

ABSTRACTS

TRACK: ADVANCED MANUFACTURING PROCESS

Code: 1001

On The Quest for Lightness in the Automobile Industry

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ABSTRACT:

This paper concerns the development of a novel joining technique, mill-knurl-press-fit (MKPF) for drivetrain component assembly. The MKPF assembly process involves press fitting of two mating surfaces, one with knurled teeth produced by milling and the other, which is of a relatively softer material, enabling it to plastically flow over the hardened teeth making a joint by solid state welding. This process is applied within the rear axle differential subjected to fluctuating torque loads. Experimental analysis and finite element simulation are used to assess the bond integrity and to compare the functional feasibility and the potential benefits of MKPF joints with laser welded and bolted joints currently use din differential/bevel gear assembly. The MKPF method for bevel wheel to differential case assembly has been proved to fulfil the torque transferability requirements and also to facilitate a more compact and lighter solution that also provides an economical advantage over the current methods.

Code: 1101

Designing Of An Intelligent Fuzzy Logic System For Accretion Prevention In Sponge Iron SL/RN Rotary Kiln Based 100TPD DRI Process

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ABSTRACT: Sponge iron is a product due to direct reduction of iron ore based on regulation of temperatures and pressures within the kiln. Since the product is an intermediate product of steel there is high risk of production of toxic gases due to uncontrolled combustion within rotary kiln. The greatest challenge is the direct measurement of kiln shell temperatures due to accretion build up. Accretion or ring formation in coal based DRI rotary kiln is the accumulation of sintered

particles of solid bed which form rings at places along the length of the kiln. It is a regular phenomenon in the DRI rotary kiln. This narrows down the opening of the kiln and gives hindrances to material flow. The system needs shut down for cleaning. The accretion in frequent intervals affects the economy of the process where the campaign life is reduced. Productivity is decreased, kiln lining is damaged and the cost of production goes high. So it is necessary to minimize the causes for the formation of semi-molten masses in the rotary kiln during processing and causes accretions. This process requires a controller which will be able to control with imprecise and partial data; and be able to achieve the desired product quality under dynamic process conditions. A Fuzzy Controller will be used for the proposed design. The fuzzy logic controller provides an algorithm, which converts the expert knowledge into an automatic control strategy. Fuzzy logic is capable of handling approximate information in a systematic way and therefore it is suited for controlling nonlinear systems and is used for modeling complex systems where an in exact model exists or systems where ambiguity or vagueness is common. The main goal of the research is to predict the rate of accretion build up within the kiln and minimize it with aid of a Fuzzy Control System (FCS) cascaded to an already existing Programmable Logic Controller (PLC). Section 1 will present the DRI process, Section 2 will present the development of the model and the results were presented in Section 3.

Code: 1102

Performance Evaluation Of Solar Air Heater With Surface Mounted Obstacles Using Artificial Neural Network

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ABSTRACT: The present paper describes an application of artificial neural networks (ANNs) to predict the thermal performance of a solar air heater using obstacles. A lab experiment on solar air heater is conducted in order to gather enough data for training and prediction. The output parameters with high correlation are measured when the Reynolds Number, Air flow rate and pitch between the obstacles is changed both in streamwise and crosswise. The three-layer back propagation (BP) network model which has one hidden layer is developed, and the node number in the input layer, hidden layer and output layer are 5, 6 and 2, respectively. This ANN model demonstrated a good statistical performance with the correlation coefficient in the range of 0.9957–0.9988, and the mean square error (MSE) values for the ANN training and predictions were very low relative to the experimental range. So this ANN model can be used to predict the thermal performance of the solar air heater using obstacles.

Code: 1201

Techniques Of Reconfigurable Manufacturing System And Flexible Manufacturing System: An Overview

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ABSTRACT: In the eighties, the concept of flexible manufacturing was introduced in response to the need for mass customization and for greater responsiveness to changes in products, manufacturing technology and markets. Meeting customer demands requires a high degree of flexibility as well as abilities to reconfigure operations for new demands. Based on literature review, various types of factors affecting the reconfigurable manufacturing system and flexible manufacturing system are presented. The different technique of RMS and FMS are overviewed. The recent researches in reconfigurable design also viewed in the research paper. The paper is concluded with a future research of flexible and reconfigurable manufacturing system.

Code: 1202

Current Trend of Sustainability Manufacturing Through Cost Saving And Environment Control

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ABSTRACT: In current economic and manufacturing environment, the manufacturing company that solely rely on traditional technologies cannot meet dynamic customer demands which is the demand always change from time to time rapidly concurrent with many other aspects and need. Consumer was seeking for more environmental friendly product. Hence, proactive manufacturing companies seek the application of intelligent and integrated manufacturing systems in order to meet the customer's demands and be the winners in the competitive market. Although, with available technologies and systems in Computer Integrated Manufacturing (CIM) and its related technologies, the application of CIM in manufacturing enterprises is a reality and can meet the need of the enterprises, nowadays manager or owner in many enterprises are confused with varying technologies and new terminologies that prevail in the public domain. To make adoption and implementation of solution in complicated issue, there are many researchers pursuing similar concepts but in different names to solve part of the issues that are or can be addressed by a CIM system. This paper provides the structure review on recent development and new trend in sustainability manufacturing through CIM application in related technology, environmental friendliness, green manufacturing and business strategies in order to meet current and next generation of manufacturing.

Code: 1301

Finite Element Analysis of Lower Suspension Arm For Optimization Of Design Parameters

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ABSTRACT: A lower suspension arm works in complicated conditions and subjected to variable amplitude loading. Its behaviour is affected by the fatigue phenomenon which results into repetitive stresses; consequently, results into dangerous ruptures and damages. In the present work, the effects of critical dimensions of lower suspension arm on its fatigue life have been investigated. The fatigue analysis, based on SWT strain-life theory, has been carried out using ANSYS code and lifespan of suspension arm resulted from ruptures due to the plastic cyclic strains has been estimated. The finite element analysis results into more savings in terms of time and costs, the two very significant parameters relevant to manufacturing. Under the variable amplitude loading, it is possible to estimate fatigue longevity of the suspension arm and to locate the critical points where the possible crack growth initiates, and reduce them by modifying some of the critical design parameters. The effects of design parameters such as length of smaller side, width of smaller side and angle of taper at smaller side, on the fatigue life have been investigated. The critical point is found near the ball joint of arm and the base dimensions are found to be optimum for the variable amplitude loading.

Code: 1302

Development of a Proe Code for Boiler Design

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ABSTRACT: Computer-Aided Design (CAD) has been a valuable tool in product development. Packages like Pro/Engineer, Uni-graphics, CATIA, etc., are some of the most widely implemented CAD packages in industry. They enable creation of virtual three dimensional models of a product which can be used for analysis purposes to optimize the design, and then put into production. This paper demonstrates automation of this feature creation operation on a CAD package, by integrating it with a programming language used to generate a 3D model of industrial package boiler. This results in considerable reduction in modelling time, compared to feature creation through the traditional method. Excel Sheet Programming is used with linking of this file to ProE, it will help to do changes in already existing model at different given conditions. Excel sheet programming helps to add the parameters like temperature, pressure which is not possible directly in ProE

Code: 1401

The Effect of Cryogenically Treated Brass Wire Electrode on the Performance Characteristics of WEDM

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ABSTRACT: This paper describes the effect of cryogenically treated brass wire electrode on material removal rate (MRR) and the surface roughness (SR) of EN-31 steel machined by WEDM. Full factorial experimental design strategy is used in the experimentation. Three process parameters, namely type of wire electrode (untreated and cryogenic treated brass wire electrodes), Pulse width, and Wire tension have been considered. Analysis of variance (ANOVA) results indicated that all the process parameters have significant effect on MRR and SR. Scanning electron microscopy (SEM) and EDS highlighted the important features of WED Med surfaces with cryogenic treated and untreated brass wire electrode. MRR is enhanced and SR is improved with cryogenic treated wire electrode.

Code: 1402

**Numerical Study of High Pressure Water Jet Assisted Machining of Titanium Alloy
Ti6Al4V**

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ABSTRACT: Titanium alloys are known for their excellent mechanical properties, especially at high temperatures. But the specificity of titanium alloys is that they can cause high cutting forces and a significant heating that can cause rapid wear of the cutting tool. To cope with these problems, research has taken several directions. One of them is the development of assisted machining. In this study, we are interested in high pressure water jet assisted machining (HPWJAM) of titanium alloy Ti6Al4V. HPWJAM is to apply a jet of water between the cutting face of the tool and the chip. The efficiency of the process depends on the choice of machining and water jet parameters. The use of the water jet helps to improve chip breaking and increases tool life. The optimization of operating parameters requires an understanding of the action of the jet on the chip formation. Thus, a numerical simulation of the process has been established taking into account the chip formation and the mechanical action of the water jet. This new model of orthogonal cutting with assisted high pressure water jet uses a technique that combines the Eulerian formulation and the Lagrangian formulation. The numerical study was carried out with ABAQUS / Explicit, considering the thermal softening, stain rate and damage material behavior law. The model can predict the cutting forces, the temperature field and stress field. It also allows you to simulate the formation of adiabatic shear bands, chip morphology and the mechanical action of the water jet on the chip.

Code: 1403

High-Accuracy Turning With Long Boring Bars

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ABSTRACT: The paper presents a new method for achieving high accuracy in finish turning

with slender tools in turning operations. The method is developed for high-accuracy machining with vibrations-damped boring bars with a length-to-diameter ratio up to 14. The method is based on a three-pass scheme where the deflection of the boring bar is calculated and compensated for in the finishing passes. The method shows very good results for a great variation of cutting conditions.

Code: 1404

Setting Up of a Low-Cost Abrasive Jet Machining Equipment

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ABSTRACT: In recent years there has been a change in the trend of the use of materials in Mauritius. Materials which are harder to work are becoming more and more common. Hence, non-traditional machining processes are being used in some workshops around the country. However, the Small and Medium Scale Enterprises do face problems in using these technologies, mostly because of their cost. The aim of this paper is, therefore, to set-up a low cost Abrasive Jet Machining equipment which can be used as prototype for its extensive development and use in the Small and Medium Scale Enterprises. The Abrasive Jet Machining equipment was assembled from commonly available materials and easily fabricated components. After its set-up, the equipment was tested to evaluate its performance, with respect to specific machining and polishing operations. A substantial decrease in the surface roughness of the metal considered was observed during the polishing operations. The equipment is functional; however, much improvement in the machining process is possible for its use in Industry.

Code: 1501

Optimal Design Approach for Machining Of Hardened AISI 4340 Steel Using Coated Carbide Inserts

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ABSTRACT: The use of multilayer coated carbide tool in hard turning has several advantages over grinding process such as, reduction of processing costs, increased productivity, short cycle time, comparable surface roughness and less environment problems without the use of cutting fluid. In the present study, an attempt has been made to evaluate the performance of multilayer coated carbide inserts during dry turning of hardened AISI 4340 steel (47 HRC). The effect of machining parameters (depth of cut, feed and cutting speed) on surface roughness parameters (Ra and Rz) were investigated by applying ANOVA. The experiments were planned based on Taguchi's L₂₇ Orthogonal array design. Results showed that surface roughness parameters (Ra and Rz) are mainly influenced by feed and cutting speed, whereas depth of cut exhibits minimum

influence on surface roughness (Rz) and negligible influence in case of surface roughness (Ra). The experimental data were further analyzed to predict the optimal range of surface roughness parameters (Ra and Rz). Finally, second order regression models were carried out to find out the relationship between the machining parameters and surface roughness parameters.

TRACK: CONVENTIONAL MANUFACTURING PROCESS

Code: 2101

Mathematical Modeling of Sensitization in GTAW of 304 SS

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ABSTRACT: Stainless steel (SS) is sensitized by thermal treatment in the range of 450°C to 800°C and inter-granular attack would occur upon subsequent exposure to certain media. This study is focused on modelling the effect of sensitization (by taking into consideration hardness as the weld property) in gas tungsten arc welding (GTAW) of 304SS, before and after cryogenic treatment on tungsten electrode. In the present work, outcome of Taguchi model has been used for developing a mathematical model for sensitization; using Buckingham's π -theorem. The parameters of significance are current, pulse frequency and gas flow rate. This study will provide main effects of these variables on hardness of weld joint and will shed light on the sensitization mechanism in GTAW of 304SS. The comparison with experimental results will also serve as further validation of model.

Code: 2102

To Study the Parameter Influence on Bead Geometry Deposited By MAG Welding Process Using AISI 1018 Steel

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ABSTRACT: In the present work, bead on plate welds were deposited out on AISI 1018 steel using MAG welding process. In this present investigation ER70S-3 solid wire having 1.2 mm diameter was used as an electrode with direct current electrode negative polarity. CO₂ was employed for shielding purposes. The fusion zone is generally characterized by a few geometrical features namely bead width, bead height and depth of penetration. The shape of the fusion zone depends upon a number of parameters such as current, voltage, polarity, travel speed and wire feed rate. From the experimental results, analysis is applied to optimize the input parameter current considering output variables penetration and reinforcement. The bead geometry changes occurring into the weld zone is investigated.

Code: 2103

Preliminary Study on the Effects of Ultrasonic Oscillations on Plasma Welds

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ABSTRACT: Vibrations has brought along various benefits when applied to a wide range conventional processes by modifying the properties, microstructure and yielding products of better quality in many cases. It has been shown that application of ultrasound can cause a decrease in power requirements, processing temperature and time. This research is a preliminary investigation on the effects of ultrasound (US) on the properties as well as microstructure and surface characteristics of plasma welds. The changes in micro hardness, microstructure and depth of penetration have been analyzed at different positions along the weld and compared with reference welds. Mild steel plates were subjected to ultrasound of low acoustical power during “bead on plate” plasma welding. One single condition was used as the power of the plasma did not permit the use of other conditions without introducing too many errors. The mild steel plate was held at one end by the ultrasonic horn through which ultrasound was injected. A bead on plate weld of length 109 mm was then performed along the center of the plate. The ultrasonic powers selected were 4W and 6W respectively as higher acoustical power was causing ejection of molten metal from the pool during welding. The results clearly show that ultrasonic oscillations has caused a change in hardness and making the hardness more uniform along the length of the weld as compared to the reference weld. Full penetration was obtained in all cases, but the thickness of the plate was varying with application of the ultrasound due to movement of molten metal. The size of the heat affected zone was greatly reduced while the width of the weld bead was almost the same. The major problem with plasma welds is the distortion of the plate this is evidenced by the change in hardness along the reference weld. Ultrasound is helping in making the hardness uniform along the length of the weld and the micro structure slightly finer but at the expense of the weld bead surface topography.

Code: 2301

Analysis of 2 Strokes Si Engine with External Scavenging & Its Validation

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ABSTRACT: This paper presents the Finite Element Analysis of engine cylinder subjected to internal pressure. The engine is a single cylinder, two strokes, 150cc designed to operate at maximum speed of 5500 rpm. For this, a model engine cylinder is created in PRO/ENGINEER and the same model is imported in ANSYS software for FEM analysis. In experimental work, modification of engine is done for the purpose of scavenging. A hole is created in the engine opposite to the exhaust port for the air passage in order to avoid short circuiting phenomenon. Maximum pressure inside the engine cylinder before and after direct air injection is noted. It has been observed that due to modification, pressure inside the engine cylinder is very high. Due to such high pressure, engine cylinder may fail. This paper reports comparative stress analysis by FEM method and experimental investigations carried out on a single cylinder 2 stroke S.I. engine.

Code: 2302

Time Domain Analysis of Stick-Slip Vibrations during Flank Wear in an Orthogonal Turning Process

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ABSTRACT: During turning, flank wear results due to dry friction acting at the flank-work piece interface. Increased flank wear due and increased contact area results in the occurrence of stick-slip vibrations. In this paper, the friction taking place between the cutting tool flank and newly generated work piece surface during an orthogonal turning process is discussed. The occurrence of stick-slip vibrations at the flank-work piece interface is also described. As the occurrence of stick-slip vibrations is highly related with acceleration, noise emission and flank wears during orthogonal turning, a methodology to identify the occurrence of stick-slip based on acceleration and near field noise measurement has been proposed.

Code: 2303

Experimental Investigation of Chatter Vibrations in Facing and Turning Processes

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ABSTRACT: This paper investigates the occurrence of regenerative chatter vibrations in facing and turning processes. Orthogonal turning (facing) and normal turning experiments are carried out under stable as well as in the presence of controlled chatter vibrations. The effects of chatter vibrations on various sensor signals are captured and analyzed using frequency domain methods, which successfully detected the chatter vibrations close to the dominant mode of the machine tool system.

TRACK: MATERIAL AND METALLURY

Code: 3001

Wear Problems on Chutes in a Rock Crushing Plant

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ABSTRACT: Chutes are essential in the manufacture of building materials involving rock crushing. They are commonly used to transfer materials; however, they subjected to wear problems. Such problems were encountered in a rock crushing plant in Mauritius. The present study investigates these problems with the aim of reducing their effects in the future. Three of the chutes which were most affected by wear problems were considered. Mild steel and Dillidur 400 samples were welded on the chutes and the amount of wear were measured over a 3 months period. The hardness of the metals and the rocks they carry were also determined. It was observed that hardness of the chute material has been the main cause of the wearing of the chutes. Other factors such as mass flow rate of the particles in the chutes do not produce significant effect on the chutes' wear.

Code: 3101

Eco-Friendly Asbestos Free Brake-Pad: Using Banana Peels

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ABSTRACT: This research was conducted to produce a non asbestos free brake pad. The use of asbestos fiber is being avoided due to its carcinogenic nature that might cause health risks. A new brake pad produced by using banana peels waste to replace asbestos and thermoset resin as a binder has been investigated. The resin was varying from 5 to 30wt% with interval of 5wt%. Morphology, physical, mechanical and wear properties of the brake pad were studied. The results shown that compressive strength, hardness and specific gravity of the produced samples were seen to be increasing with increased in wt% resin addition, while the oil soak, water soak, wear rate and percentage charred decreased as wt% resin increased. The samples, containing 25wt% in BUNCp and 30wt%BCp gave the better properties in all. The result of this research indicates that banana peels particles can be effectively used as a replacement for asbestos in brake pad manufacture.

Code: 3102

Influence of Pre-Ageing Thermal Condition on the Corrosion Characteristics of A356.0 Type Al-Si-Mg Alloy

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ABSTRACT: Studies have been made on the corrosion behavior of pre-aged and thermally treated, chill cast Al-Si-Mg alloy in simulated sea water environment. The temper conditions are double thermal ageing treatment (DTAT) at 90°C, 105°C and 120°C with variable pre-ageing time 1-5 h respectively. These were compared with the as-cast and single thermal ageing treatment (STAT) samples. The corrosion characteristic was evaluated using weight loss and linear polarisation techniques. From the results, the DTAT samples showed a higher improvement in corrosion resistance than the as-cast and conventional STAT alloy in all the temper conditions.

Code: 3103

A Review of Characterization of Aluminium Based Metal Matrix Composites by Stir Casting Technique

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ABSTRACT: Aluminium matrix composites (AMCs) reinforced with micro and nano sized particles of (SiC, Al₂O₃, Fly ash, B₄C and Gr) fabricated by stir casting technique are widely used for high performance applications such as automotive, aerospace, and electricity industries because of their improved physical and mechanical properties. The parameters such as heat treatments of the particles, injection process, stirring speed, reinforcement particles size and different weight percentage of reinforcement particles generally influence the microstructure and mechanical properties of the composites. The following review is a study of characterization of microstructure, physical, mechanical and tribological properties in the commercial Al-Si casting alloys reinforced with micro and nano sized reinforcement particles to assess the current status of work done in the field.

Code: 3104

Synthesis and Characterization of Cu-Al-Be Ternary Shape Memory Alloys Prepared By Induction Melting Technique

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ABSTRACT: Shape memory materials are stimuli-responsive materials. They are widely used in military, medical, safety, and robotics applications. Until recently, only Ni-Ti based SMAs are commercially used due to its relatively easy of manufacturing. However, the exorbitantly high

cost of Ni-Ti based SMA limits its application to niche markets such as medical stents, aerospace and defence. Recently, it is found that Cu based alloys e.g. Cu-Zn-Al, Cu-Al-Ni, Cu-Al-Be exhibit shape memory behavior. Out of which, Cu-Al-Be is most interesting SMA in terms of less process complexity and low cost. Cu-Al-Be shape memory alloys in the range of 9.2–15 wt.% of aluminum and 0.01-0.5 wt.% of Beryllium, exhibiting β -phase at high temperatures and manifesting shape memory effect upon quenching to lower temperatures, were prepared through ingot metallurgy. The alloy ingots were homogenized followed by step quenching so as to obtain a structure that is completely martensitic. They were subsequently characterized by X-ray diffractogram (XRD), Differential Scanning Calorimetry (DSC) and Scanning Electron Microscope (SEM). The shape memory properties of the alloys were studied by bend test. This paper emphasizes the synthesis and characterization of the Cu-Al-Be shape memory alloys.

Code: 3105

Fibre Reinforced Polymer Concrete – An Alternative Material for Machine Construction

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ABSTRACT: Polymers in concrete have gained an immense publicity in the past 40 years. Polymer Concrete has been used for machine tool applications for the recent 3-4 decades. But limited studies are available on the fibre reinforced Polymer Concrete usage in machine tools. The objective of the present study is to find out the damping characteristics of Polymer concrete exclusively for its usage in machine tool beds. The Taguchi Design of Experiment approach has been used to develop nine different grades of Polymer Concrete using Taguchi L9 orthogonal array. Four factors i.e. resin %age, fibre %age, aggregate type and filler %age have been used in the study where as three levels are selected for each factor. The experiment is carried out using the vibration analyser in the frequency range of 0-160Hz. Vibration Analyzer is an electronic device that processes and analyzes the signals received from the transducers used in vibration measurement like impact hammer, accelerometer, digital tachometer, etc and is basically used for Modal Analysis. The modal parameters are the natural frequency, damping ratio, and modes shapes are obtained as results. The results obtained are compared with that of cast iron. The highest damping ratio obtained for Polymer Concrete is 0.1204 while that of cast iron is 0.0506. Thus it has been concluded that fibre reinforced polymer concrete has damping ratio 2-3 times higher than that of the cast iron. Therefore the polymer concrete should be promoted to be used in machine tool beds to reduce vibrations and achieve higher accuracy.

Code: 3106

The Knittability of Rib Structures Using Jute Yarns

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ABSTRACT: The popularity of using natural fibres such as jute has kept on increasing not only because of environmental awareness but also thanks to their unique properties, ease of availability in different parts of the world as well as their low cost. Jute yarns have been used for a very long time to make woven structures. Jute is nowadays used in composite matrices in the

form of fibre, yarn and fabric. Little research has been done into the conversion of jute into knitted structures. The latter has a lot of potential in different applications where extensibility is required. Raw jute yarns have a high coefficient of friction and significant hairiness and these drawbacks make the yarns very difficult to knit. During the formation of double-knit rib structures on the knitting machines, the needles have to overcome yarn-to-yarn friction as well as machine-to-yarn frictions in order to achieve interloping of yarns. The study shows that treating jute yarns to improve its surface frictional properties and hairiness can significantly improve its knittability. The right yarn-count and machine-gauge combination is also important to achieve low rate of defects during the knitting process. The tightness factor of the resulting double-knit structures is higher than that of plain fabrics. The strength of jute fibres and yarns coupled with the potential of knitted structures to form extensible and 3D structures on modern flat-knitting machines will undoubtedly open new avenues for further research with knitted jute structures.

Code: 3301

Development and Stress Analysis Of A Glass-Epoxy Refrigerator Door Handle

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ABSTRACT: Refrigerator door handle of short glass fibre reinforced epoxy composite with 30% volume fraction of fibre has been developed by replica method which has a higher life than the present type of handles being used. S-Glass fibres of 250 micron diameter and 1.5 mm length have been randomly distributed in the matrix of epoxy. 2-D finite element analysis has been carried out using NISA Ver.8.0/9.0 to find out the principal stresses, maximum shear stress and von Misses equivalent stress under plane stress condition. Six noded isoparametric triangular elements have been used to discretize the continuum along with a load of 400 N supposed to be given by a normal human being during opening and closing of the door. It is observed that all the above stresses developed due to loading are well within acceptable limits i.e. much less than the permissible stresses calculated theoretically for the composite.

Code: 3302

Study of Non-Isothermal Crystallization of Polylactic Acid Composites with Natural Fibres

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ABSTRACT: This paper deals with the evaluation of crystalline structure and thermal properties of injection molded parts based on polylactic acid (PLA) matrix reinforced by hemp and banana natural fibres (NF). Using differential scanning calorimetry (DSC) and wide angle X-ray diffraction (WAXD) methods were evaluated thermal properties and crystalline structure of PLA/NF composites, depending on the amount of natural fibres within the weight ratio of 10% up to 30%. We observed that hemp and banana fibres work like natural nucleating agents and

thus subsequently improve the material properties of PLA. We also observed process of melt (primary) and cold (secondary) crystallization of PLA/NF composites depending on cooling rate.

Code: 3303

Analysis and Optimisation of Machinability Behavior of GFRP Composites Using Fuzzy Logic

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ABSTRACT: Glass Fibre reinforced plastics (GFRP) contain two phases of materials with drastically distinguished mechanical and thermal properties, which brings in complicated interactions between the matrix and the reinforcement during machining. Surface quality and dimensional precision will greatly affect parts during their useful life especially in cases where the components will be in contact with other elements or materials during their useful life. This paper discusses the application of the Taguchi method with fuzzy logic to optimise the machining parameters for machining of GFRP composites with multiple characteristics. A multi-response performance index (MRPI) was used for optimisation. The machining parameters viz., Tool geometry (helix angle of the endmill cutter), spindle speed, feed rate, depth of cut and work piece (fiber orientation), were Optimised with consideration of multiple performance characteristics viz., machining force, delamination, and material removal rate. The results from confirmation runs indicated that the determined optimal combination of machining parameters improved the performance of the machining process.

Code: 3304

Development of Polymer Matrix Composites for Automobile Application

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ABSTRACT: Natural fibre composite produces material with zero corrosion and s good mechanical properties such as impact, tensile, bending etc and also good physical properties (density, water resistance etc). Natural filler used varies from 5-30% from the first test we discover that from 5-15% the sample as almost the same strength and at 20% as the maximum strength, and from 25-30% the strength reduces. For the blended fibre, 25-30% has the highest strength. For bending test 5% has the lowest strength, 10% has the highest strength and 15-30% has a slightly lower strength. The lower the percentage composition the higher the strength, and the higher the percentage the lower the strength for the blended fibre.

Code: 3305

Advances in Polymer Technology

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ABSTRACT: The term Polymer encompasses both Natural and Synthetic class of compounds, with a wide variety of properties. A Polymer is a chemical mixture of compounds consisting of repeating structural units created through a process of Polymerization. In this paper, I have collected information about Polymer products which have been synthesized recently and have brought out the advances in Polymer Technology. A great deal of my work involves new age of Functional Polymers and Green Chemistry along with the role of cross linking polyamides for membrane applications. I have also revealed some of the Synthetic Polymers along with the information about the constitution of such Polymers which are revolutionizing the world today. Production of Nanopolymers are one of the important developments in Polymer Technology which in simple words are Nanostructure Polymers.

Code: 3501

Metallurgical Processing and Tribology of Quartz Particulate Reinforced Aluminium Composite

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ABSTRACT: Although there are a lot of aluminium metal matrix composites available, not much research has been done on the usage of quartz as a reinforcement material. Five test samples, each with different aluminium to quartz composition were produced using powder metallurgy process involving blending, compacting and sintering of the mixture. All test samples were subjected to the same compaction pressure and sintering temperature to get a more consistent result. Rockwell hardness tester, metallurgical microscope, pin on disc wear test machine were used to test and analyze the processed composites. It was found that the powder metallurgy process produced a good distribution of the particles with minimum and little deformation. The hardness test results showed that the addition of reinforcement such as quartz indeed enhances the hardness of the material. However, the hardness of the material only increased to a certain percentage of quartz. This amount was found to be an ideal percentage of quartz to be added. Similarly, the wear testing showed significant loss in the amount of wear with the addition of quartz as a reinforcement material. The friction coefficient has also decreased with the increase in quartz percentage.

Code: 3502

Effect of Ageing on the Mechanical and Wear Behaviour of A356 Alloy Containing Copper

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ABSTRACT: Reduced weight of automobiles for the purpose of fuel economy has encouraged the use of light metals especially Aluminium alloys. A356 Al alloy containing 7% Si and 0.3% Mg is widely used in automobile and aircraft industries due to excellent castability, good corrosion resistance and good pressure tightness. A356 is age hardenable alloy and there is appreciable improvement in strength and hardness achievable due to precipitation of intermetallic compound Mg_2Si . In the present investigation, aluminium alloy A356 with and without Copper (Cu) addition (0.2 wt%) was subjected to single ageing. The results were compared for Microstructural analysis, XRD, mechanical properties like hardness and ultimate tensile strength (UTS) and wear behaviour of alloyed and unalloyed samples.

Code: 3503

Modes of Failure in Bearings in Textile Mills

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ABSTRACT: Textile machineries operate under severe working conditions involving high temperatures and corrosive environments. Under these conditions, frequent failures occur in bearings in the various machines. This results in an increase in maintenance costs and downtime. In this study, the problem of bearing failures is investigated in the dyeing and finishing section of a major textile mill in Mauritius. Bearings operating in different conditions of temperature and in corrosive environments, which frequently fail, were chosen as samples. They were visually inspected and measurements were taken to determine their surface roughness, diameter and roundness. The bearings were then disassembled to observe their inside surfaces. Different types of failure were observed in the bearings. The main reasons being corrosion, high temperature, inclusions and fatigue and fretting wear. The results of this study can be used in the textile sector to improve the maintenance of bearings for their optimum use.

TRACK: OPERATIONS MANAGEMENT

Code: 4001

A TOPSIS Method-Based Approach to Machine Tool Selection Problem of N.I.T Agartala

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ABSTRACT: Due to highly competitive global market, the organizations are now forced to focus more on increasing productivity while decreasing cost by right selection of machine tools. Proper selection of machine tool justifies labor saving, improved product quality and increased production rate with enhanced overall productivity. Evaluation and selection of a machine tool is a complex decision-making problem involving multiple conflicting criteria. This paper presents a logical procedure to evaluate the Machine Tool selection of NIT Agartala by using TOPSIS method. The results derived while solving the Machine Tool selection of NIT Agartala are the most scientific way of solving the machine selection problem for different research activities and demonstrations purpose and how to take best decision when several suppliers are existing.

Code: 4002

Solving Job Shop Scheduling Problem Based On Employee Availability Constraint

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ABSTRACT: Manufacturing System is enabled with an excellent knowledge on production plan, proper scheduling of machinery process, employee timetabling and labor costs. Heuristic algorithms are developed to bring optimized results in stipulated time with respect to optimum schedule. This article deals with minimizing the maximum completion time (makespan) based on job scheduling and minimization of labor costs based on employee workload with Shuffled Frog Leaping Algorithm and Sheep Flock Heredity Model Algorithm. The labor costs minimization and makespan which is to find a schedule that satisfies the organization's rules, employee's preferences, due date and customers. The formulation of assigning workload for employees is concerned with assigning number of employees into a given set of shifts over a fixed period of time and week task. The main problem attempts to minimize labor costs based on performance criteria and assigning the loads equally among all employees. Several local search methods and heuristics algorithms has been proposed in many research on Job shop scheduling. The Results are compared with other heuristics in terms of makespan, idle time and Labor costs the Shuffled Frog Leaping algorithm performs result oriented than other Heuristics Algorithm.

Code: 4003

GSCM Performance Indicators in Agro Industry and Its Ranking In Indian Perspective

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ABSTRACT: The supply chain management of agro food products has gained special attention of public during last decade due to several incidences of food contamination and scandals. Due to the increased pressure from the domestic as well as overseas buyers to buy more and more eco-friendly products many agro companies are inclined to implement “Green supply chain management” as their strategy to improve their brand image and to capture more market share and to win the trust of the customer. The study aims to examine the performance indicators which must be considered while implementing Green supply chain management in agro industry. To attain this, survey has been conducted in twenty agro based industry using standard questionnaire followed by in-depth interviews of the persons in this field. The questionnaire used for the purpose has been tested by experts before launching it.

Code: 4101

Human Factor Engineering in Air-Conditioning Systems

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ABSTRACT: Use of air-conditioned vehicles in passenger transport is grown up rapidly during the last decade with the improvement in standard of living. Air-conditioned vehicles are designed with non openable windows and mechanical ventilation & air-conditioning system (MVAC) is installed for better Indoor Air Quality (IAQ) as well as to provide a thermally comfortable environment. However health problems associated with air-conditioning systems and Indoor Air Quality appear more frequently. The rising standards of thermal comfort in modes of transport create a need to improve the thermal conditions provided in passenger vehicles in order to avoid unfavourable comparisons, passenger complaints and an excessive transfer of traffic to other less environmentally friendly modes of transport. The paper reviews published work on thermal comfort for the human body. Based on the reviews, an attempt will be made to discuss human factor engineering involved in air-conditioning.

Code: 4201

Inbound Supply Chain Management of Aniron Foundry: System Dynamic Approach

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ABSTRACT: Foundry manufacturing involves melting a metal in a furnace and pouring it into mould to produce casting. Supply chain management plays a dynamic and vital role to integrate the suppliers, manufacturer and the customers. These System dynamic is a methodology where a complex, dynamic and nonlinear interactions can be understood and analysed. The objective of this paper is to show the system dynamic of an iron foundry to control the inventory and make the inventory policy decisions. This paper presents the simulation, system dynamic of medium size iron foundry, which will produce gray cast iron products, and gives the dynamic interaction between the different variables-like incoming materials quantity, demand, inventory, rejections, production rate and also dispatch rate. The policy experimentations carried out considering various factors of the foundry and their degree of development. The model results have been

discussed and validated based on the actual results of a foundry. This paper has addressed many important issues related to demand, inventory, production rates of a foundry.

Code: 4202

Enhancing Global Supply Chain Performance in an Improved Information Sharing Platform

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ABSTRACT: The integration of supply chain functions both within and beyond the boundaries of an organization is essential for optimization. However, this integration is difficult to achieve due to the presence of different players at each stage of the chain at diverse locations across the globe, each aiming for local optimization. This research paper attempts to understand the impact of improved information flow on supply chain performance specifically through better customer service, improved inventory management and reduced bullwhip effect. This study suggests a supply chain risk pooling model and analyze the impact of information sharing and coordination of information flow on supply chain performance through data manipulation on different configurations of the model.

Code: 4203

Application of Dynamic Programming for Improving Storage Utilization In Manufacturing Environment

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ABSTRACT: The objective of the paper is to reduce the space required for storage. The basic concern is to arrange bins (containers in which the parts are kept) on shelves so as to minimize the space used. Dynamic programming is used to locate the bins in shelves. This paper describes work carried out for an international automobile manufacturer. The experience of the company with the system, which is now in routine use, is also discussed. This application of dynamic programming is unique and can be used in probabilistic way also.

Code: 4301

The Impact of Technology on Product Quality in the Cement Industry Of Pakistan

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ABSTRACT: This paper aims to address an imperative issue of corroborating the amount of impact technology has on the product quality in cement industry of Pakistan. The data was

collected by visiting the industry primarily and further through customers & competitors using interviews and questionnaire. Analysis tools were used after collecting the data. The results indicate that there is a significant effect of using automotive technology. These technological advantage accumulate a marked increase in the product quality. This article proposes a framework of product quality for the cement industries of Pakistan in particular and cement industries world over in general.

Code: 4302

Application of Optimization Techniques in Bio-Diesel Processing

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ABSTRACT: Depletion of petrochemical sources had led us to search for some alternate source of fuel in order to meet the increasing demand and to reduce the pollution effect. Thus biodiesel has found a great deal of importance in the research field. Production of biodiesel is of proper concern and thus optimization of the various process parameters is very much important. Various methodologies have emerged to satisfy this purpose. Among all such methodologies, till date, Response Surface Methodology is mostly used in this field by various researchers. A total of 13 runs of experiment were conducted and were designed to study the process parameters. In order to optimize different physical factors involving chemical and thermodynamic criteria during biodiesel processing, we have identified typical two parameters namely reaction temperature and reaction time. In this paper, we will study the use of Response Surface Methodology in this field and compare the result with the experimental value. The statistical model predicted that the maximum value of ester yield to be 83.57% at reaction time of 343 *minutes* and temperature of 58.34°C. Using these optimal values three experiments were conducted and the average of 82.8% conversion was found, which is well within the range of the predicted value.

Code: 4303

Supply Chain Management: - As Tool Of Optimization of Production System for Bosch Ltd, Nasik, India

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Managing a manufacturing firm is today's present tremendous challenge. Top management of companies is presented with endless stream problems that arise from inadequate productivity & intense foreign competition. It has long been recognized that high productivity has been one of the key to our high standard of living in the country. Increasing the productivity should be a national challenge. Productivity optimization is key goal of manufactures in new millennium, as market become increasingly competitive in global market. Companies have already cut operating expenses and reduced prices in efforts to remain viable as competitive pressure increase. Rather than making further cuts, firm be better served to concentrate on increasing internal efficiencies and productivity. Hence supply chain management is a optimization tool of production system for facing global competition. The benefit of Productivity in common rail injector testing line that serves near about 9 to 10 % productivity and energy conservation.

Code: 4401

Design of Supply Network Considering Uncertainties in Demand and Supply in a Pharmaceutical Supply Chain Using Traffic Engineering Concept

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ABSTRACT: Agent based modeling is used for analysis of supply chain network. Agents (Supplier, Manufacturer, Distributor, Retailer and Customers) are assumed as individual decision makers in agent based modeling. There is a lack of protocol in terms of price and inventory at nodes. In agent based modeling, researchers mainly focus on coordination, flexibility and integration issues. The dynamics of supply chain caused by demand and supply is not addressed in agent based modeling. Study of supply network becomes very complex and unpredictable due to demand and supply dynamics and lack of scientific design. Manufacturer has to decide about shipment locations as well as channel partners (Distributors, Retailers) for setting up distribution network. Facility location and inventory control decisions are strategic decision, because each shipment facility involves cost incurred by own facility or third party facility. Therefore, it is manufacturer responsibility to ensure flow of commodity in a network for the benefit of customers and, it is necessary to control the network for the mutual containment. Question will arise to manufacturers that how many authorized distributors are required to fulfill the dynamic demand at desired quality of delivery. The same question will arise to distributors to pick retailers. Scientific design of network helps the manufacturers as well as the distributors to optimize the network and hence, the cost, because each node in the network incurs some cost. This paper deals with above issues.

Code: 4501

Supply Chain Disruptions Happen: Engineered Strategies On How To Avoid And/ Or Manage Pitfalls?

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ABSTRACT: Many decades from this day, companies manufactured products virtually from scratch. In contrast, companies operating in this era tend to assemble final products from increasingly complex components, which are procured from thousands of suppliers. These suppliers are located throughout the globe (globalization), many in regions that are politically and financially unstable or subject to wars and natural disasters. This globalization has led to extremely fragile supply chains. This is because companies of the world are engaging in longer geographical spread and more complex supply chains, thus increasing companies' vulnerability in the presence of different disruptions. As supply chain networks increase in complexity due to outsourcing, globalization and volatility in the trading environment so too has the risk of disruption. Natural disasters, geopolitical turmoil, cyber security threats and pandemics threaten the ability of logistics providers, suppliers and customers to maintain a state of business continuity. In today's tightly integrated and lean supply chain, customers know about their

suppliers' problems in real time, i.e., the same time it happens. For as long as supply chain systems exist, random disruptions are also bound to emerge, and no supply chain, logistical system or any infrastructure network is immune to them. Disruptions can take many forms, such as natural disasters, economic crises, political instability and terrorist attacks, etc. A supply chain framework is proposed and presented where sources of risks are identified and the risk management processes that are currently implemented are described. A newfangled concept called "*Supply Chain Velocity Theory*" (SCVT model) that focuses on ameliorating all forms of value adding activities in the supply chain system is also proposed and presented.

Code: 4601

Theory of Constraints Based Approach To Marketing Management

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ABSTRACT: Theory of constraints has been gaining popularity as a complete management philosophy. Many of the academicians and practicing managers feel that the application of TOC is confined to production management area only. This is not correct. There have been examples of application of techniques of TOC to almost all the areas of management like marketing, finance, project management, supply chain management etc. In this paper an attempt has been made to present a methodology, based on Theory of constraints, for marketing management. The method presented will prove to be a new and useful tool for marketing managers and will extend the application of TOC to the area of marketing management.

TRACK: QUALITY AND RELIABILITY

Code: 5201

Application of FMEA for Reducing Downtime in A Thermal Power Plant: A Case Study

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ABSTRACT: This paper presents the application of failure mode and effects analysis (FMEA) for reducing downtime in a thermal power plant taken as case study. As the downtime due to various forced outages is very high as compared to world class operations, so it has been opted to apply FMEA to assist maintenance personnel for improving availability and reliability of the plant. By inspecting outage review report of the plant, the availability has been calculated which comes out to be unexpectedly low. Critical fault identification has been done to segregate most critical faults and top ranked fault prone component has been dealt by providing FMEA worksheet. The failure modes and effects have been identified and remedial measures have been suggested. The application of FMEA on water wall tubes of boiler results in 16.8% reduction in downtime.

Code: 5202

A Study of Overall Equipment Effectiveness in Cold Drawn Bar Manufacturing Line.

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ABSTRACT: This study is about finding the Overall Equipment Effectiveness (OEE) that can be used in order to improve the equipment and manufacturing line performance. Overall Equipment Effectiveness is one of the performance evaluation methods that are most common and popular in the production industries. This study was done in a manufacturing industry in Selangor, Malaysia. By referring to these factors, the company will have the guidelines for further development and improvement that they can make for their equipment and manufacturing line. Thus, this will ensure that the company can perform their operation smoothly with minimum breakdowns and can meet the needs of their customer. For this study, all the required data such as cycle time, downtime and operation time will be collected using a suitable method and tools in order to make sure that the data collected is accurate. The result from this study shows that Cold Drawn Bar Manufacturing Line in the industry has low performance which is the Overall Equipment Efficiency (OEE) at 74.90%.

TRACK: MANAGEMENT OF SYSTEMS

Code: 6001

Entrepreneurship and Competitiveness

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ABSTRACT: Increasing number of people are now already opting for entrepreneurship as a career option not only due to the dearth of opportunities in the formal sector but also due to their desire to dream big, be independent and do something on their own. The scope of entrepreneurship development in country like India is tremendous. In India there is a dearth of quality people in industry, which demands high level of entrepreneurship development programme throughout the country for the growth of Indian economy. This paper aims to study different contexts describing entrepreneurship and qualities an entrepreneur should seize entrepreneurship development in India, and present scenario of competitiveness in entrepreneurship as well as the role of the Government since 1947. The study was limited to the entrepreneurship and competitiveness in India only due to time constraint.

Code: 6401

A Paradigm Shift from Human Resource Management to Knowledge Resource Management for Micro Small and Medium Enterprises (MSME) Sector

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ABSTRACT: This paper seeks to show that knowledge acquired from certain sources helps the firms to be competitive. The actual need is to have a paradigm shift from Human resource management to knowledge source management. Some people to build a flourishing business from nothing. While others though given every advantage background and preparation at the best business schools run a business It is very interesting to study what special talents allow into the ground? What abilities allow one person to take a mediocre company and transform onto a great company and transform in to industry leader. While other turn great companies into mediocre one? And what collective qualities let one company flourish year after year while other competitors flounder? These observations leads to the partial question: Could there be business intelligence - a set of abilities that distinguish those truly outstanding in the world of commerce? Could business intelligence be the mark of outstanding individual performance, as well as the building block of the best performing companies?

Code: 6402

Innovative HR Practices in 21st Century: An Indian Perspective

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ABSTRACT: In the current scenario, globalization has a major impact on the management of human resources in developing countries like India. With picking up the velocity of globalization, organizations have to adopt to the significant changes and new trends in all aspects

of management including the management of human resources has an imperative role to play in the performance and success of organizations. Moreover, competitive pressures on the organizations have encouraged them to be proactive in diagnosing HR problems and to adopt more innovative HR practices since these were no longer a matter of trend, but rather of survival. Hence the corporate have started formulating and adopting innovative HR strategies in the areas such as attracting and accessing the talented, developing and growing the potential, engaging and aligning the best, transition, etc. In this research paper various HR strategies, current and future trends, challenges have been discussed, which will help in enhancing the satisfaction level of employees, managing diverse workforce and in turn will increase in productivity of the organizations.

TRACK: PRODUCTIVITY AND PERFORMANCE MANAGEMENT

Code: 7001

Lead Time Reduction in Vendor Invoice Processing

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ABSTRACT: Lean, at its core, is a cultural and people-oriented initiative. Key to making the transition to a Lean organization is the fundamental change in the corporate culture that must be made. There must be commitment from the top to establish a clear vision for all employees to understand the benefits to them personally as well as to the organization as a whole. In addition, the mindset of measuring performance must shift from measuring each individual department or discrete task to measuring performance across departmental boundaries, and measuring the end-to-end delivery of services and products across the organization. Lean principles can in fact benefit every department and business process, including engineering and design, project management, finance, human resources, purchasing and supplier management, customer service and customer relationship management, sales and marketing, quality assurance, and of course, inventory control, distribution and manufacturing. In this company where study was conducted vendor payments were not paid on time due to several issues in invoice processing from different teams and sometimes because of vendor. The project started out with an aim to reduce the total process lead time of the Invoice receiving process. By eliminating the non value added time the major problems addressed through this project are 1) Wait time reduced, 2) Reduction in errors. Root cause for the delay was identified by analyzing past 6months data and causes were identified by doing why-why analysis. Receiving process was studied and Value Stream Map was developed and bottleneck was identified and by applying lean concepts future Value Stream Map was developed to improve the Receiving process. Ultimate result of reduction in lead time was measured and was found that around 75% reductions in Invoice processing lead time. Benefits by achieving the reduction in lead time in invoice processing are validated.

Code: 7401

The Linkages between Youth Development and Sustainable Democracy in Nigeria

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ABSTRACT: Across societies and civilizations, the youth are considered as the leading agents of change and development. They play vital a role in the political and socio-economic transformation of their respective societies. As such, youth development policies and programmes remain essential components of every country's development plan. In Nigeria, the youth constitute a very significant portion of the country's population and their potentials for the growth and sustainability of various sectors of the society is acknowledged by the state. In the political realm, for instance, the youth in Nigeria are often described the vanguard of country's fledging democracy. Accordingly, the connection between youth development and sustainable democracy remain obvious. To establish the connection in the Nigeria's political landscape therefore, the following lingering questions need to be addressed. Are there clearly defined policies and programmes on youth development in Nigeria? Are the policies integrated with the country's development plan? To what extent are the objectives of these policies and programmes

being realized? How does this affect the level and pattern of youth participation in Nigeria's democratization? How does the trend affect the sustainability of democracy in the country? Thus, answers to these questions will undoubtedly provide the linkage between youth development and sustainable democracy in Nigeria.

Code: 7402

Good Governance: A Key To Quality Education

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ABSTRACT: Despite the Government effort of much spending in education, the present prevailing education condition and students' academic achievement/performance is very unfavourable and even disastrous. The assumption of this study is that the management and administration of educational sector is questionable. The study viewed that educational outcome and national development is a direct function of good governance – accountability, transparency, responsibility and societal goal. It is good governance that will improve teachers' effectiveness, good learning environment which at the end will improve quality of education and societal development. On the other hand it is the qualitative education that enhances the capacity of the leaders, managers, administrators and educationist the ethics of good governance. In conclusion, qualitative Education and good Governance are correlated.

Code: 7403

Impact of OEE Metrics in Automotive Industry – Case Study

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ABSTRACT: The study presents the implementation of Overall Equipment Effectiveness (OEE) at a small enterprise manufacturing automotive components. OEE is employed as a simple performance metrics, but it is still effective method for analyzing the overall performance of an integrated manufacturing system. Authors intend to find out the impact of OEE metrics implementation on the performance of the Industry. The approach used in this paper is experimental and the instruments used to collect the data are real-time observation. Finally, after three month of successful implementation, OEE performances improved up to 35%, since subsequent improvement in Availability, Performance Rate and Quality Rate has also been observed.

Code: 7404

Manufacturing Lead Time Reduction of Gear Box Side Frame Using Lean Principles

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ABSTRACT: In today's highly competitive market scenario slashing lead time is the fastest and most powerful approach to profitability and customer satisfaction. The objective of the work is to reduce the lead time of the side cover component. The initial phase of study included the construction of a macro process map. Macro time study revealed processes with higher cycle time than Takt time. Micro process mapping and micro time study was conducted to identify Muda. Root cause analysis was carried out to and Principles of lean manufacturing was used reduce waste. New quick change over fixture was designed, fabricated and implemented. There was significant reduction in lead time of the component with an average reduction of 15% of the lead time. The use of the fixture along with tool trolley significantly reduced the process time of by about 38%.Future, recommendation was also provided that would further reduce the total lead time of the process.

TRACK: ANY OTHER ALLIED TOPIC

Code: 8001

Heat Transfer Analysis of Steel Structure Column and Effect of Temperature on Their Mechanical Properties

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ABSTRACT: In our work we have take a column of I-section. A major advantage of steel is that it is incombustible and it can fully recover its strength following a fire, most of the times. During the fire steel absorbs a significant amount of thermal energy. For the analysis we have take FEA method using software ANSYS and STAD-PRO. We have taken several parameters which are heat flux, stress, strain, deformation, linear buckling and modal analysis. Now we obtained some results which shows when temperature difference increases some of the parameters are in linear proportional. All the validation work is carried on different column.

Code: 8002

An Image Mining System For Gender Classification & Age Prediction Based On Facial Features

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ABSTRACT: Over the recent years, a great deal of effort has been made to age estimation & gender recognition from face images. It has been reported that age can be accurately estimated under controlled environment such as frontal faces, no expression, and static lighting conditions. However, it is not straightforward to achieve the same accuracy level in real-world environment because of considerable variations in camera settings, facial poses, and illumination conditions. In this paper, we apply features based approach for gender recognition & histogram base matching for age prediction to get desired objectives. Through real-world age estimation experiments, we demonstrate the usefulness of our proposed method.

Code: 8003

Streamlining The New Product Design And Development Process

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ABSTRACT: New product development is essential for any organizations for its survival and growth. To sustain continuity of the business and the fierce competition from the market, new products are introduced into market in a very short period of time. The speed of new product development (NPD) has been a key factor in a firm's degree of competitiveness, which is driving organizations to improve the way they develop and introduce new products to the market. Hence, a detailed study is required to understand the techniques to reduce the new

product development time. This technical paper is aimed at reducing the product design and development time of a rugged laptop by using quality management and project management techniques. Initially the process and practices followed in developing previous products were analyzed to identify the grey areas which resulted in 62 weeks of lead time. Industry average product design and development time for a rugged laptop is around 40 to 45 weeks. An improvement plan is prepared and implemented to reduce the product development time. The plan consists of implementation of concurrent engineering techniques, aligning the design guidelines and DFM /DFA practices specific to the manufacturer, effective project management techniques such as delivery management, project knowledge management, etc. Product development time is reduced by 18% by implementing the improvement plan. Development time is reduced by effective practice of concurrent engineering, effective project management and delivery management strategies. Design reworks reduced by 89% by aligning the design guidelines and DFM /DFA practices specific to the manufacturer and early involvement of manufacturing team in product design phase. Product design errors reduced by effective utilization of lessons learned and knowledge captured from executing previous projects.

Code: 8004

Sustainable Livelihood Through SRI Project: A Case Study

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ABSTRACT: Focused interventions to improve agricultural productivity is one of most effective methods of alleviating the living conditions of rural poor in developing countries. To improve productivity of rice, a major staple food, the System of Rice Intensification (SRI) has been adopted in various countries in Asia, Africa and Latin America. This article attempts to study the implementation issues in adoption of SRI project practice in Bihar, India by the government through its project, Jeevika. The SRI project is analyzed from project operations management perspective. Project management study involves the three systematic steps of planning, scheduling and controlling a project which is required for achieving the desired results on time and within budget. Planning involves breaking the project into smaller activities and estimating their times and costs and allocating responsibilities of the project implementing team. Scheduling involves identifying sequential relations between activities, sequencing them and estimating the project completion time. Project control starts with implementation and time, costs and quality are checked to ensure conformance to plans. Project management tools like Work Breakdown Structure, Gantt Chart and Responsibility Assignment Matrix were used to understand the operational details of the SRI project. This study will help to understand the typical operational issues and challenges during implementation of similar sustainable development projects.

Code: 8005

Bacteriological Surveillance Of Drinking Water For Its Potability

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ABSTRACT: In the present study, The bacteriological characteristics of potable water and its impacts on human health in the rural area of Malwa region in Punjab (India) are studied.

Bacteriological surveillance of 36 samples was done with the help of Bacteriological water testing kit. Twelve samples each were taken from municipal tap water, submersible and hand pump respectively. A total of 27 (75%) samples were found to be bacteriological non-potable due to the presence of Escherichia coli, Entrobactor. A total of 11(thirty percent) samples show the Excess TDS. Study reveals that majority of the water sources are not safe for drinking purpose.

Code: 8006

State-Of-The-Art Predictive Maintenance Techniques

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ABSTRACT: This paper discusses the limitations of time-based equipment maintenance methods and the advantages of predictive or online maintenance techniques in identifying the onset of equipment failure. The three major predictive maintenance techniques, defined in terms of their source of data, are described as follows: 1) the existing sensor-based technique; 2) the test-sensor-based technique (including wireless sensors); and 3) the test-signal-based technique (including the loop current step response method, the time-domain re ectrometry test, and the inductance– capacitance–resistance test). Examples of detecting blockages in pressure sensing lines using existing sensor-based techniques and of verifying calibration using existing-sensor direct current out- put are given. Three Department of Energy (DOE)-sponsored projects, whose aim is to develop online and wireless hardware and software systems for performing predictive maintenance on critical equipment in nuclear power plants, DOE research reactors, and general industrial applications, are described.

Code: 8007

Water Filter for the Rural House Holds

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ABSTRACT: According to the World Summit of Sustainable Development, the major reason for lack of safe water is either scarcity of water or contamination of water sources. Lack of safe drinking water is due to both lack of investment in water systems and inadequate maintenance of existing systems. According to the UNICEF, lack of access to safe water is having a disastrous impact on children across the world. Reasons for this include shortage of water, poverty, and lack of education about the impact of drinking unpurified water. Nearly, 2.2 million children die annually from water born diseases. The World Health Organization estimates that at any given moment, approximately one half of all peoples in the developing world are suffering from one or more of six primary diseases caused by poor water supply and suboptimal sanitation. In this paper a detailed report is given in the Design and Manufacture a water filter which is suited for the rural households. The main criteria for making this project are its low cost and portable.

Code: 8009

An Analytical Study On Delegacy Of Internet Banking System And Its Process Used In Modern Century.

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ABSTRACT: As the internet becomes more important for commerce, internet websites will take on a more central role in most companies business plans .the success of internet banking is determined not only by banks or government support, but also by customer's acceptance of it. Online banking acceptance has gained special attention in academic studies during the past several years as banks move towards implementing internet banking as part of their overall strategy. The business benefit of the internet banking is to generate additional revenue, improve customer service, extend marketing, and increase cost saving. This paper aims at creation of a secure Internet banking system. This will be accessible to all customers who have a valid User Id and Password. This is an approach to provide an opportunity to the customers to have some important transactions to be done from where they are at present without moving to bank. In this paper we are going to deal the existing facts in the bank i.e.; the transactions which takes place between customer and bank. We provide a real time environment for the existing system in the bank. We deal in the method transaction in the bank can be made faster and easier that is our project is an internet based computerized approach towards banking.

Code: 8010

A Study on the Process and Functions Of Enterprise Customer Relationship Marketing in Today Completion.

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ABSTRACT: Customers are significant assets of any business and an increasing number of organizations are realizing the importance of becoming customer-centric. The data collected from these customers can be analyzed and researched to form and build customer relationships. This is called Customer Relationship Management (CRM). By developing this data-based, customer-focused management strategy the organization retains its consumers and ensures repeat purchases that aim to increase customer satisfaction by cultivating long-term relationships. Technology has changed the way organizations approach CRM as advances in technology have also changed consumer buying behavior and offers new ways for companies to communicate with customers and collect data about them. This study aides in understanding the evolution and building of a CRM foundation. Further, a CRM reference model for the telecom industry and the strategy followed in will be discussed.

Code: 8011

An Application of G8D Methodology as a Problem Solving Tool in a Manufacturing Firm

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ABSTRACT: Complaints are so expensive, both as direct and indirect costs; anyhow, for this cost, companies may extract priceless knowledge, because complaints contain the direct Voice of the Customer (VOC). If complaints are transformed into knowledge about customers, they can provide a valuable amount of capital for enterprises. To explore this capital, companies must design, build, operate and continuously upgrade systems for managing complaints. Complaint feedback can be used to identify root causes of problems that lead to customer dissatisfaction and eliminating root causes of problems, which improves customer satisfaction. The definition of customer satisfaction depends on the feedback and complaints from the customer regarding the particular product. This paper, by using Global Eight Disciplines (G8D) method, which is used to identify, correct and eliminate recurring product problems. Hence it finds an important place in complaint management and customer satisfaction. The methodology is useful in product and process improvement. It establishes a permanent corrective action based on statistical analysis of the problem. It focuses on the origin of the problem by determining Root Causes.

Code: 8012

Paper Battery A Clean Way of Producing Energy through Carbon Nano Tubes (CNT)

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ABSTRACT: Batteries form a significant part of many electronic devices. Typical electrochemical batteries or cells convert chemical energy into electrical energy. Batteries based on the charging ability are classified into primary and secondary cells. Secondary cells are widely used because of their rechargeable nature. Presently, battery takes up a huge amount of space and weight. There is strong recent interest in ultrathin, flexible, safe energy storage devices to meet the various design and power needs of modern gadgets. New research suggests that carbon nanotubes may eventually provide the best hope of implementing flexible batteries which can shrink our gadgets even more. Paper batteries could meet the energy demands of the next generation gadgets. A paper battery is a flexible, ultra-thin energy storage and production device formed by combining carbon nanotubes with a conventional sheet of cellulose-based paper. A paper battery acts as both a high-energy battery and super capacitor, combining two components that are separate in traditional electronics. This combination allows the battery to provide both long-term, steady power production and bursts of energy. Non-toxic, flexible paper batteries have the potential to power the next generation of electronics, medical devices and hybrid vehicles, allowing new designs and medical technologies. The various types of batteries followed by the operation principle, manufacturing and working of paper batteries are discussed in detail.

Code: 8013

Secure and Poise Crime Revelation and Obliteration System (SAPCRON)

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ABSTRACT: Based on the analysis of data processing and Google maps, this paper deals with the design and implement of secure and poise crime revelation and obliteration system. The system is developed on Android phone mobile development platform. The system provides the functions, including complaint upload and its management and GPS location.

Code: 8014

**A Study of Linear and Non-Linear Spatial Filters and Wavelet Filters For
De-Noising Ultrasound Images**

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ABSTRACT: The arrival of ultrasound imaging technology has revolutionized the computer aided diagnosis. In order to get good result of diagnosis, the area of interest in digital medical images must be sharp, clear and free from noise. So before proceeding with image processing techniques like segmentation, object recognition the image de-noising is an important pre-processing task. Noise may be classified as impulsive noise: salt and pepper noise, additive noise: additive white Gaussian noise (AWGN), multiplicative noise: speckle noise. The filter is used to remove noise so that the area of region needed is clearer. The spatial filtering process consists simply moving the filter mask from point to point in an image. The filtering procedure in this category includes direct manipulation of pixels. At each point, the response of the filter at that point is calculated using a predefined relationship. Wavelet domain comes under non-data adaptive transform of transform domain. Wavelets are developed in applied mathematics for the analysis of multiscale image structures. There have been many published algorithms on these filters and each approach has its assumptions, advantages and disadvantages. In this paper the various filters will be discussed and then they will be categorized as linear or non-linear filter in wavelet domain and spatial domain. The future trends in the area of de-noising will also be discussed.

Code: 8015

**Achieving Manufacturing Performance Excellence with the Implementation of TPM: An
Exploratory Study On Indian Industry**

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ABSTRACT: The importance of maintenance in modern manufacturing is becoming ever more important, with the recognition of maintenance function as a profit-generating business element. The unwanted failure of equipments or machines to produce products on time as required may result in losing the competition. In the era of globalization, even the developing countries are shifting their focus to proactive maintenance approaches than traditional maintenance approaches. It has been strongly emphasized in the literature that proactive maintenance

approaches like TPM results in improving manufacturing performances of the organization. In this study, efforts have been made to establish the relationship of implementation of TPM with manufacturing performance of the organizations of India.

Code: 8016

An Application of Fish Bone Diagram for Quality Improvement Measure and to Reduce the Scraps While Manufacturing.

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ABSTRACT: The manufacturing is used as a continuous quality improvement tool, in which planning; implementing, monitoring, evaluating framework for the purpose of quality measures depends on a sustainable basis. Ishikawa diagram is often used in quality management in the manufacturing firm. Ishikawa diagram is also known as cause and effect diagram (or) Fish Bone diagram, it was created with the goal for identifying and grouping the causes, which generate a quality based issues. Fish bone diagram has been used to group in which the causes of other types of problems which an organization confronts with. This made this fish bone diagram to become a very useful instrument in risk identification stage. In this paper, by using cause-and-effect diagram and six-sigma technique is used to demonstrate how to relate potential causes of the problems in the manufacturing firms. In this fish bone diagram is used for the purpose of maintaining the quality and to reduce the scraps.

Code: 8017

Managerial Practices of Quality Costing: A Study in Indian Industry

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ABSTRACT: Quality of a product is an important and critical factor for remaining competitive. As every quality related activity comes with a cost so measuring and reporting Cost of Quality is important. The purpose of measuring CoQ is not only to reduce cost but also to ensure that cost incurred on the quality activities is of right kind (Omar, M.K 2009).The general concept of the quality costs was given by Juran (1951) in “Quality control Handbook” as economics of quality. The concept of standardization of procedures in the industry was given in the form of ISO and QS standards. These standards define quality costs as measures of quality management and quality improvement tool. The tool of cost of quality provides justification for any corrective action in the quality management programme. Quality cost is the cost incurred by any organization to apply quality management system in the areas of design, implementation, operation and maintenance (Dale & Plunkett 1999). The measurement of these costs helps in expressing the quality related activities in terms of money. However, as yet, there have been

many attempts to propose a systematic operational framework of the processes or practices of quality costing. This paper uses the empirical data to classify and categorise the practices of quality costing. The research uses 23 “best practices” proposed by Luther.R & Satarwi.,I (2011) of the quality costing to conduct survey of 60 manufacturing organisations. Exploratory factor analysis is used to get more rational categorization. Factor analysis categorises the best practices of quality costing in six major factors. The factors are found to be conceptually meaningful having no conflicting items. All factors are reliable and found behave statistically sound. The classification can help managers to understand and implement the concept of quality costing in a better way.

Code: 8018

Studies on Municipal Solid Waste Leachate Management

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ABSTRACT: Poor solid waste management has become a major threat in India. India is generating approximately one Lac tones of solid waste every day of which 90% is dumped in the open place. Leachate from solid waste is the significant source of soil, surface water and ground water contamination. Leachate is the liquid that seeps from landfills and its quantity and quality depends mainly on the composition and types of solid waste dump along with many other factors like moisture content, size, density, precipitation, land filling techniques etc. The leachate from the dump yard waste is polluting the environment as Total solids(TS),Total Dissolved Solids(TDS),Biological Oxygen Demand(BOD),Chemical Oxygen Demand(COD),Leachate Pollution Index(LPI),Ph and different metal concentrations in the leachate samples of dumping sites and were compared with standard values. Effect of Leachate on ground water was studied with Depth and Distance.

Code: 8019

Role of Public Relations in the Field Of Education, Resources and Advertising

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ABSTRACT: The monetary investment in the field of education in different countries, including India, has made “Publicity”, a necessary challenge. Multinational tie-ups, MOU’s between National and International Educational Institutes, Faculty Exchange Programmes and collaborations in the name of understanding the International Study Technique, has given “Publicity”, a new direction. In India, a lot of advertisements related to education sector are there in newspapers, magazines, radio and television. Even the community websites, news portals, email services, search engines are full of advertisements of education sector. But the worst thing is that the target audience of these advertisements is least concerned about the ads. The advertisements of newspapers are sold in the name of readership and circulation of newspaper but the reality is that readership and circulation are two different concepts. Even the website media has the same scenario. Every person clicking on the news portal, search engines may not

really be interested in advertisement of education sector, but these sites claim advertisements on the basis of number of clicks. A lot of websites are related to career guidance. These websites are also collecting the education sector advertisement on the same pattern. Television is collecting the ads in the name of prime time, popular shows and special career programmes. It is very important to know about the problems faced by PRO in managing the finances of the organization for advertising so that the money spent on advertising should not be wasted. Earlier, the only meaning of Public Relations was to build the relations of the organization in the eyes of public but now the Public Relations is not only to build the relations, rather it is also to manage the finances of the organization in ad world.

Code: 8020

Management of Airline Hygiene

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ABSTRACT: Commercial aviation has become an integral part of modern life. Millions of passengers travel by air daily all over the world and aircraft could be a vehicle of infection. It is mandatory to make the travel safe, comfortable and imbibe universal hygiene precautions to prevent spread of disease from one point to another on the earth. Long haul flights force aircrew and passengers to consume food and water, use toilets on board. Infections associated with food and water transportation, via flying insects, rodents and by incorrect handling of waste disposal can be a potential health risk for passengers. This paper discusses about In-Flight Catering, Water supplies, Disposal of waste, Pest control, Cleaning and Disinfection methods employed in a civil commercial aircraft.

Code: 8021

Determination of Optimal Location for Dominant Constraint in Multi-Constraint Scenario

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ABSTRACT: Drum-Buffer-Rope (DBR) and Buffer Management (BM) are scheduling and control techniques of Theory of Constraints (TOC). In this paper, an attempt has been made to extend the application of these techniques to multi-constraint scenario. From the analysis of outcomes of simulation studies of a balanced line, it has been concluded that it is better to take the first constraint as the dominant constraint. The output of the production line improves by introducing initial buffer in front of more than one constraint. At the same time manufacturing lead time also increases. So, the number of buffer locations must be decided on the basis of acceptable lead time. Buffer management techniques can be applied only to the buffer placed in front of the first constraint.

Code: 8022

Effect of Occupational Stress in Mental Health of Professionals

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ABSTRACT: India being a developing nation is faced with traditional public health problems like Stress and burnout. However, globalization and rapid industrial growth in the last few years has resulted in emergence of occupational health related issues. There are many agencies like National Institute of Occupational Health, Industrial Toxicology Research Centre, Central Labour Institute, etc. are working on. Still much more is to be done for improving the occupational health research. The measures such as creation of advanced research facilities, human resources development, creation of environmental and occupational health cells and development of database and information system should be taken.

Code: 8024

In Air Synthesis of *Gum Xanthan* Based Organo-Inorganic Hybrid Ion Exchangers with Different Vinyl Monomer Mixtures and Their Swelling and Thermal Studies

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ABSTRACT: In this research paper in air synthesis of pH and temperature sensitive hydrogels of *Gum Xanthan* with different vinyl monomer mixtures like acrylamide-co-crotonic acid (CA), acrylamide-co- 2-hydroxy ethyl methacrylate (HEMA) and acrylamide-co-methylacrylate (MA) keeping acrylamide as principal monomer was reported. Optimization of the concentration of binary vinyl monomer mixtures were carried-out in order to get the hydrogel with maximum swelling capacity. Synthesized hydrogels were characterized by FT-IR, SEM, and TGA/DTA/DTG. Swelling capacity of hydrogels was investigated in deionized water. Moreover, effect of ionic strength of cations on swelling capacity of the hydrogels in different salt solutions was also studied. Also in this paper in air synthesis of gum xanthan and zirconium tungstate iodophosphate based organo-inorganic hybrid ion exchanger was carried out. Synthesized hybrid ion exchanger was characterized by FT-IR, SEM, EDS and TGA/DTA/DTG. Ion exchange capacity and thermal studies of the ion exchanger was investigated using the potassium chloride solution.

Code: 8025

Renewable Energy from Poultry Excrements for Heating Purposes in the Poultry Industry

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ABSTRACT: The breeding temperature is a very important factor in the well being of chicken during the breeding process. Broiler farms reject lots of excrements due to their relatively high number of chickens. Its disposal is becoming difficult because of the pungent smell arising from the high ammonia content in it. There is a high possibility of producing methane from the excrements which could be in turn used to heat up the sheds. Chicken litter is one of the best excrements that can be used to produce methane (Huang and Shih, 2004). The project

investigates the setting up a bio gas digester at the farm for the production of methane which will be used as fuel for heating purposes. This will eventually lead to a reduction in the expenses of the poultry farm or even make the farm self sufficient in terms of energy requirements. A poultry farm located in the eastern region of the country has been considered as a case study to determine if the poultry manure can be converted economically to supply bio gas to the poultry. The study has shown that the amount of bio gas that can be produced as a whole from the poultry waste will be more than sufficient for the heating up purposes for summer and winter. The surplus bio gas can be used instead of coal as fuel to produce electricity which can be used by the poultry itself or even sold to the grid. 151.660 m³ of bio gas can be produced per day which is equivalent to 955 kW while only 137.15 kW and 178.77 kW are needed to heat up the poultry daily in summer and winter respectively. The AD process also results in the production of compost which is less acidic and can eventually be used as organic fertilizer. Some 80,000 kg of compost of monetary value Rs 800,000 (USD 27 000) can be produced each month. Other items of revenue include the carbon credits gain which amounts to Rs 451,372 (USD 15 000) per year as a result of a net reduction in carbon emissions to the atmosphere. The amount of electricity that can be produced from the surplus of bio gas amounts to Rs 3,686,400 (USD 123 000) per year. The investment capital amounts to Rs 65,713,743 (USD 2.2 m) with a payback period of 5 years if the AD process is fully exploited.

Code: 8026

Lung Functions Deterioration among Steel Workers: An Exploratory Study in India

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ABSTRACT:

Objective: Manufacturing industry especially casting and forging (iron and steel) industry comprises a major part of the occupation in India. However, health protection is still ignored. Therefore the present study explores the respiratory symptoms among steel workers and subsequently measured the lung functions parameters using spirometry investigation.

Method: Present study assessed the level of respiratory symptoms through questionnaire survey of 572 workers, out of which 309 workers and another control group of 74 subjects were assessed for the spirometry test. Both the groups were statistically matched for age and BMI. Students't' test and one way ANOVA were used to compare the various subgroups.

Results: The results reveals that workers are exposed to the higher respirable suspended particulate matter (RSPM) levels as prescribed limit of 5 mg/m³ by Indian factory act. The spirometric parameters such as FVC, FEV₁, and FEV₁/FVC ratio, FEF₂₅₋₇₅, PEFR, PIFR and FIVC were significantly lower in exposed group than controls. In the present scenario the iron and steel SME's of the region are very much lagging behind in implementing the occupational health and safety practices.

Conclusions: The majority of the workers were not wearing proper PPEs like; masks due to ergonomically bad design at the same time they were working 60 to 72 hr/week, which leads to very high level of exposure to RSPM. Therefore, the workers were under higher risk of and lungs functions deterioration.

Code: 8027

A Novel Approach for Software Testing Based On Artificial Bee Colony Technique

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ABSTRACT: Software testing process typically consumes at least 50% of the Total cost involved in software development. This percentage might even be higher if the software is safety critical. Automation of the testing process is desirable both to reduce the testing cost and also to improve the quality of software. So, we present a new, non-pheromone-based test suite optimization approach inspired by the behavior of biological bees. Our proposed approach is based on ABC (Artificial Bee Colony Optimization Technique) which is motivated by the intelligent behavior of honey bees. In our proposed system, the sites are the nodes in the Software under Test (SUT), the artificial bees modify the test cases with time and the bee's aim is to discover the places of nodes with higher coverage and finally the one with the highest usage by the given test case. Since ABC system combines local search methods carried out by employed bees with global search methods managed by onlookers and scouts, we attain near global optima. Taking into account the results of our experiments, we conclude that (1) the proposed approach uses less iteration to complete the task; (2) is more scalable, i.e., it requires less computation time to complete the task, and finally (3) our approach is best in achieving near global optimal solution.

Code: 8028

Artificial Intelligence and the Impact of Expert Systems

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ABSTRACT: In Artificial Intelligence, a computer system acts as an Expert System that emulates the decision making ability of Human Experts by supplying the users with the same services and facilities that the Human Expert does. Expert Systems are computer programs which are designed and created in such a way that it facilitates various tasks in the fields of Production and Manufacturing, Accounting, Health Care, Process Control, Financial Services, Human Resources and in so many other areas. Expert Systems have increased the efficiency, quality and competitive leverage of all these organisations employing this technology in different areas. This paper provides an in-depth study of the Expert System Applications, Expert System Structure, highlight the major characteristics of Expert System, Conventional System Vs Expert System, Participants in Expert System Development and Tools for development of Expert System.

Code: 8028

E- Waste Management – Issues and Challenges

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ABSTRACT: E- Waste , also referred to as ELECTRONIC WASTE is rapidly growing segment of municipal waste stream. This is a novel burgeoning problem especially in developing countries which do not have proper measures to manage these wastes. These contain toxic materials such as BARIUM, MERCURY and CADMIUM that vitiate the environment and require to be managed in a prolific manner. E- Wastes are considered as hazardous as they pose a great threat to the human health as well as environment. But many of its materials can be reused, refurbished or recycled so that they become less parlous to the environment. It was in the beginning of mid 1990's, when Switzerland was the first country ever to introduce a national E-waste management system. Since 2003, EMPA, one of the technical control bodies of the system, is passing on the experiences gained and its extensive erudition candidly focusing on the developing countries. Hence, this paper highlights: 1) Hazards of E- waste, 2) Need for its management & 3) Measures taken or that can be implemented in future