: Statistical Tools, Medical Lab Technology, Quality Assurance, Calibration and Reliability

Study of Hydrazine Carboxamide of 5 Nitro Indol 2, 3 Dione & their Metal Complexes with CO(II), Ni(II) and Mn(II)

Dr. Malvika Chaudhary*, Dr. Alka Srivastava, Dr. Preeti Bhadauriya, Dr. Aman Rohilla

Department of Applied Sciences (Chemistry)

Delhi Technical Campus, Greater Noida

*Corresponding author e-mail- malvika.phd@gmail.com

Abstract Among the organic chelating ligands hydrazine are gaining importance day by day because a large no. of such compounds and their metal chelates are known which possess, appreciable antibacterial, fungicidal, antituberculosic and anticancerous activities. Various such compounds have been proved of great importance in the field of medicine, industry, biochemistry and research.

Hydrazine carboxamide derived from different indol have been prepared and used as chelating agent, bactericidal and fungicidal agents.

In view of this and my interest in biologically active coordination compounds, the present paper include the preparation of Hydrazine carboxamide of 5 nitro indol 2, 3-Dione & 6-nitro indol 2,3-dione and their metal complexes with Co(II) and Zn(II).

Keywords: Hydrazine Carboxamide, nitro indol, anticancerous

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Language Testing for Im(migration): In(validity) and Ir(relevance)

Bharti Shokeen

Assistant Professor, Delhi Technical Campus (GGSIPU), Greater Noida

Abstract Linguistic proficiency has emerged as one of the key conditions for the granting of permission to stay and for naturalization in an increasing number of European as well as non- European countries. A survey in 2002 showed that 4 out of 14 countries (29%) had language conditions for citizenship; the 2007 follow-up survey revealed that five years later this number had grown to 11 out of 18 countries (61%). These tests are often used for a variety of undeclared and covert purposes, other than just 'measuring knowledge'. These 'Language tests' enable governments to use them in the context of immigration, and for the purpose of gate-keeping to regulate and restrict the entry of immigrants. (Spotti & Van Avermaet 2009:14). This article offers a wide range of possible answers, their in(validity) and ir(relevance), social desirability and level of detail required.

Keyword: Language test, Im(migration), In(validity), Ir(relevance)

Spectral and Biological investigation of 5-Phenyl-1,3,4-oxadiazole-2-thiol

Rovin¹, Dharmendra Kumar², Vikas Kumar³, Leeladhar¹

¹Department of Physics, Monad University, Ghaziabad

²Department of Applied Physics, IIMT Engineering College, Meerut

³Department of Applied Chemistry, IIMT Engineering College, Meerut

Abstract: In the current study, a compound 5-phenyl-1,3,4-oxadiazole-2-thiol was synthesized by converting variously benzoic acids successively into the corresponding esters, hydrazides. The structure of the synthesized compound was confirmed based on ¹H-NMR, IR and mass spectral data. The synthesized compounds were screened for antimicrobial activity against Escherichia coli, Bacillus subtilis and Staphylococcus aureus and fungus Candida albican, Aspergillusnigerand Candida krusei.

Keywords: FTIR, NMR, Raman spectroscopy, UV-Visible spectroscopy, pyrimidin-4-one, antimicrobial activity.

Dielectric Spectroscopy near the Smectic C* Phase Ferroelectric Liquid – Crystalline Material

Bishan Pal Singh¹, Jitendra K Kushwaha² and Dharmendra Kumar²

¹ Department of Physics, Monad University Hapur (UP), India

² Department of Applied Sciences, IIMT Engineering College Meerut (U.P.), India

Abstract The frequency and temperature dependence of the complex dielectric spectroscopy was measured near the smectic C* phase liquid crystal with a large spontaneous polarization. The dielectric strengths as well as the corresponding relaxation frequency were determined. Due to large polarization, we were able to resolve the contribution of different modes. The Significant contributions of conductance effect at lower frequency side in experimental data have to show.

Key words: Ferroelectric liquid crystal, dielectric strength, relaxation frequency. PACS: number 61.30V

Experimental investigation and comparison between an integrated compound parabolic domestic solar water heater with and without an air gap introduced at the arms of the CPC

Jaji Varghese^{1,*}, Samsheer² and Manjunath K²

¹Department of Mechanical Engineering, Aryabhata Institute of Technology, DTTE, Delhi, India

²Department of Mechanical Engineering, Delhi Technological University, India

*corresponding author email:jajivarghese@gmail.com; Phone: 9968009210

Abstract: The introduction of a concentrator in a domestic solar water heating system is not yet commercialized but research studies have been carried out and model validation done with symmetrical and asymmetrical type of reflectors. With concentrating collectors it becomes imperative to track the sun. Now the method of tracking to be adopted and the number of adjustments required depends upon the collection efficiency and its application. However for households, systems operating at the lower temperature range the optical system best suited are the compound parabolic concentrator. The advantage is that it has large acceptance angle and therefore requires only occasional tracking. The model studied is batch type heater, as the receiver serves the dual purpose of absorber and storage tank, unlike conventional design which consist of a large number of smaller diameter tubes and separate storage tank. The concentrator i.e. the reflector in this case, is supported on a wooden cradle which comprises the two parabolas of the compound parabolic concentrator. In the present work experimental studies have been carried out and mean collector efficiency computed on model with an air gap introduced in the side walls (arms of the CPC) and performance compared with the model without an air gap. This work is built upon a on a model but without the air gap. Results have shown that there is 37.7% percentage increase in collector collection efficiency with air gap.

Keywords – compound parabolic, domestic, reflector, solar water heaters, air gap

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Email 1: vplinf@vplinf.com

Email 2: vplinf@gmail.com

Email 3: vplinf@rediffmail.com

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