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PREFACE

The First International Conference on "Advanced Innovations in Engineering and Technology (ICAIET 2017)" held on 14th - 15th Feb 2017, in collaboration with Association of Scientists, Developers and Faculties (ASDF), an International body, at Rohini College of Engineering and Technology, Tamilnadu, India, Asia.

ICAIET 2017 provides a chance for academic and Industry professionals to discuss the recent progress in the area of Advanced Innovations in Engineering and Technology. The outcome of the conference will trigger for the further related research and future technological improvement. This conference highlights the novel concepts and improvements related to the research and technology.

The technical committee consists of experts in the various course sub fields helped to scrutinize the technical papers in various fields, support to maintain the quality level of the proceedings of conference which consist of the information of various advancements in the field of research and development globally and would act as a primary resource of researchers to gain knowledge in their relevant fields.

The constant support and encouragement from Dr. S. Prithiv Rajan, ASDF Global President, Dr. P. Anbuoli, ASDF International President and Dr. K. Kokula Krishna Hari, ASDF International Secretary General helped a lot to conduct the conference and to publish the proceedings within a short span. I would like to express my deep appreciation and heartfelt thanks to the ASDF team members. Without them, the proceedings could not have been completed in a successful manner. I would like to express my sincere thanks to our management,

Student's friends and colleagues for their involvement, interest, enthusiasm to bring this proceeding of the conference in a successful way.

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A System for Dialled Number Prediction on Mobile Phones Based on Call History

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Abstract: *There are several instances where mobile phone users would not have stored all the numbers in their phone book (or PIM – personal information management). Even if a phone number is stored in the PIM, users would want to make a phone call using the keypad, without scrolling down the names in the PIM. The system proposed in this paper provides the users with the convenience of 'number completion' based on the first few digits keyed in. The system uses a number completion heuristic which makes use of the call history and the context of the user, and makes a prediction and suggests a few numbers. The short list of phone numbers suggested by the system is expected to contain the user–intended phone number with high probability. This saves the users from entering the whole numbers or searching through the call log (especially in a hurry), and avoid common mistakes (such as flipping of digits). It facilitates fast and correct dialling even in time constrained situations, without distracting the user for a long time.*

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GUI for the Detection of Auditory Processing Disorder using Reaction Time Measurement System

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Abstract: *Auditory processing disorder (APD) is a set of problems that results in different kinds of listening tasks. It is found in people of all ages especially in children. Different methods are used in developed countries for the early detection of APD. It is found in children and adults as well. These methods are not advisable in testing children below 11 years. Other existing APD detection methods are costly and not easily available to ordinary people in developing countries like India APD is directly related to the time taken by the person to react to a speech signal. In this paper the reaction time is measured using MATLAB program and thereby developing a GUI based on MATLAB APP to find out whether a person can be tested for suspected APD. This method is very useful in distinguishing APD from hearing related problems.*

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Reviews on Various Methodologies in Touch less Fingerprint Recognition

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Abstract: *Touch-less fingerprint system, the hardware of which is limited to just a camera and a processor. This technique is developed to overcome the problems of Touch-based fingerprint technique. The currently used biometric systems are unhygienic and sometimes it may lead to forgery. In touch less we use a web camera to capture the image. First we use the pre-processing steps to improve the quality of the image, and then followed by the minutia detection, minutia extraction, removal of false minutia and fingerprint matching. The main applications of this technique is, it can be used almost all the fields like personal security, Attendance etc.*

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Power Flow Management in DC Grid for Residential Photovoltaic Systems

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Abstract: *This project proposes a power flow management algorithm for photovoltaic system feeding DC load is presented. The growing concern for energy saving has increased the usage of LED- based street lights, electronic chokes, compact fluorescent lamps, residential dc loads and inverter-fed drives. Hence, the load profile seen by the electrical grid is undergoing a notable change as these devices have to operate from a dc source. Photovoltaic (PV) being a major energy source, the aforementioned loads can be connected directly to the dc bus. A grid-connected PV system involves a power source (PV array), a power sink (load) and two power sources/sink (utility and battery), and hence, a power flow management system is required to balance the power flow among these sources. A unique control algorithm is developed for selecting the operating mode of the converter by sensing the battery voltage. Detailed simulation studies are carried out in MATLAB/Simulink environment.*

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Implementation of She PWM Based Cascaded H-Bridge Multilevel Inverter Using Newton Raphson Method

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Abstract: *In this paper, a new approach for solving non-linear transcendental selective harmonic elimination equations by Newton Raphson method is proposed with any random initial guess in a single phase cascaded h-bridge eleven level inverter. Selective harmonic elimination pulse width modulation (SHE PWM) technique is used to minimize lower order harmonics by solving nonlinear equations, while the fundamental is satisfied. A simulation in the MATLAB/SIMULINK platform has validated the proposed idea that eliminated the lower order harmonics such as 5th, 7th, 11th and 13th while maintaining the amplitude of the required fundamental voltage. Experimental results are presented to confirm the simulation results.*

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An Optimal Scheduling Scheme in Future Smart Grid Network

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[2]Assistant Professor, Department of EEE, V V College of Engineering, India

Abstract: *In this paper, an optimal scheduling scheme in smart grid network is proposed to minimize energy consumption cost and reduction in peak load. The user is provided with smart meter which has an Energy Consumption Controlling (ECC) unit to share the information of energy consumption. The Energy Consumption Controlling unit is connected with neighbouring units through Local Area Network. A distributed algorithm in each ECC unit is employed to minimize peak load such that the heavy loads are shifted from peak-hours to off-peak hours according to their energy consumption profile which in turn reduces the energy consumption cost. Simulation results are determined through MATLAB/SIMULINK software.*

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ANN Based Sensorless Speed Control of BLDC Motor

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Abstract: *This paper presents the speed control of Brushless DC motor using Artificial Neural Network (ANN). The drive behaviour is based on back Emf induced in the motor which is sensed for providing the controlled gate pulse to MOSFET switches in PWM inverter. Hall Effect sensors give low output capability. To overcome the problem of sensing back Emf by hall effect sensor, ANN control algorithm is used. The ANN based speed control provides variable speed operation of motor also gives precious and accurate speed command. In this ANN control algorithm, Back propagation algorithm and Pattern matching algorithm is used. By using ANN control, it reduces the current and torque ripples hence increases efficiency. The performance and efficiency of motor is verified by the simulation results.*

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SVM based Finite Control Set Model Predictive Control Technique for MPPT of Photovoltaic Array

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Abstract: *This paper put forward the control of Photovoltaic (PV) array Maximum Power Point Tracker (MPPT) through Nonlinear Model Predictive Control (NMPC) strategy which uses Least Squares Support Vector Machines (LS-SVM) regression model. Another Support Vector Regression (SVR) model is employed to offer the reference Maximum Power Point (MPP) trajectory to the model predictive control system by predicting the maximum power point current and voltage of the nonlinear PV module at different operating conditions. The above control algorithm is speeded up by simplifying the optimization problem by Finite Control Set Model Predictive Control (FCS-MPC) technique. Thus an improved system performance is guaranteed by an accurate predictive model and simple control algorithm. The obtained simulation results show the superiority of the proposed method compared to state space model based NMPC.*

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Visual Content Searching Using Sift

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Abstract: *To search and retrieve the expected images from the database content-based image retrieval (CBIR) system is highly demanded. CBIR extracts features of a query image and try to match them with extracted features from images in the database. This paper introduces two novel methods as image descriptors. The basis of the proposed methods is built upon scale invariant feature transform (SIFT) algorithm. This paper presents a method for extracting distinctive invariant features from images that can be used to perform reliable matching between different views of an object or scene. The features are invariant to image scale and rotation, and are shown to provide robust matching across a substantial range of affine distortion, change in 3D viewpoint, addition of noise, and change in illumination. The features are highly distinctive, in the sense that a single feature can be correctly matched with high probability against a large database of features from many images. In this paper, a vision-based mobile robot localization and mapping algorithm is described which uses scale-invariant image features as landmarks in unmodified dynamic environments.*

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Detection of Patient Vital Signs with Wearable Sensors Using IOT

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Abstract: *Technology plays a major role in healthcare. It is made easy to monitor the medical parameters through Healthcare communication method using Internet of Things. IOT serve as the catalyst for the healthcare and plays a vital role in wide range of healthcare applications. In this paper the ATMEGA328 is used as a gateway to communicate to the sensors. The microcontroller picks up the sensor data and sends it to the network through Wi-Fi and hence provides real time monitoring of patients. The data can be accessed only by the authorized user (doctor) through password protected Wi-Fi module.*

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A Fault-Tolerant Dual Three-Level Inverter Configuration for Multipole Induction Motor Drive with Reduced Torque Ripple

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Abstract: *Multilevel inverters are gaining more attention in ac drive application due to their many attractive features .In the case of conventional neutral-point-clamped (NPC) or flying capacitor multilevel inverter configurations, active switches are connected in series to produce multilevel output voltage waveform. Therefore, if any one switch fails, the entire configuration has to be shut down; this will reduce the reliability of the system. A dual three-level inverter configuration for induction motor drive is proposed in this paper to improve reliability of the system. This topology is developed by feeding four-pole induction motor stator winding with four conventional two-level inverter modules. A level-shifted carrier-based third harmonic injection pulse width-modulation technique is used to produce the gating signals for the proposed configuration.*

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Study of Heat Transfer in Porous Media Using Open Foam

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Abstract: *Multiphase in porous media is analyzed using OpenFOAM. OpenFOAM is a C++ tool box for the development of customized numerical solver and pre/post processing utilities for the solution of continuum mechanism problems including computational fluid dynamics. Finite volume method (FVM) is used to discretize the governing equation proposed in the problem. Often FVM discretize the transport equations into a matrix which is applied to all arbitrary shaped cells within the computational domain to obtain desired results. The impesFOAM has got mass momentum equation in it but lack energy equation. In the current work an attempt was made to include energy equation in impesFOAM so as thermal energy variation could also be studied in multiphase porous media flows. For this adding of temperature field was done in the solver using C++ language. A code was developed in C++ language which could add the energy equation to the current solver. After modifying the new solver it was renamed my_impesFOAM. In order to benchmark the new solver validation upon two journal works were done and the results were satisfactorily similar with the original works.*

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An Improved CAD System for Lung Nodule Detection Using CT Images

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Abstract: *In recent years, the image processing mechanisms are used widely in several medical areas for imaging earlier detection and treatment stages in which the time factor is very important to discover the disease in the patient as possible as fast, especially in various cancer types such as lung cancer. The effective CAD system is proposed in this paper for Lung Nodule detection from CT images. If defective nodules are detected at an early stage, the survival rate can be increased upto 50%. The proposed CAD System takes the CT image has passed and its database in basic 3 stages to improve the sensitivity in experimental results. We extracted a total of 13 GLCM feature values and used them to eliminate false-positive findings. Our experiment result shows nodule detection sensitivity of 96.7% with k-SVM is achieved by the proposed CAD system using CT images.*

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PV Cell Based Cascaded H-Bridge Multilevel Inverter Using She PWM

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Abstract: *In Photovoltaic power generation, Multi-level inverters play a vital role in power conversion. Diode clamped inverter, Cascaded H-bridge inverter and Flying capacitor inverter are the three widely used topologies of multilevel inverters .Among these three topologies, Cascaded H –bridge multilevel inverter is mostly used for photovoltaic system because each cell of Cascaded H –bridge multilevel inverter requires separate DC sources which can be easily supplied by individual PV arrays and each H-Bridge cell will be available in a single module. Selective harmonic elimination pulse width modulation technique is used to eliminate lower order harmonics such as 3rd by solving non-linear equations, while the fundamental is satisfied. The Cascaded h-bridge inverter is driven by the PIC Microcontroller 16F877A. The performance of single phase cascaded h-bridge five level inverter is simulated by using MATLAB/Simulink. A hardware prototype is developed to verify the performance of the developed system. The results of hardware are compared with simulation results.*

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Performance of Load Curves Using Artificial Neural Networks in Smart Grid

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Abstract: *In this paper, use of demand side management techniques in smart grid is presented. Also it explains the simulation of a data classifier produced from digital meters using an artificial neural network to study the performance of load curves and creates load curve patterns to select the most suitable demand side management policies for each type of consumer ranked over the network. Simulation results are determined through MATLAB/SIMULINK software. The results obtained in this paper show that the intelligent network environment facilitates the implementation of DSM and the use of ANN presented a satisfactory performance for the classification of load curves.*

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A Survey on Automatically Mining Query Facets

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Abstract: *Mining query facets extracts the knowledge from the search results and summarize the obtained query facets to provide useful information to the user. The Query Facets are the multiple groups of words or phrases which are obtained from the content covered by the given query in the search engine. Query log is the record of valuable information which provide query facets related to user's search queries on the internet. A query facet searching is an exploratory searching mechanism which refines the search results based on the faceted taxonomy and provides useful query facets related to the query given in the search engine. This paper focus on various techniques involved in mining query facets from the search results and to provide better knowledge to the user.*

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Experimental Study on Strength of Concrete Using Rice Husk Ash

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Abstract: *RHA, produced after burning of Rice husks (RH) has high reactivity and pozzolanic property. Indian Standard code of practice for plain and reinforced concrete, IS 456- 2000, recommends use of RHA in concrete but does not specify quantities. Chemical compositions of RHA are affected due to burning process and temperature. Silica content in the ash increases with higher the burning temperature. RHA produced by burning rice husk between 600 and 700°C temperatures for 2 hours, contains 90-95% SiO2, 1-3% K2O and < 5% unburnt carbon. RHA contains silica in amorphous and highly cellular form, with 50-1000 m2/g surface area. So use of RHA with cement improves workability and stability, reduces heat evolution, thermal cracking and plastic shrinkage. This increases strength development, impermeability and durability by strengthening transition zone, modifying the pore-structure, blocking the large voids in the hydrated cement paste through pozzolanic reaction. RHA minimizes alkali-aggregate reaction, reduces expansion, refines pore structure and hinders diffusion of alkali ions to the surface of aggregate by micro porous structure.*

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Experimental Study of Self Curing Concrete Using Polyethylene Glycol

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Abstract: *Curing of concrete is maintaining satisfactory moisture content in concrete during its early stages in order to develop the desired properties. However good curing is not always practical in many cases. Therefore the need to develop self-curing agents attracted several researchers. The concept of several self-curing agents to reduce water evaporation from concrete. And hence increase the water retention capacity of concrete compared to conventional concrete. It was found that water soluble polymers can be used as self-curing agents in concrete. Concrete incorporating self-curing agents will represent a new trend in concrete construction in the new millennium The aim of this investigation is to evaluate the use of water-soluble polymeric glycol as self-curing agents. the use of self-curing admixture curing admixtures is very important from the point of view that the water resources are getting valuable every day (ie; each 1 m3 of concrete require about 3 m3 of water for construction. Most of which is for curing). The benefit of self - curing admixtures is more significant in desert areas where water is not adequately available. In this study the mechanical properties of self-curing at different percentages of poly ethylene glycol will be evaluated and compared with conventional concrete specimen.*

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Design and Fabrication of Automatic Material Handler Using Solar Energy

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Abstract: *Material handling system consists of continuous resources to move entities from one place to another place. Material movement occurs everywhere in a factory during and after processing. Solar the rising cost of energy has inspired many manufactures to find ways to optimize energy consumption and improve operational efficiency in their manufacturing, product lines, distribution and administrative operations. Solar Photovoltaic generates electricity from sunlight. The power of solar energy is used to run the trolley through the DC motor. This reduces the man power and effort to men to move the products around the industry. The main aim of this work is to reduce the human effort and use the renewable energy.*

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Optimization of Compression Ratio of A VCR- Di Diesel Engine by A Rubber Seed Methyl Ester

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Abstract: *Petrol and diesel are the most widely used fuel for transportation Purpose. Since it is a non-renewable source of energy and due to the current level of usage will result in its depletion in the coming years. So there is a need in changing the current standards in fuel consumption. Thus the idea of a natural fuel came into existence. But the efficiency of the bio-fuels are way lower than gasoline, we try to mix the bio-fuel with diesel to reduce its quantity in usage without much loss in their efficiency. Here we are taking rubber seed oil for preparing the bio-fuel since it is non-edible oil and is available abundantly in the southern end regions of India. Rubber seed oil cannot be used directly as a fuel due to its high density and higher acid content. Then the obtained biodiesel will be blended with diesel and its performance will be obtained. And the compression ratio of this best performance value is varied in a VCR DI Diesel Engine and optimum value is to be found out. The test results are analysed for blends of bio-diesel in comparison with standard diesel at different compression ratios (16:1, 18:1, 20:1 & 22:1). From the results of performance, emission and combustion characteristics of the engine, it is noticed that brake thermal efficiency for bio-diesel is slightly better than that of diesel at all compression ratios. Moreover, the optimum compression ratio for bio-diesel is found to be 20 and that for standard diesel is 18. Engine modification is a method to improve the performance of the engine and reducing pollution levels. The engine runs at higher injection pressures of 240 bars and 260 bars; in addition to that the piston is coated with Copper, Magnesium oxide and Nickel for a thickness of 350 microns using plasma spray technique. The effect of coating lowers heat rejection from the combustion chamber through thermally insulated components increases available energy which further increases the efficiency and reduces emission.*

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Wireless Sensor Networks Based Control Strategies for the Enhancement of Reliability in Smart Grids

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Abstract: *The rapid increase in the demand for electricity necessitates the power quality improvement for achieving better reliability in smart grids. Wireless Sensor Networks (WSN) is the proven technology for reliable monitoring. This paper proposes a system model for the development and implementation of WSN based communication system for the monitoring of distributed generation, loads and transmission lines in the electrical grid and a controller system for automated control on the electrical grid. This work also aims to reduce the carbon footprints by reducing the dependency of electrical grid through the enhancement of distributed generation and grid sharing for avoiding voltage rise problem. To achieve this, a smarter electrical grid has been developed for the validation of smart grid considering a generation substation, a transmission substation and a distributed generation with loads. The occurrence of power quality issue and voltage rise has been controlled by active power control strategy. The communication network and controller has been modelled and tested for the performance of monitoring system and data communication capability on smart grid.*

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Lightweight Concrete with Using Coconut Shell

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Abstract: *In this study, coconut shell is used as lightweight aggregate in concrete. The properties of coconut shell and coconut shell aggregate concrete is examined and the use of coconut shell aggregate in construction is tested. Moisture content and water absorption were 4.20% and 24% respectively and these values are more compared to conventional aggregate. Coconut shell exhibits more resistance against crushing, impact and abrasion compared to conventional aggregate. Density of coconut shell is in the range of 550 - 650 kg /m3 and these are within the specified limits for lightweight aggregate. There is no need to treat the coconut shell before use as an aggregate except for water absorption. The presence of sugar content in the coconut shell, as long as it is not in a free sugar form, does not affect the setting and strength of concrete. Hydration test on coconut shell fines with cement indicates that the inhibitory index for coconut shell fines with cement can be classified as low and no pre-treatment is required. Coconut shell-cement ratio has been optimized to satisfy the criteria of structural lightweight concrete.*

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Hierarchal Aligned Cluster Analysis for Temporal Clustering of Human Motion

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Abstract: *The construction industry is in need of finding cost effective materials for increasing the strength of concrete structures this project deals with the possessibilit of using the waste pet bottles as the partial replacement of fine aggregates in Portland cement concrete with 5%,10% and 15% pet bottles flakes for fine aggregates were produce.*

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Bamboo as A Building Material

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Abstract: *Bamboo is a renewable and versatile resource, characterized by high strength and low weight, and is easily worked using simple tools. It is widely recognized as one of the most important non-timber forest resources due to the high socio-economic benefits from bamboo based products. Bamboo is the world's fastest growing woody plant. Bamboo grows three times faster than most other species. Housing is one of the priority items and sensing the current shortage of the dwelling units, the present administrative leaders around the world find tough to hit upon a solution for. Apart from the other substances already in practice, bamboo appears to be the most promising material. Bamboo building construction is characterized by a structural frame approach similar to that applied in traditional timber frame design and construction. In this case, the floor, the wall, the roof elements are all interconnected and often one dependent on the other for overall stability. The use of bamboo for foundation is rather restricted. This is mainly due to the fact that like timber when in contact with damp ground, they deteriorate and decay very quickly unless treated with some very effective preservatives. The most extensive use of bamboo in construction is for the walls and partitions. The major elements, the posts and beams, generally constitute part or structural framework. The roof offers protection against extremes of weather including rain, sun and wind, and to provide shelter, clear and usable space beneath the canopy. Above all it must be strong enough to resist the considerable forces generated by wind and roof coverings. In this respect, bamboo is ideal as a roofing material- it is strong, resilient and light weighted. Bamboo will continue to play an important part in the development of enterprises and the transformation of rural environments.*

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Study of Performance of Pervious Concrete

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Abstract: *Pervious concrete is a special type of concrete with high porosity used for concrete flat work applications that allow water to precipitate and pass directly through. This porosity is attained by introducing voids in concrete. Typically pervious concrete have very little or no fine aggregate and have just enough cementing paste to coat the coarse aggregate particles. Pervious concrete is traditionally used in parking areas, walk ways, green house etc. Pervious concrete is an important application for the application for the sustainable construction and is one of many low impact development techniques used by builders to protect water quality.*

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FCM Based Clustering Compression of Power Quality Disturbance Signal Using Huffman Coding

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Abstract: *The mis-operation or failure of any customer equipment may be the result of deviation in the perfect sinusoidal waveform of voltage or current which affects the quality of power. These power quality disturbances are in the form of signals like voltage sag, voltage swell, voltage transients, flicker, voltage imbalance and harmonics. Such disturbance signals cover a broad frequency spectrum because of its high sampling rate and produces megabytes of data which leads to the requirement of high storage space. In this paper, Huffman coding with the fuzzy c means clustering is used to reduce storage space of the power quality disturbance signals. The objective of the paper is to analyse how the clustering and the Huffman coding can be applied to the power quality disturbance signal for detection and compression. It incurs that this method is effective tool for compression of power quality disturbance signals. The performance parameters such as compression ratio, root mean square error and correlation coefficient are evaluated.*

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An Enhanced Group Mobility Protocol for 6Lowpan-Based Wireless Body Area Networks

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Abstract: *Various wireless sensor nodes can be attached to the human body or clothes and hence can form a wireless network named as the Wireless Body Area Networks. In this project, the concept of group-based network roaming in Proxy Mobile IPv6 (PMIPv6) domain is considered in the 6LoWPAN-based wireless body area networks. PMIPv6 is a standard to manage the network-based mobility in all- IP wireless network. However, it does not perform well in group-based body area networks. To further reduce the handoff delay and signalling cost, an enhanced group mobility scheme is proposed in this paper to reduce the number of control messages, including Router Solicitation (RS) and Router Advertisement (RA) messages as opposed to the group-based PMIPv6 protocol. Simulation results illustrate that the proposed handoff scheme can reduce the handoff delay and signalling cost. The packet loss ratio and the overhead can also be reduced.*

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Design of Supersonic Diffuser for Plasma Wind Tunnel

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Abstract: *In plasma wind tunnel, the wind is travelling at supersonic speed. To prevent the formation of ice (condensing), the plasma arc is used to heat the air which is entering the wind tunnel. Normally the exhaust of the wind tunnel will be having higher velocity. In order to reduce the velocity, a supersonic diffuser is used to reduce the velocity and increase the pressure. The design of the supersonic diffuser is done in the gambit software and it is analysed in the fluent software. The focus of the study is on the structure of the fluid and wave phenomena associated with the flow separation. Computations are conducted for an exit-to-throat area ratio of 1.5 and for a range of nozzle pressure ratios. The results are compared with available experimental data in a nozzle of the same geometry.*

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An Investigation on the Variation of Mechanical and Chemical Properties of "Borassus Flabellifer Fruit Fibre" depends on its Plantation Environment

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Abstract: *Borassus fruit fibre has already proven to be a contender in the race for natural, biodegradable and cost effective composite materials. This paper aims to investigate a Borassus fruit fibre from the coastal belt of Muttom, Kanyakumari District and compare its properties with that of normal Borassus fruit fibre. Ecological impact on the properties of the fiber is of prime concern in this paper. Chemical analysis was done to obtain levels of Cellulose, Hemicellulose, Lignin, Wax and Moisture contents. The molecular and thermal analysis performed in this study was Fourier Transform Infrared Spectroscopy, Scanning Electron Microscopy, Tensile testing and Thermographic analysis. All parameters tested revealed that the investigated Borassus fruit fibre has much improved properties far superior to that of the other Borassus fruit fibres. It can be further stated that the ecological factor is an important determinant in defining the properties of natural fibres.*

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Matrix Converter for PMSG Based WECS Using Duty Ratio Based Switching

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Abstract: *This paper presents the application of Matrix converter for Permanent Magnet Synchronous Generator (PMSG). The Matrix converter is connected between the PMSG wind and the grid. The matrix converter does not use the DC link capacitor and provides a direct AC/AC conversion. Thus, it is a good candidate for WECS applications. The Duty Ratio based modulation scheme is proposed. The Duty ratio is calculated based on input and output voltages as reference. The switching is done based on the duty ratio value. Conventional AC-DC-AC back to back converter is replaced by direct AC to AC converter. By using the duty ratio based modulation scheme the power transfer ratio is improved. A three phase to three phase matrix converter is simulated using MATLAB/ simulink software and the results are shown.*

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Bioremediation of Catechol Using Wild and Mutated Pseudomonas Aeruginosa and Comparative Molecular Docking Studies of Catechol 2,3 Dioxygenase

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Abstract: *Many aromatic hydrocarbons and catechols are known as toxic and carcinogenic to humans, and their contamination of soils and aquifers is considered as the major environmental concern. Bioremediation is recognized as an efficient strategy to neutralize the negative impact caused by hydrocarbons. Hence the present study designed to isolate indigenous hydrocarbon degrading bacteria and perform comparative molecular docking studies on its beneficial mutant strain to ensure absolute bioremediation of hydrocarbons in the meantime. There were four hydrocarbon degrading bacteria isolated such as Bacillus sp., Pseudomonas sp., Staphylococcus sp., and Staphylococcus sp., where Pseudomonas sp. shown the maximum cell density when allowed to grow in the enrichment media containing petrol oil. The degradation potential of Pseudomonas sp. was tried to increase by inducing mutation through UV irradiation. The mutant percentage was identified by using UGene software and the isolate was then identified by 16S rRNA sequencing. BLAST analysis of the sequence showed 99% similarity with Pseudomonas aeruginosa. The mutant Pseudomonas aeruginosa has been further subjected for optimization of various parameters to identify the optimal conditions for maximum enzyme production in order to ensure better degradation of hydrocarbons. Consequently, comparative molecular docking studies were carried out that clearly indicates the finest receptor-ligand interaction. The binding affinity studies show that the mutant P. aeruginosa possess a binding energy of -3.56 kcal/mol, which was higher than the binding energy of -8.72 kcal/mol was obtained for the wild P. aeruginosa. However, the present study demonstrated that the mutant P. aeruginosa was competent for effective hydrocarbon degradation, since the exploration of the identified mutant would assure complete remediation of toxic hydrocarbons in an eco-friendly manner.*

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Retrieval of Secure & Dynamic Multiranked Keyword Search by Trapdoor Randomization

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Abstract: *The advent of cloud computing motivated the data owners to outsource their complex data management from local sites to commercial public cloud for greater flexibility .To enhance data security the sensitive data are encrypted before outsourcing. Considering the large number of data users and documents in the cloud, it is obligatory to sanction multiple keywords in the search request and return documents as per the user's request. The drawback is that if more than once same data is accessed, the hacker can easily understand the genuine data in that location and leads to insecure data retrieval. Trapdoor randomization helps to protect the data owners from hacker by randomizing the query and index. Each time when a person accesses a particular data, location should be randomized according to the size of keyword. This leads to enhance the security of data in the cloud.*

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Hybrid Authenticate Beacons for VANET'S Communication of Systems

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Abstract: *Vehicular ad hoc networks (VANETs) have recently attracted extensive attentions as a promising approach to enhancing road safety, as well as improving driving experience. When a large number of beacons arrive in a short time, vehicles are vulnerable to computation-based Denial of Service (DoS) attacks that excessive signature verification exhausts their computational resources. In this work, an Efficient broadcast authentication scheme called Prediction-based Authentication (PBA) is proposed to defend against computation-based DoS attacks, and resist packet losses caused by high mobility of vehicles when a large number of beacons arrive in a short time, vehicles are vulnerable to computation-based Denial of Service (DoS) attacks that excessive signature verification exhausts their computational resources.*

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Data Pouring and Buffering On the Road Side Unit for Vehicular Ad Hoc Networks

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Abstract: *The vehicular cloud system (VCS) is a new emerging technology that can provide traffic management and road safety. The infrastructure for VCS consists of high-performance cloud servers at a data centre and a number of roadside wireless APs with limited-sized local data storage. The application requires high computational power or an extensive amount of data storage. A vehicle route-based data prefetching scheme is proposed, which maximizes data dissemination success probability, when the size of local data storage is limited and wireless connectivity is stochastically unknown. Here proposed a greedy algorithm and an online learning algorithm, to decide how to prefect a data of interest from a data centre to roadside wireless APs. The proposed algorithms can achieve efficient data dissemination in a variety of vehicular scenarios.*

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Strength Behaviour of Cement Concrete in Seashell Used in Course Aggregate

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Abstract: *This paper represents the experimental study on concrete using seashell as a partial replacement. The present work is to investigate the effects of seashells in concrete protection produce high strength concrete. The compressive strength, flexural strength and split tensile strength tests were carried out with different proportions of seashell at different curing days to find the optimum percentage of seashell replacement to give targeted strengths. The concrete samples were prepared by adding seashells about 0%,10%,30% &40% as a partial replacement to coarse aggregate. All these samples were cured for 7 days, 14 days, 28 days and the tests were carried out. It should be noted that no additives were added to the mix expert seashell as the partial replacement coarse aggregate. The cubes were casted for compressive strength test with dimensions of (150mm x150mm x150mm) and prisms were casted for flexural strength test with dimensions of (100mm x100mm x300mm) and cylinders were casted for split tensile strength test with dimensions of (100mm x200mm). The test results are compared with those of the control experiment the results showed a decrease in density due to increase in seashell contain and a high strength value obtained for 20% replacement. It was noted that implementing seashells in the concrete mix can be used to produce a lightweight concrete with high strength.*

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Pre-treatment of Municipal Waste Activated Sludge by Using Thermo-Chemo Process

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Abstract: *The organic fractions of municipal solid waste (OFMSW) usually contains high lignocelluloses and fatty fractions. These fractions are hard biodegradable substrate for biological treatments and its presence involves limitations on the performance of anaerobic processes. To avoid this, thermochemical pre-treatment has been applied on the OFMSW coming from a full-scale mechanical-biological treatments (MBT) plant, in order to prehydrolyze the waste and improve the organic matter solubilisation. Excess sludge disposal is one of the serious challenges in biological waste water treatment. Reduction of sludge production would be in an ideal way to solve sludge associated problems rather than the post treatment of the sludge produced. In this study, a new waste water treatment process combining anaerobic/anoxic/oxic system with thermochemical sludge pre-treatment was tested in a laboratory scale experiment. In this study, the effects of the sludge pre-treatment on the excess sludge production in anaerobic/anoxic/oxic were investigated. To study the stabilization yield, the increments of soluble organic matter have been measured in terms of dissolved organic carbon (DOC), soluble chemical oxygen demand (SCOD), total volatile fatty acids (TVFA) and acid genic substrate as carbon (ASC). The process variables analysed were temperature, pressure and NaOH dosage. The levels of work for each variable were 160-180- 200°C, 3.5-5.0-6.5 bar and 2-3-4 g NaOH/l. In addition, the pre-treatment time was also modified for about 15 and 120 mints. Thus, predictably the application of this pre-treatment in this optimum conditions cloud improves the H2 production during the subsequent Dark Fermentation Process.*

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Power Transmission for Hybrid Wind and Solar System

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Abstract: *Now a day's electricity is most needed facility for the human being. All the conventional energy sources are depleting day by day. The combination of two energy resources i.e. wind and solar energy. Solar panels are used for converting solar energy and wind turbines are used for changing wind energy into electricity. The generating dispatch able electric power using wind and solar thermal energy combined through compressed air for transmission and storage and large area solar air heating collector integrated with high temperature capacity thermal storage media. The essential subsystems include wind turbines directly coupled to air compressors, high pressure large diameter pipeline, solar collectors with integral thermal storage for air heating, and a turbo-expander driven generator. This hybrid power generation system will be particularly useful in electric systems, such as the Electric Reliability Council of Texas (ERCOT), with very large wind energy potential, severe transmission limitations in very windy locations, areas of high solar radiation, and a significantly higher market value for dispatch able power than for intermittent energy. This hybrid wind / solar system would be a more economical means for achieving zero-emission, firm, dispatch able capacity than independent construction of wind and solar plants.*

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Area Efficient Low Power ECG Based Processor for Ventricular Arrhythmia Detection

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Abstract: *Electrocardiogram (ECG) provides useful information about functional status of the heart. This study proposes a finite-impulse-response (FIR) prediction model to analyse the unpredictable intra-QRS potentials (UIQP) for identifying ventricular tachycardia patients with high-risk ventricular arrhythmias. In existing method consume high area and delay and filter design is complex so these problems can be overcome by using FIR filter. A finite impulse response (FIR) filter is a filter structure that can be used to implement almost any sort of frequency response digitally. The simulation study shows that a QRS complex including abnormal intra-QRS potentials (AIQP) has a higher UIQP and UIQP-to-QRS ratio in comparison with one without AIQP. The clinical results demonstrate that the mean UIQP-to-QRS ratios of VT patients in leads X, Y and Z were significantly larger than those of the normal subjects, and the linear and logical combination of UIQP-to-QRS ratios and ventricular late potential parameters can enhance diagnosis performance for VT patients. In experimental result consume low area and delay using our proposed FIR filter.*

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Fuzzy Adaptive Threshold Based Receiver Design for Free Space Optical Communication

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Abstract: *Free-space optical communication (FSO) is an optical communication technology that uses light propagating in free space to transmit data for telecommunications or computer networking. In this paper propose Fuzzy threshold for reduce Bit error ratio. Fuzzy Thresholding techniques that account for noise are essential for the efficiency and accuracy of an optical communication or optical data storage system. In existing method, high error rate occur and it doesn't support for highly nonlinear channel condition so these problems can be overcome by using Fuzzy threshold method. Simulation results are presented for fading channel for different level of channel turbulence. Bite error rate (BER) analysis is presented for fading channel and compared with the theoretical BER. Results also shows that as the signal to noise ratio increase BER goes on decreasing and try to approaches the ideal value. A comparison of BER is also presented with the changing value of the channel turbulence with gamma-gamma channel model in free space optical communication system. Experimental result show better performance using Fuzzy threshold method.*

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A Novel Study of 12 KVA Grid Tie Inverter in 10 KW Hybrid Solar and Wind Power Plant

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Abstract: *Due to swift growth of photovoltaic (SOLAR) power generation, highly efficient and cost effective pure sine wave inverters are greatly demanded in the local market. This paper explores a topology for transformer less pure sine wave grid tie photovoltaic inverter for residential application using dual-stage Boost converter. Our proposed gird tie inverter employs dual-stage switch mode boost converter, dual-stage switch mode buck converter, an H bridge inverter, and a T-LCL remittance conversion circuit. The switching technique of proposed inverter consists with a combination of sinusoidal pulse width modulation (SPWM) and square wave along with grid synchronization condition. As the suggested method is entirely transformer less, it ridiculously reduces total harmonic distortion (THD) which is less than 0.1%, minimizes size and swells inverter efficiency up to 97%. T-LCL Remittance conversion circuit provides a nearly constant output current which stabilize system rapidly and reduces harmonics generated by inverter. Overall performance of the proposed inverter is simulated through the PSIM. The simulation results are analysis through PSIM and MATLAB software. The results of simulation show that this new method can be eliminated vast harmonics and is highly efficient. As Tamil Nadu has all over good weather condition and there will be no shortage for solar power, therefore this grid tie inverter can make a revolution in Tamil Nadu as well as all over India.*

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Combination of Battery Energy Storage Model with Smart Grid to Assess the Lifetime of Batteries

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Abstract: *In this paper, a battery energy storage model is proposed to assess the lifetime of batteries combined with high resolution smart grid operating in islanded mode. This battery model is used to describe a transformer level battery grid system. Smart grid data is used to simulate the battery system operating in islanded mode. Thousands of islanding events are simulated to show the expected lifetime. 50 kWh transformer-level storage alone can endure 93% of average-duration outages. Adding rooftop solar does not increase islanding lifetime during peak hours. Simulation results are determined through MATLAB/SIMULINK software.*

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Performance Analysis of A Hybrid Renewable Micro Generation System

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Abstract: *In this paper, two energy systems were proposed such as a ground source heat pump (GSHP) system and a hybrid GSHP/Photovoltaic Thermal (PVT) micro generation system and its performance is compared with the conventional system. Simulation results are determined through MATLAB/SIMULINK software. Based on the simulation results, by implementing a single GSHP system able to meet both heating and cooling loads of the buildings, an overall energy saving close to 46% can be achieved mainly due to the introduction of a significant renewable component. The integrated hybrid GSHP &PVT system, however, results a much higher overall energy saving of 58% due to the contribution of both geothermal and solar energy.*

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A New Islanding Detection Method (IDM) for Microgrids

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Abstract: *Islanding occurs when a section of the distribution system containing Distributed Generation (DGs) is disconnected from the main utility grid, while the DGs continue to supply fully or partially the load in the isolated section. In this paper, a novel hybrid islanding detection method (IDM) is proposed. It is based on the insertion of large variable impedance at the low voltage side of the Grid, inside the structure of the Micro grid Central Switch. The variable impedance is always connected to the system, so extra switches and, thus time delays are avoided. This feature makes the proposed IDM fast and accurate. This IDM is based on local current measurements. Simulation results are determined through MATLAB/SIMULINK software. Both simulation and experimental results show the effectiveness of the proposed method.*

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Stability Analysis of Droop Controlled Inverter Based Microgrids

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Abstract: *In this paper, main contribution is to give conditions on the droop gains to ensure stability of droop-controlled inverter-based micro grids with general meshed topology and inverter models with variable frequencies as well as variable voltage amplitudes. In the first work , conditions for global bounded ness are given for lossy microgrids; second, we relate the spectral properties of the local network couplings between the phase angles and the active power flows of the microgrid in port-Hamiltonian form to those of the microgrid in absolute coordinates; third, making use of the global boundedness result, a relaxed stability condition for a lossless microgrid under a specific parameter selection of the controller gains and setpoints of the frequency droop control is derived; finally, the theoretical analysis is illustrated via simulation through MATLAB/SIMULINK software.*

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Smart Grid and Its Development Prospects

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Abstract: *In this paper, the overview on the three key technological components of Smart Grid such as Distribution Automation, Personal Energy Management, and Advanced Metering Infrastructure Focusing are presented. Also, it lays out the introduction on the factors that are pulling and pushing the utilities to change the way they operate in order to improve the current services. The flow then involves the explanation on Moving beyond Advanced Metering Infrastructure to Adopt Smart Grid Vision which includes the overview of all the key components of Smart Grid and thus focusing on the requirement to make the electricity grid "Smart" and revolutionizing the electric power networks. The On-going and Future Projects on Smart grid are addressed.*

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Design of Hybrid Charge Controller for Hybrid Solar &Wind Power System

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Abstract: *The proposed system present power control strategies of a grid connected hybrid generation system with versatile power transfer. The hybrid system allows maximum utilization of freely available renewable energy sources like wind and photovoltaic energies. For this, an adaptive MPPT algorithm along with standard perturbs and observes method will be used to for the system. The turbine rotor speed is the main determinant of mechanical output from wind energy and solar cell operating voltage in the case of output power from solar energy. A control strategy regulates power generation of the individual components so as to give the hybrid system to operate in the proposed modes of operation. The concept and principle of the hybrid system and its control were described. The simulation results were presented to evaluate the performance and power reliability of the hybrid system.*

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A Novel Red Mud Catalysed Biofuel and Its Engine Performance

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Abstract: *In this investigation, rubber seed biodiesel was prepared by hydrodynamic cavitation technology (HC) using red mud as catalyst and was compared with conventional catalyst potassium hydroxide (KOH). The character study was done using Energy Dispersive Spectroscopy (EDS) and Scanning Electron Microscope (SEM). Performance characteristics of diesel engine were analysed by different blends extracted using both catalysts. Results show that 30% red mud catalysed bio diesel can blend with diesel, whereas it is 20% for KOH catalyst. Red mud biodiesel validates ↑BTE, ↓BSFC, ↑EGT and ↓HRR than KOH biodiesel. Additionally, red mud biodiesel emits lesser emission and can be an environmental friendly alternative.*

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DC Magnetron Sputtered Chromium Nitrate Coating over High Speed Steel for Cutting Tool Application

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Abstract: *Over the years, many thin film deposition techniques have emerged, each harbouring its own set of pros and cons. Sputtering is one of more popular methods of particle vapour deposition (PVD) and is based on the idea that ion collisions dislodge particles from the target material which fall to the surface. RF/DC Magnetron sputtering is a highly developed technique which allows for the sputtering of a large variety of material with a high control over film thickness and uniformly. In this work, Chromium Nitrate is coated over high speed steel samples, fabricated by DC-magnetron sputtering. The main application of this specific material is cutting tool and it is characterized metallurgical by means of optical microscope, Field Emission scanning electron microscope, X-Ray Diffraction. This method is to serve as the basis for further research for production of application oriented components and parts. This coating is widely used in the improvement of tool life.*

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Densification Characteristics and Mechanical Behaviour of Artocarphus Heterophyllus Leaves Powder

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Abstract: *Recently the environmental awareness, ecological concerns and new legislations of bio fibre reinforced composites have received increasing attention. In this paper sufficient number of Artocarphus heterophyllus powder (AHP) reinforced with fiber biodegradable resin composite samples are produced as per the ASTM standards. Mechanical testing such as tensile strength and impact test are done. Different types of biomass briquettes improve the properties of densification and characterization of a new set of natural fibre based AHP composites. Scanning electron micrographs obtained from fractured surfaces were used for qualitative evaluation of the interfacial properties of AHP composites. The consequence of moisture content and particle size on bulk density of AHP was deliberated.*

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Design and Fabrication of Spiral Coiled Solar Water Heater with PCM Thermal Storage System

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Abstract: *The aim of the project is to design and fabrication of spiral coiled solar water heater with aluminium & copper tube materials. Solar water heating or solar hot water is water heated by using of solar energy. Solar heating systems are generally composed of solar thermal collectors, a fluid system to move the heat from the collector to its point of usage. The system may use electricity for pumping the fluid, and have a reservoir or tank for heat storage and subsequent use. The systems may be used to heat water for a wide variety of uses, including home, business and industrial uses. This project eliminates the use of fossil fuels like petrol, diesel & LPG in the cars and save us from the high oil price hike. Finally the main reason for creation of this project is to get hot water without spending any money. PCMs utilizing latent heat produced during phase change transformation process do attain higher energy density with small temperature difference than other storage media using sensible heating. One potential concept being pursued for minimizing cooling and heating loads is the integrated PCM thermal storage system. This system is based on randomly mixing PCMs into wallboards. This study evaluates the concept of laminated-PCMs as integral part of wallboard system in tanks.*

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Measurement and Control of Emissions from Diesel Engine Operated by Biodiesel with Bio Additives of Mentha Piperita

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Abstract: *The sole intention of this investigation is to control and protect the environment by low emissions. An experiment was conducted in a DI CI engine by fuelling with 20% of rubber seed biodiesel blended with diesel (B20). Similar experiments were performed with the three different proportions of combined additives (pentanol and mentha piperita leaves extract) viz. B20A1, B20A2, B20A3. The performance and emission characteristics were compared with baseline fuel (diesel). Compared with B20, B20A2 exhibited higher brake thermal efficiency of 27.98% and the brake specific fuel consumption is less by 4.83%. However, the engine exhaust temperature was slightly higher. All the additive mixed blends emitted lesser CO, HC, and smoke, especially with B20A2. In addition, B20A2 showed 12% reduction of NOx than B20. Experimental results proved that B20A2 blend was found to be a novel environmentally friendly fuel with most favourable emissions.*

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Solar Power Based Automatic Irrigation System

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Abstract: *Solar energy is one of the costless energy readily available in the universe to generate electric power. The principle beyond the solar power generation is the photo electric effect where photons induce electrons in semiconductors. Solar energy based automatic irrigation system is an idea to integrate solar power with commercial and domestic irrigation facilities. In this plan we get the power from solar panels and it is supplied to the irrigation system (the motor pump). The master piece of this project is the automation of irrigation motor pump. Automation implies sensing the moisture of the soil, control over stagnation of water in the soil, switching ON and Switching OFF Motor pump. The plan for automation led to the way for electro mechanical parts entering in to the project. Solar panel voltage is inverted and stored using an uninterrupted power supply system for motor pump. Battery power is resumed when there is no sun light. We are sure that this project helps industrialists and farmers in raising agriculture income.*

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