



Proceeding of 1st National Conference on Recent Advancements in Civil, Mechanical and Management Studies

Department of Civil, Mechanical and Management Studies

Amrita College of Engineering & Technology, Nagercoil, Kanyakumari, Tamil Nadu, India.

Amrita Institutions, Nagercoil

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Amrita Institution, Nagercoil has a sprawling green campus of more than 100 acres of landscape with well-furnished infrastructure with High-end computing facilities, Wi-Fi enabled campus, and central library individualized department buildings with advanced laboratories, Video Surveillance System, water purifiers for each block, hostels for both boys and girls, extensive playgrounds and a Gymnasium.

Amrita College of Engineering and Technology (Acet)

Amrita College of Engineering and Technology (ACET) is a co-educational, self-financing Engineering College (formerly Sun College of Engineering and Technology, established in the year 1999) run by Mata Amritanandamayi Math (MAM), Kollam from the academic year 2018-19. MAM is an International charitable organization aimed at the spiritual and material upliftment of humankind. MAM was founded in 1981 by the spiritual leader and humanitarian Mata Amritanandamayi Devi, with its headquarters in Paryakadavu, AlappadPanchayat, Kollam district, Kerala.



The College has been approved by the All India Council for Technical Education, New Delhi, and is affiliated to the Anna University, Chennai. The College is located inside Amrita Institutions Campus, Nagercoil, in a sprawling area of a 100-acre lush green campus, which is situated about 5 Kilometers north of Nagercoil, the headquarter of Kanyakumari District. Nagercoil Railway Station is 7 km from the campus. This campus is well connected by rail and road. Thiruvananthapuram, the capital of Kerala, is 75 Kilometers from the campus. The atmosphere is conducive to calm and peaceful academic pursuit. The college is well-connected to the town by public transport buses. The college operates its own transportation system for the convenience of students' from various parts of Kanyakumari and neighboring districts/State. Amrita Institutions is known for its value-based quality education through continuously improving its infrastructure, human resources, and teaching-learning process and we are committed to imparting high quality skill-based education in Engineering & Technology to the youth in order to meet the challenging requirements of the industries.

Department Of Civil Engineering

Civil Engineering is a wide field of engineering concerned with the planning, design, analysis, estimation, construction, and maintenance of structures, or public works, as they are related to the earth, water, or civilization and their processes. Predominantly, Civil Engineering may be regarded as the profession that makes the world a more agreeable place to live in. The Department of Civil Engineering at Amrita College of Engineering and Technology was started way back in 2002 and has been continuing its glorious journey ever since. The department offers an undergraduate programme in Civil Engineering with an annual intake of 60 students. The curriculum, as per the Anna University Regulation covers subjects such as Structural Engineering, Transportation Engineering, Geotechnical Engineering, Surveying, Construction materials, Water Resources and Environmental Engineering. This programme aims to provide quality education in Civil Engineering keeping in pace with the current and futuristic demands in this field.



The faculty team of this department consists of a rich blend of experienced academic and industry professionals. This department is equipped with excellent laboratory facilities. The major laboratories include Strength of Materials Laboratory, Fluid Mechanics Laboratory, Soil Mechanics Laboratory, Concrete and Highway Engineering Laboratory, Environmental Engineering Laboratory and Computer Aided Design and Drafting (CAD) Laboratory. These laboratories endowed with advanced instruments and equipment play a crucial role in imparting hands-on experience and practical skills to the students. Students are encouraged to participate in National and International Level Seminars, Workshops and Conferences organized by Research organizations such as CECRI, SERC, and Institutes of Excellence like NITs and IITs. In order to expose the students to recent technological advances, Guest Lectures are arranged inviting eminent Scientists, Technocrats, Industrialist and Professors. Internships, In-plant training and Industrial Visits are also arranged for the students to gain practical knowledge. This department conducts Survey Camp every year to groom our students with essential knowledge and exposure to factual work, and to encourage leadership and teamwork skills. The department has a dedicated library for the benefit of students' and staff. Green Club actively organizes two events per semester for the students. The department is also an annual member of the Indian Green Building Council (IGBC). The Department takes great pride in delivering technically competent and ethically responsible engineers to society, and it commits to continuing to do so.

Department of Mechanical Engineering

Mechanical Engineering is one of the oldest engineering disciplines. Mechanical Engineers use the principles of energy, materials, and mechanics to design and develop equipment, devices, processes and systems for all types of industries. This domain has got great scope for innovation through designing new products, developing new materials and manufacturing processes to make the product cheaper by increasing its operation life. The college offers a 4-year regular (full-time) B.E programme in Mechanical Engineering. The annual intake of students is 60. During the four-year study period, students are taught and practiced in the areas of manufacturing technology, theory of machines, thermodynamics, fluid mechanics, materials science, thermal engineering and heat transfer, CAD/CAM, production planning, managerial concepts, etc. In addition, students can specialise in areas such as robotics, cryogenics, fuel technology, automotive engineering, biomechanics, vibration, etc. by choosing appropriate elective courses under the Choice Based Credit System (CBCS) followed under Anna University Regulations 2017.



The students are also provided with soft skills and technical skills training every semester to make them industry-ready engineers. Further, students are provided with the opportunity to undergo skill training in mechanical engineering software such as AutoCAD, Solid WORKS, ANSYS, etc. Students interested in pursuing higher studies are supported with GATE coaching on regular basis.

Master of Business Administration

The Department of Management Studies at Amrita College of Engineering & Technology offers a two-year full-time M.B.A program as per the regulations and curriculum of Anna University, Chennai. The department is committed to imparting quality education to students through various professional deeds. This program assists students in developing skills to meet the challenges of a competitive environment through academic and industrial lectures, personality development programs, presentations, case studies, and guest lectures. The department also inculcates confidence in the minds of students and works to develop them as entrepreneurs. It builds up expertise for counseling activities by providing opportunities for industry-institute interaction.



The students are expected to have the necessary managerial skills to fit into any of the above options, for which AMRITA provides opportunities to aspiring managers through group discussions, internships in industries, and doing individual semester-end business projects that are implemented in practice. The faculty team is well trained to help the budding managers with a range of soft-skills like communication, motivation, negotiation, etc. The team members dedicate themselves to constantly upgrading the technical skills needed to produce proficient professionals to cater to the needs of society and meet the global challenges.

Scope of the Conference (NCRAMCM'22)

Aims at providing a forum at the National Level to present and discuss new ideas and challenges in the field of Civil Engineering, Mechanical Engineering and Management Studies. It provides a platform for bringing interaction among the students, researchers, scientists and practitioners and also helps them exchange their ideas and approaches in the Recent Advancements of Civil Engineering, Mechanical Engineering and Management Studies.

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- Ms. S. M. Saranaya, AP/Management Studies.

Message from the Principal

I am glad that the Department of Civil, Mechanical and Management Studies has added one more feather to its cap by organizing a National Conference on Recent Advancements in Civil, Mechanical and Management Studies NCRACMM'22 on 9th July 2022. I am sure that this conference would serve as a forum to encourage and facilitate interaction among members of faculty, practitioners, researchers and post-graduate students alike. At this backdrop "NCRACMM'22" has been planned at the right time and hope it would provide opportunity to share ideas among the professional, faculty and students, who must also work together to develop the country in the sustained manner. I congratulate the faculty members, supporting staff and students for organising the national conference and wish them all success.

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Paper ID: 22CE001

Mechanical Characterization of Mono and Hybrid Fiber Reinforced Engineered Cementitious Composites

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Abstract: Engineered Cementitious Composites (ECC) is a class of high-performance strain-hardening material produced using cement, fly ash, finely graded sand, admixtures and short discrete fibers. The large strain hardening behavior of ECC is possible only because of the addition of discrete fibers. In this work, an attempt is made to understand the compression behavior of mono and hybrid fiber reinforced ECC specimens. The main test variable used is the type of fiber (i.e., natural artificial fibers) and combination of fibers adopted (i.e., mono or hybrid addition). Different artificial fibers used in this work include polypropylene (PP), polyvinyl alcohol (PVA), and steel. Also, natural fibers such as flax, pineapple, hemp, and kenaf are used for the production of ECC. In total, 24 standard cylindrical specimens of size 150mm (diameter) x 300mm (height) were cast and tested for understanding the compression behavior of ECC with mono and hybrid fiber combinations. Test results highlighted that the hybrid combination of low modulus and high modulus fibers (i.e., PVA and PP) enhanced the ductility when compared to the mono fiber reinforced ECC specimens with an ultimate strain value of 1%. Moreover, the addition of flax fiber showed excellent enhancement in compressive strength when compared to the other specimen series. The failure mode of all tested samples was highly ductile in nature with a large strain hardening capacity.

Keywords: ECC, natural fibers, artificial fibers, Hybridization, compression.

Paper ID: 22CE002

A Review on Existing Indian Pavement Maintenance Management Systems

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Abstract: In India, the large network of existing roads, which are built at huge expanses, have started showing signs of distress failure before time due to combined effect of inadequate maintenance and structural inadequacies to meet the requirements of increase in traffic intensity and loading. The gap between the minimum requirements and actual allocation of funds for maintenance over the years has resulted in poor quality of road maintenance. India's many cities like throughout Palestine are facing a monumental challenge in dealing with aging infrastructure. For pavements in particular, it is found that many streets were built 20 or 30 years ago and they are near the end of their economic life. Other streets have been deteriorated because of misuse, overuse and mismanagement. In addition, present and future threats affect the hoped mission of these pavements for rapid, safe and comfort movements of people and goods. Moreover, the current management reveals that the system used is not flexible enough to reflect the changing conditions and poor to assist in making decisions. This study aims to initiate a Pavement Maintenance Management System (PMMS) in which it provides a systematic process of maintaining, upgrading and operating the city pavements and tools to facilitate a more flexible approach that can enable to perform tasks better.

Keywords: Distress Failure, Structural inadequacies, traffic intensity, loading, Mismanagement, comfort movements, road maintenance.

Paper ID: 22CE003

Investigation on the Causes of Failure in Flexible Pavement

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Abstract: Flexible Pavements (bituminous roads) are specifically designed to carry loads of men and material to various destinations and should last for the period for which they have been designed. Failure of flexible pavement structure is defined as break or fracture. The cases of failures of flexible pavements (bituminous roads) have been reported in many developing countries. This failure usually happens when applied load exceeds the maximum allowable value. The applied loading on flexible pavement (bituminous road) is usually much smaller than the strength of material. Therefore one application doesn't fail the pavement, but causes an infinitesimal amount of deterioration. This deterioration gradually increases until it reaches an unacceptable level. Flexible pavement fails due to any one of the following three failures. These are sub-grade failure, sub-base or base course failure and wearing course failure. The causes of failure need to be investigated using appropriate methodology and equipments. To determine the pavement characteristics such as structural adequacy (strength) Benkelman Beam Deflection Test (BBDT) and falling weight deflect meter (FWD) are frequently used. The surface condition of the pavement is mainly assessed in terms of roughness, pavement surface distress in the form of cracking, Raveling, potholes, edge break, patch work, rutting, skid resistance and texture depth. British Pendulum Tester (BPT) is used to assess the Skid resistance. The limiting value for each test is defined in code of practice which is the base to investigate and ascertain the causes of failure.

Keywords: Flexible Pavement, Benkelman Beam Deflection Test (BBDT). British Pendulum Tester (BPT). Roughness, Cracking, Raveling, Potholes.

Paper ID: 22CE009

Effects of Alkaline Activator Solution on Concrete Mixed with Sugarcane Bagase Ash and Ground Granulated Blast Furnace Slag

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Abstract: With an advancement in technology and research, various studies have been carried out on traditional concrete mixes and proposes modifications in order to obtain better quality concrete having both mechanical and durability requirements. In this work, both mechanical properties and durability indices of supplementary cementitious material are considered. Agricultural and Industrial wastes like Sugarcane Bagasse Ash (SCBA) and Ground Granulated Blast Furnace Slag (GGBS) are utilized as supplementary cementitious materials.

Keywords: Ground Granulated Blast Furnace Slag, Sugarcane Bagasse Ash

Paper ID: 22CE010

Experimental Study on the Removal of Micro plastics from Water Samples by Ferro fluid Magnetic Extraction

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Abstract: Magnetic extraction with ferrofluid is an innovative method of microplastic removal in water. It's very inexpensive, simple and sustainable. Ferrofluid is formed by mixing Iron oxide powder (Fe₃O₄ black powder, also known as magnetic powder) with oil. This study starts with the addition of microplastic into synthetic ferrofluid, followed by extraction using a magnet. The removal efficiency of this process is examined in artificial water samples by varying elements of ferrofluid based on four parameters, namely type of oil (Coconut, Castor, Sunflower and Sesame), volume of oil, dosage of iron oxide and type of microplastics (PVC, PET, PP, HDPE and LDPE) to obtain optimum results. From the results, we inferred that the optimum oil volume to magnetite dosage ratio of 1:2.5 using castor oil has successfully removed 92% of microplastics from the water samples. Higher dosage of iron oxide and lower volumes of oil can increase the removal efficiency upto 99%. PET microplastic can be easily removed by this method. Physical and chemical properties of the prepared ferrofluid were also analyzed using scanning electron microscope (SEM) and Fourier transform infrared (FTIR) spectroscopy. Performance evaluation of the prepared ferrofluid on actual wastewater (industrial wastewater) revealed that 61.9% of microplastics were removed after treatment.

Keywords – Ferrofluid, Microplastics, Wastewater, Water Pollution

Paper ID: 22CE012

Pursuit of Copper Slag and Silica Fume in High Strength Concrete

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Abstract: The conventional concrete has lost its usage in modern days as it does not serve the present needs. Hence in order to improve the properties of the concrete in the fresh and the hardened state, high strength concrete (HSC) is used. High strength concrete is a concrete that is produced by partially replacing concrete with improvised minerals. High strength concrete has been defined as the concrete that possess high workability, high strength, high dimensional stability, high durability, low permeability and resistance to chemical attack. This project deals with the effects of supplementary cementitious materials in concrete by incorporating silica fume and copper slag with a water binder ratio of 0.5. Here the conventional concrete is obtained by replacing fine aggregate with 20%, 30%, 40%, 50%, 60% copper slag and ordinary Portland cement is replaced with 20% of silica fume. From the experimental results, it is observed that high strength concrete exhibits improved compressive strength, split tensile strength and flexural strength when compared with the conventional mix.

Keywords: High Strength Concrete (HSC), Copper Slag, Silica Fume.

Paper ID: 22CE013

Partial Replacement of Coarse Aggregate with Replaced Brick Aggragatein Concrete

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Abstract: For the past couple of decades, a huge quantity of construction wastes is generated. Managing these wastes has become a critical task for the environmentalist. Due to the increasing construction waste and demolition waste, an effective method to utilize these wastes by recycled aggregates can be implemented. In the present study a partially replaced the coarse aggregate with recycled brick aggregates such as red brick, Autoclaved Aerated Concrete (AAC) bricks, Fly ash brick and cement brick. These bricks are added to the concrete as partial replacement of natural coarse aggregate with recycled brick aggregate by 20%, 30%, and 40%. Initial test such as specific gravity, water absorption, crushing value were carried out for the recycled brick aggregate. Further, the hardened concrete test such as compressive strength, split tensile strength, flexural strength was determined. Moreover, Scanning Electron Microscope (SEM) is used to analysis the pores, bonding and minor cracks present in the concrete specimens. EDX test is conducted to study the element present in the specimen.

Keywords: Brick Aggregate, Fly ash brick, Autoclaved Aerated Concrete.

Paper ID: 22CE014

Utilization of Bore well Sand in the Progress of making bricks

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Abstract: In building construction the brick is the major ingredient used for the construction. In developing countries like India the large scale of bricks used for the construction. To reduce the economic value of the brick the replacement or utilization of materials are made. In this project we utilize bore well Sand for making bricks, to make environment friendly and economically cheap. We have taken initial test of the materials to find the material is used for the utilization and need to find the texture of soil that can bind with other material with the help of soil report. Bore well sand is going to be the replacement of fly ash and need to check the replaced bore well brick specimen can pass all the testing and can attain its strength to withstand all possible loading conditions and at the same time it should be economically cheap in society.

Keywords: Bore well Sand, bricks

Paper ID: 22CE015

Efficacy of Recron Fibre in Improving the Geotechnical Properties of Soil Found in Amritagiri Site

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Abstract: Geotechnical engineers face various problems while designing the foundations on highly compressible clayey soil due to poor bearing capacity and excessive settlement. Most of the soil available are such that they have good compressive strength adequate shear strength but weak in tension. Soil stabilization is very necessary by the addition of additives in suitable dosages because it improves the engineering properties of soil to sustain load carrying capacity in terms of quality and quantity of performance. Many researchers have concentrated their studies on soil improvement techniques by developing many novel materials. In this study the soil is collected from the Amritagiri site at Nagercoil, initial test where carried out and effect of recron -3s fiber in improving the geotechnical properties of soil where analyzed. From the test result it is evident that Inclusion of 1.5% recron-3s fibre to the soil shown the remarkable improvement in geotechnical properties of soil.

Keywords: Recron Fibre, Geotechnical Properties, Amritagiri Site

Paper ID: 22CE016

Seismic Response of Diagrid Structure

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Abstract: In 21st century the availability of land has given rise to the construction of tall structures. The improvement in the methods of analysis & design of structure, advancement in the material for construction has increased the development of tall structures especially skyscraper. Loads acting on any structure are mainly of two types vertical loads and the lateral loads. In conventional building the vertical load gets transferred from slabs to the beams, from the beams to the columns and from columns to the foundation which distributes the load safely to the ground. The lateral loads on a structure are resisted by the bracings, shear walls etc. One more type of the load transfer system that developed in early 19th century is being adopted today in many tall structures is the diagrid system. It is a system consisting of framework of diagonal structural elements in which all the external columns are eliminated and only inclined members are used on facade of the building. In diagrid systems all the gravity loads and lateral loads are carried by the diagonal triangulated configuration without any exterior column. Diagrid system gained its popularity because of its architectural and structural efficiency. In present study, seismic behavior of different diagrid structure is assessed using FEM software. Three steel buildings of 3, 5 & 7 storey are considered for this study. The objective of the study is to compare response of diagrid structure with respect to varying number of storeys. To elaborate the comparison, diagrid system is further divided into three types as per diagrid angles i.e. 33.7° , 38.6° & 41.6° & response is evaluated.

Keywords: Skyscraper, Diagrid Structure

Paper ID: 22CE017

Reduction in Effluent Concentration of Rubber Industry Waste Water using Banana Leaf Powder

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Abstract: Waste water is a major pollutant which degrades environment. The waste water from the rubber industry when disposed directly into the land may cause several ill effects. Thus, to prevent this low cost filtration setup is chosen and can be implemented in the small scale rubber industries. The banana leaf acts as good adsorbents and reduces the effluent concentration in waste water. The banana leaf filter is setup and experiments on Ph, chlorides, sulphates, COD, BOD, and total solids are done. These tests are done for the raw waste water sample and the sample passing through the banana leaf powder for contact period of 2 hours and 24 hours. From the experimental results, there is a high reduction in the total solid contents. Finally the results are compared with standard values, from this it is evident that banana leaf filter reduces the effluent concentration in rubber industry waste water.

Keywords: Rubber Industry, Banana Leaf Powder

Paper ID: 22ME001

Low Cost, Solar Power Driven Smart Irrigation System for the Agricultural Field

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Abstract: To improve the productivity in the field of agriculture sector more innovative technology are applied not only for product and also to cultivate the land for better yielding. The Primary focus for the Irrigation system is to the watering the agricultural land with the minimal water resources and the smart irrigation system mainly provide the necessary water level for the land or plant and also it reduces the human effort. In this paper, Arduino technology is implemented in the automation in the farm irrigation and soil moisture sensor is used for maintaining the soil moisture level with L293D module. The suitable usage of the smart irrigation system is very much needed in the situation like, shortage of water due to lack of rain in the land reserved, spontaneous use of water as a result plenty quantity of water goes vain and also in the dry areas where the irrigation becomes difficult. This smart irrigation system senses the moisture level in the soil and automatically switches on the water pump when there is a need. The pump is energized using solar power and the power is available at free of cost. This irrigation system design aims in the execution of the system with minimal water level and also low power monitor device which is useful in all sessional conditions.

Keywords: Irrigation system, Moisture level, Solar power, Arduino.

Paper ID: 22ME002

Taguchi Method with Grey Relational Analysis and TOPSIS Optimization of EDM Parameters for Ceramic Composite

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Abstract: Titanium Nitride and Silicon Nitride ceramic composites are an emerging sophisticated material with excellent hardness, strength, toughness, and low density qualities. Due to their characteristics, these materials are difficult to work with in a normal machining process since they result in significant tool wear. Materials can be manufactured using non-traditional machining techniques like laser cutting and water jet; however these techniques have their limitations. Electric discharge machining demonstrates greater capabilities for highly accurate cutting of complicated forms. The goal of the current effort is to maximize material removal rate while minimizing electrode wear rate. The trials were planned using a Taguchi L9 orthogonal array. The process parameter was optimized using Grey relational analysis and TOPSIS (Technique for Order Preference by Similarity to Ideal Solution). The confirmation tests verified the outcomes and in order to obtain a higher rate of material removal and a lower rate on the electrode, the machining parameters for electric discharge machines were improved. The outcome demonstrates that the suggested technique is successful in maximizing the machining parameter for electric discharge machining.

Keywords: Titanium, EDM, Metal Matrix Composite, TOPSIS.

Paper ID: 22ME003

A Review Study on Characteristics of HCCI Engine Using diesel and biodiesel

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ABSTRACT: The main objective of this paper is to review the performance and emission characteristics of Homogeneous Charge Compression Ignition (HCCI) engines using Biofuels in duel fuel mode. HCCI engines are gaining the increased attention of the researchers in the recent years. Unlike SI and CI engines HCCI engines do not use spark plugs or injectors to assist the combustion. HCCI engines use a different combustion technique where the mixtures reach chemical activation energy and combustion auto-ignites in multiple spots. One of the major benefits of an HCCI engine is to operate with a wide range of fuels including gasoline, diesel, biofuels, and hydrogen makes the HCCI technology emerged as the next internal combustion engine candidate suitable for commercialization. Biodiesel takes its place as the most promising alternative fuel because of its renewability and sustainability. In addition to good volumetric efficiency, HCCI engines produce cleaner combustion and lower emissions levels of NO_x and Particulate Matters (PM). Its improved combustion technology will benefit the environment and automotive sectors.

Keywords: SI, CI, gasoline, HCCI, Biodiesel.

Paper ID: 22ME004

Modified Design and Development of Cost-Effective 3D Printed Hovercraft

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Abstract: Toy manufacturing is heavily dependent on various technologies of molding (injection molding, blow molding, rotary molding etc.) of plastic parts in India. The capital cost of machinery, material cost, manpower cost, recurring mould cost among other issues are making India under competitive as compared to its international competitors in the Indian market. 3D printing is an alternative viable next-generation technology with many advantages over molding technologies such as no recurring mould cost, better market resilience, lower capital cost per machine etc. The profitability of any business requires full assessment of a manufacturing plant and it varies over time with the movement of demand, supply and production cost. Considering Hovercraft toy and modify the design with addition of structure in place of bolts that reduces overall cost of manufacturing toy using additive manufacturing. The modified design of hovercraft is carried out in On shape Part Design. The designed hovercraft is manufactured using RAISE3D N2 – V2 Hot end, Using Fused Deposition Modeling.

Keywords: Additive Manufacturing, 3D Printing, Cost-effective Method.

Paper ID: 22ME005

On-board weighing system using load cells to measure the loaded Trucks

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Abstract: This paper aims to integrate a weighing scale into trucks so as to eliminate the use of separate weigh bridges to measure load on trucks by the use of strain gauge load cells. A strain gauge is a transducer that converts mechanical load changes into changes in resistance which can then be measured as voltage variations using a bridge circuit. Mounting a strain gauge load cell to the chassis of the truck so as to detect and measure load variation thereby computing additional load added to the truck. So analog signals obtained from multiple load cells mounted on various spots is converted into digital electrical signal to get an equivalent change in load. Here the strain gauges are mounted on four corners of the truck's chassis. When a load acts on the strain gauges, it produces a resistance proportional to the change in load. This load is then converted into voltage variation using a bridge circuit. This voltage obtained from the bridge circuit is in analog format and needs conversion into digital form for further calculation. For this purpose an analog to digital converter is used. The obtained values from four individual strain gauges are then summed up and calibrated. This output summing is done using a junction box. This junction box is capable of taking inputs from multiple sources and combining it into a single equivalent output. This output value can be used to measure the load added to the truck. Arduino is used as data acquisition where GPS module is responsible for location and Wi-Fi module is used to send the load and location of vehicle to internet server (or) web server. The web server has the complete history of the truck and measurable data of the truck. The objective is to measure the load of the truck and prevent from overloading and to find out the loss of goods during transportation. Wireless monitoring of truck location and load status from an unknown location is possible by using this method.

Keywords: Strain gauge load cells, Trucks, Arduino, weighing system.

Paper ID: 22ME006

Acoustic Emission assisted mechanical testing and corrosion studies on reinforced Aluminum based composite material

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ABSTRACT: In this paper, aluminum based metal matrix composite is developed through stir casting process. The reinforcement material for investigation at different weight proportions for analyzing the porosity of the composite samples, theoretical density and actual density were calculated and mechanical properties and corrosion were evaluated in accordance with standard procedures. Addition of reinforcement in the composite has reduced the porosity by eventual dispersion of reinforcement in the matrix material. A tensile test is conducted using an acoustic emission system to determine the composite's strength. Average weight percentage of reinforcement (10% and 15%) has produced good strength. The scanning electron image shows the mechanical failure of the composite from ductile to brittle transition. Subsequently, the material performance under the cyclic loading reveals better with 10% and 15% in reinforcement. Under sea water, the increase in reinforcement found decrease in corrosion resistance. Presence of reinforcement resists corrosion and sulphide found susceptible towards corrosion. Hence, the composite with 10% and 15% reinforcement in aluminum is recommended for engineering application facing mechanical loading and corrosive environment.

Keywords: Aluminum, AE system, mechanical properties, corrosion, SEM.

Paper ID: 22ME007

Analysis of a Thermal Power Plant Cooling Tower

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Abstract: Regular Draft Hyperbolic Cooling towers are the describing land signs of power station. These structures are most productive measures for cooling of warm power plants by minimizing the need of water and staying away from warm contamination of water bodies. The Present Paper manages the investigation of static and element examination of hyperbolic cooling towers. Two existing cooling towers are looked over Bellary warm Power station (BTPS) as contextual analysis. The Material properties of the cooling towers are youthful modulus 31GPa, Poisson Ratio 0.15 and thickness of RCC 25 kN/m³. Static investigation has been done utilizing 8 node SHELL 93 component and 4 nodes SHELL 63. The behavioral changes because of anxiety convergence of cooling tower is broke down utilizing ANSYS 10 (SHELL 93) component with shifting its tallness and thickness. The goal is to get the ideal stature, with low stretch focus. Seismic and wind examination has been completed for two existing cooling tower utilizing (FEA), SHELL 93 component. The Seismic burdens are completed for 0.5g, 0.6g, 0.7g, ground increasing speed as per IS 1893(part I)-2002 and IS 1893(part IV)-2005 by modular and Response Spectrum strategy. Wind loads on these cooling towers have been figured as weight by utilizing outline wind weight co productive given in IS 11504-1985 code and outline wind weight at distinctive levels according to IS 875 (Part 3)- 1987 code. Eigen clasp investigation has been done for both existing cooling towers. Greatest Deflection, Maximum Principal Stress and strain, Maximum Von Mises stress, strains are acquired. The variety in max primary anxiety v/s thickness, greatest avoidance v/s thickness is plotted graphically.

Keywords: Thermal power plant, Cooling tower, ANSYS

Paper ID: 22ME008

Modal Analysis of Car Chassis Using ANSYS

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Abstract: Vehicle crash is a highly nonlinear transient dynamics phenomenon. The purpose of a crash analysis is to see how the car will behave in a frontal or sideways collision. Crashworthiness simulation is one typical area of application of Finite-Element Analysis (FEA). This is an area in which non-linear Finite Element simulations are particularly effective. In this project impacts and collisions involving a car frame model are simulated and analyzed using ANSYS software. The chassis frame forms the backbone of a heavy vehicle; its principle function is to safely carry the maximum load for all the designed operating conditions. The frame should support the chassis components and the body. It must also withstand static and dynamic loads without undue deflection or distortion. The given model is tested under frontal collision conditions and the resultant deformation and stresses are determined with respect to a time of 80 Mille sec for ramp loading using ANSYS software. The crash analysis simulation and results can be used to assess both the crashworthiness of current frame and to investigate ways to improve the design. This type of simulation is an integral part of the design cycle and can reduce the need for costly destructive testing program. In automobile design, crash and structural analysis are the two most important engineering processes in developing a high-quality vehicle. Computer simulation technologies have greatly enhanced the safety, reliability, and comfort, environmental and manufacturing efficiency of today's automobiles. This significant achievement was realized with the advanced software and powerful computers that have been available in the last twenty years.

Keywords: Car Chassis, ANSYS, Structural analysis

Paper ID: 22ME009

Design and Analysis of a Shock Absorber

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Abstract: A suspension system or shock absorber is a mechanical device designed to smooth out or damp shock impulse, and dissipate kinetic energy. The shock absorbers duty is to absorb or dissipate energy. In a vehicle, it reduces the effect of traveling over rough ground, leading to improved ride quality, and increase in comfort due to substantially reduced amplitude of disturbances. When a vehicle is traveling on a level road and the wheels strike a bump, the spring is compressed quickly. The compressed spring will attempt to return to its normal loaded length and, in so doing, will rebound past its normal height, causing the body to be lifted. The weight of the vehicle will then push the spring down below its normal loaded height. This, in turn, causes the spring to rebound again. This bouncing process is repeated over and over, a little less each time, until the up-and-down movement finally stops. The design of spring in suspension system is very important. In this project a shock absorber is designed and a 3D model is created using Pro/Engineer. The model is also changed by changing the thickness of the spring. Structural analysis and modal analysis are done on the shock absorber by varying material for spring, Spring Steel and Beryllium Copper. Structural analysis is done to validate the strength and modal analysis is done to determine the displacements for different frequencies for number of modes. Comparison is done for two materials to verify best material for spring in Shock absorber. Modeling is done in Pro/ENGINEER and analysis is done in ANSYS. Pro/ENGINEER is the standard in 3D product design, featuring industry-leading productivity tools that promote best practices in design. ANSYS is general-purpose finite element analysis (FEA) software package. Finite Element Analysis is a numerical method of deconstructing a complex system into very small pieces (of user-designated size) called elements.

Keywords: Shock Absorber, ANSYS, Structural analysis.

Paper ID: 22ME010

Vibration Analysis of a Rotary Compressor

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Abstract: In the rotary compressor, the rolling piston and the contacted rotor-journal bearing system are basically moving components. Because of the inertia forces and the periodically changing gas force acting on the rolling piston and the rotor, the journal bearing suffers very large loads. It always leads to serious vibration of the rotor-journal bearing system, and the wear of the rotor. Thus, the vibration must be reduced. In this paper, research works of vibration characteristics of the rotor-journal bearing system were carried out to provide evident of optimizing its structure to reduce the vibration. The average values of the natural frequencies and the vibration mode of the rotor-journal bearing system was obtained based on three-dimensional numerical simulations with finite element method using APDL routine. The power spectral density map of the exciting forces on rolling piston was obtained by the Fourier transformation. It could be used to judge whether resonance vibration would happen during working process of the compressor. The analysis results showed that the lateral vibration mode and the torsion vibration mode were the main vibration modes of the rotor-journal bearing system, and the first four orders of the exciting frequencies played a major role on the vibration of the system.

Keywords: Rotary Compressor, APDL, Vibration analysis, Natural frequency.

Paper ID: 22ME011

Pedal operating water purifier system

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Abstract: The aim of the project is to design and fabrication of pedal operated water purification system. This project is operated by pedal power and therefore it can be used in areas where electricity is irregular or insufficient. This project consists of a pump in which its shaft is connected to the pedal shaft. This is an eco-friendly pump, which does not pollute the world. It does not pollute the environment. Finally, the main reason for fabrication of this project is to run a purifier pump without spending any money. The CAD model used in project is CREO. Desalination of brackish water or sea water can reduce very specific chemical contaminants. Analysis gives the pH Value is around 7.13 for filtered water.

Keywords: Water purifier system, Pump, CAD, CREO.

Paper ID: 22ME012

Design and Fabrication of Single Motor Operated Multi-Purpose Machine

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Abstract: The aim of our project is to design and fabricate a multipurpose device. With this device a number of operations can be performed. They are as follows: Drilling, Grinding and cutting. By means of this machine various operations can be performed using same power. So, this multipurpose device is used for various operations with a less amount of investment. The single motor multi-purpose machine contains three operations in a single machine. The three operations are drilling, grinding and cutting. The purpose of the machine is to reduce the manufacturing time and cost reduction. The same machine is used for doing all these three operations, instead of using separate machines such as drilling machine, grinding machine and hacksaw cutting machine. The machine operates through motor drive with bevel gear mechanism, which paves the ways to carry out all these three operations exactly at the same time.

Keywords: Multi-purpose machine, Drilling, Grinding, Cutting, Bevel gear mechanism.

Paper ID: 22ME013

Experimental investigations of foam filled Aluminum honeycomb sandwich panel

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Abstract: Increasing demand in lightweight structures inspired a strong trend towards development of sandwich panels. The concept of sandwich construction is thin, stiff and strong facing sheet is bonded to a thick, lightweight core. Cellular solids such as honeycombs are widely used in engineering applications mainly due to their superior mechanical behavior and lightweight high strength characteristic. Interfacial bonding is essential to glass-fiber and aluminum-honeycomb sandwich composites for their structural performance. The feasibility and effectiveness of nano clay interfacial toughening at the interface between the glass-fiber face sheets and foam filled aluminum-honeycomb core were examined. In this present study, the mechanical behaviors of sandwich panels are experimentally investigated. Four different combinations of FRP composites face sheet (0, 2, 4, 6 W% of nano clay) have been prepared by hand lay-up manufacturing techniques and they have been investigated. Further, sandwich panels are prepared to make relative comparison with sandwich panels without nano particles and sandwich effects. The utilization of nano clay as fillers in the polymer composites has attracted considerable attention due to the improved mechanical, thermal, flame retardant and gas barrier properties of the resulting composites. Because of the extremely high surface to volume ratios and the nanometer size dispersion of nanoclays in polymers, they exhibit improved properties when compared to the pure polymers.

Keywords: Aluminum-honeycomb, Honeycomb Sandwich Panel, FRP composites, Mechanical behavior.

Paper ID: 22ME014

Computer Aided Design of side actions for injection molding of complex parts

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Abstract: The complex parts of injection molding include undercuts, patches on the part boundaries. Undercut difficulties are reduced with the help of side actions in the molds. Computer aided design tools will automatically design two-piece molds for parts, but not for parts with undercuts, etc. So far, in available CAD designing of side actions are not possible without any manual designing. Algorithm are implemented to reduce the manual input. Initially the mold is prepared using CAD software and converted into .stl type. Algorithms are programmed into Integrated Development Environment (IDE) software. Then the .stl type design is imported to IDE software. This will process the re-design and prepare a design of mold with reduced molding cost and time. Then these mold design is processed through CAM software.

Keywords: Injection Molding, Computer Aided Design, Algorithm, Integrated Development Environment (IDE) software.

Paper ID: 22ME015

Design and fabrication of coolant system for Multiple Lathe Machines

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Abstract: Lathe machines are frequently used to perform numerous operations on mechanical components in all mechanical industries and workshops. Turning, Drilling and Cutting are the most frequent processes carrying on the Mechanical components. A significant quantity of heat is generated due to the continual contact of tool and workpiece. When these machines are cooled properly, the tool life gets increased and also enhances the Machining Quality of the workpiece. The Main objective of our project work is to supply coolant to multiple lathe Machines using a common Coolant tank which is fixed in a highly elevated level. This Coolant system for multiple lathe machines was determined to be suitable for mechanical workshops and industries where multiple lathes are continuously Machining various mechanical components.

Keywords: Coolant system, Multiple Lathe Machines.

Paper ID: 22ME016

Analogy of jute fibre with mud crab shell and mussels shell powder filler reinforced epoxy resin-based composites

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Abstract: Jute fibers are totally biodegradable and recyclable Materials, i.e., environmentally friendly materials. The current annual worldwide production of jute fiber is about 3.2 million tons and used for various applications. Various research is being carried out to find a suitable replacement for the non-bio degradable plastic reinforced composites, which has a negative impact on the environment. A Similar attempt is made to present an overview of recent research efforts addressing the properties of isophthalic polyester based Jute fabric. The mercerization process is done using 8% of sodium in water to form the sodium hydroxide (NaOH). The property of the Fabric is further promoted by adding mud crab shell powder and mussels shell powder during the hand moulding process. The Composite material is developed with the help of epoxy resin with 2% of accelerator and hardener used along with it. Experiments are carried out as per ASTM standards to find the mechanical properties namely, Tensile strength and modulus, flexural strength and modulus, and Impact strength. In addition to mechanical properties HDT (Heat Deflection Test) of the composites is also studied. With help of the research and study, it can be found whether the epoxy resin-based Jute Fabric mat can be used as an alternate for plastic components (non bio Degradable) in various applications such as automobile and structural Applications.

Keywords: Jute fibre, Mud crab shell, Mussels shell powder filler, Epoxy resin.

Paper ID: 22ME017

Design and Fabrication of Automated Decoction (Kashaya) Making Machine

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Abstract: Ayurvedic medicines are being popular day by day. Most of the ayurvedic medicines are based on plant extracts. Kashaya refers to water decoction or water extract of an herb or group of herbs. Dry herbs are taken as per the specific traditional Ayurveda Formula. Water is added and boiled over mild fire till it reduces to the desired quantity. In traditional way of making ayurvedic decoction, wood is used as fuel for heating. This traditional method of making ayurvedic decoction is a difficult process. It consumes more time and needs constant observation. In this project automated portable decoction making machine is proposed which can be used in hospitals and work places. Here, Arduino Uno micro controller is used which acts as heart of the machine. Based on the input given by the user to the microcontroller, it gives command to the relays for actuating the heater and solenoid valve. This machine prepares the ayurvedic decoction at specified time and water level as required by the user. Thus this automated portable decoction making machine prepares the ayurvedic decoction without continuous human observation and it takes lesser time when compared to the traditional method of making decoction.

Keywords: Arduino Uno, Automated process, decoction.

Paper ID: 22ME018

Energy Generation Using Flywheel in Electric Vehicles

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Abstract: Energy storage systems (ESSs) play a very important role in recent years. Flywheel is one of the oldest energy storage devices and it has several advantages. Magnetic flywheel storage system is upgraded version of FESS. It improves efficiency of power generation. Frictionless power generation is eco- friendly as well as has longer life because of no wear and tear during production. The principle of power generation of the system is based on Faraday's law of induced emf.

Keywords: Energy storage systems, Flywheel, Magnetic flywheel storage system.

Paper ID: 22ME019

Design and Thermal analysis of IC Engine Piston

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Abstract: The piston is one of the most important parts of an internal combustion (IC) engine because it is responsible for converting heat energy from the fuel combustion into mechanical work and vice versa. It is the component that bears the pressure and temperature of the fuel combustion inside the cylinder. Piston failure is frequent due to different thermal and mechanical stresses. As a result, studying the thermal behavior of piston is crucial in designing the efficient engines. This project deals with the design and analysis of an IC engine piston using five different materials that are currently being researched in the industry. Pulsar 200 cubic centimeter (cc) motorcycle piston is taken as reference for 2-Dimensional design (2D). The engine's basic information was gathered from a pulsar 200cc motorcycle engine. Solid works software is used to model the piston in this project. Then the 3-Dimensional design (3D) is imported into the ANSYS 15 software, and then the thermal analysis is done. The results are displayed, and a comparison is done to choose the best design. Finally, based on the temperature analysis, total heat flux, and directional heat flux data, the Titanium alloy (Ti1100) is chosen from among the five materials.

Keywords: Solid works, Ansys 15, piston, Internal Combustion Engine, thermal analysis

Paper ID: 22ME020

Design and fabrication of wire extruder for 3D filament

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Abstract: 3D printing is a form of additive manufacturing technology where a three dimensional object is created by laying down successive layers of material. It is a mechanized method whereby 3D objects are quickly made on a reasonably sized machine connected to a computer containing blueprints of the object. As 3D printing is growing fast and giving a boost to product development, the factories doing 3D printing need to continuously meet the printing requirements and maintain an adequate amount of inventory of the filament. As the manufactures have to buy these filaments from various vendors, the cost of 3D printing increases. To overcome the problem faced by the manufacturers, small workshop owners, the need of 3D filament making machine arises. This project focuses on designing and fabricating a portable fused deposition 3D printer filament making machine to recycle the used prototype models and wastes into usable filament of size 1 mm.

Keywords: ABS, 3D printing, Extrusion, Single Screw Extruder.

Paper ID: 22ME021

Manufacturing Time a Reduction in CNC Lathe and VMC Machining to Increase the production by Changing Parameters

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Abstract: In the manufacturing industry, parameter like depth of cut, spindle speed, feed rate, cutting speed, plunge rate, and retract rate are very essential. It is one of the reasons behind in the increased output in many industries. Manufacturing is the process of transforming raw materials into finished products that can be used for a variety of purposes. The objective of this project is to increase the production rate and decrease the manufacturing time by changing parameters like depth of cut, spindle speed, feed rate, cutting speed, plunge rate, and retract rate. On the mild steel block (tool and die part) and mild steel cylindrical rod, the process of changing parameters for vertical milling centre and CNC turning centre(lathe) has been successfully carried out through Mitsubishi and Fanuc controllers. Parameters such as depth of cut, spindle speed, feed rate, plunge rate, and retract rate are used in vertical milling centres, while parameters such as spindle speed, cutting speed, depth of cut, feed rate are used in turning machining centres were investigated effectively. The outcome of the project obtained that the manufacturing time has been reduced on the CNC turning centre, vertical milling centre and it referred that there is no highly change in given quality specification of the product.

Keywords: CNC Lathe, VMC Machining, Manufacturing.

Paper ID: 22ME022

Fabrication of prototype Air Engine

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Abstract: Nowadays, the cost of fuel has increased day by day. So the running cost of fuel-operated vehicles has also increased. It is very difficult for ordinary people. So we think about alternate sources of energy. The Compressed- air engine as a pneumatic actuator that converts compressed air energy into mechanical energy. The Air Driven Engine is an eco-friendly engine which operates with compressed air. This Engine uses the expansion of compressed air to drive the pistons of the engine. An Air Driven Engine is a pneumatic actuator that creates useful work by expanding compressed air. There is no mixing of fuel with air as there is no combustion. An Air Driven Engine makes use of Compressed Air Technology for its operation The Compressed Air Technology is quite simple. If we compress normal air into a cylinder the air would hold some energy within it. This energy can be utilized for useful purposes. When this compressed air expands, the energy is released to do work. So this energy in compressed air can also be utilized to displace a piston. This kind of system is called pneumatic propulsion. And DC compressor can also be used in this system. The primary objective of this work is to design and fabricate compressed air engine to cope up the shortage of most commonly used fuel engines and go for compressed air as an alternate fuel, after doing certain analysis and perform mathematical calculations.

Keywords: Air Engine, Pneumatic actuator, DC compressor, pneumatic propulsion.

Paper ID: 22ME023

Design and Fabrication of Jig and Fixtures for Increasing Production

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Abstract: Nowadays almost all industries are atomised by incorporating Computer Numeric Control (CNC) machines with flexible manufacturing system (FMS). The objective of this project is to design and fabricate the fixture for a drilling process in CNC machine. This fixture will hold the jobs rigidly and thereby increasing the production and reduces the production time. The fixture is fabricated in such a way that it can accommodate 16 jobs at a time and perform the drilling operations. The initiative helps the company to increase their production and to increase the profit of the company. The number of work pieces drilled before the initiative is 60 pieces/hour. After the initiative the number of work piece drilled is doubled as per the rate of 120 pieces/hour.

Keywords: Jig and Fixtures, CNC, FMS.

Paper ID: 22ME024

Design and performance analysis of solar refrigeration system using Zinc-Antimonide material under the principles of peltier effect

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Abstract: The refrigeration process means removing heat from a specific surrounded space to make its temperature lower than the atmospheric temperature. The aim is to provide cooling effect by using thermoelectric effects rather than using vapour compression cycle or the vapour absorption cycle. The objective of this project is to provide a device that can do the cooling effect without polluting the atmosphere and to reduce the production of the Carbon dioxide (CO₂) and Sulphur dioxide (SO₂) because it affects our environment. Solar energy can be converted into electric energy by means of solar panel. This energy can be stored in a rechargeable battery. The electric energy can be then converted into any desired energy. The thermoelectric effect is the direct conversion of temperature differences to electric voltage and vice versa via a thermocouple. When a voltage is passed through a thermocouple, one end of the thermocouple is heated and another end gets cooled. The heated air from the one end of the Peltier element is removed using exhaust fan. The cool air from the other end of the Peltier element is passed to the blower fan. So as time increases, the cooling effect will be increased.

Keywords: Solar Refrigeration System, Peltier Effect, Zinc-Antimonide, vapour compression cycle.

Paper ID: 22ME025

Design and fabrication of power generation using gravitational force

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Abstract: The need for electrical energy is increasing rapidly, thus the ability for power generation must be enhanced. Hence, gravitational force can be adapted as an alternative energy source. The objective of this project is to generate electricity from gravitational free fall. Initially, the weight is placed at a height of 2m and hanged by rope or chain. The dead weight or payload of 5 kg is made to move downward or pulled by gravity with the help of pulley and gears. The generated potential energy converted in to kinetic energy by the gear arrangement. It then produces acceleration via gears and generates power of 12 V. The electricity produced can be served as a backup power source.

Keywords: Power Generation, Gravitational force, Potential energy, kinetic energy, electrical energy.

Paper ID: 22ME026

Selection of competent material for steering knuckle by using Finite Element Analysis method

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Abstract: Lighter vehicles require less fuel to move because they have less inertia to overcome. Losing weight is the easiest way to improve fuel economy. Even a 10% weight reduction in an automobile will result in 6-8% boost in mileage. Steering knuckle component provides movement in the desired directions with the help of steering system. It is one of the essential vehicle components that connects to the vehicle chassis through the steering, suspension and brake, therefore it requires high precision, quality and durability. Aluminium metal matrix is the suitable materials for replacing other typical materials as aluminium metal matrix has good load carrying capacity and light weight. In this research work, SOLIDWORKS software is used for modelling the steering knuckle component and the modelled component has been analysed by using static structural analysis in ANSYS Work bench. Aluminium 7075-T6 (Al7075-T6) and Aluminium Silicon Carbide (Al-SiC) materials have been selected as the competent materials by considering total deformation, direction of deformation, von-mises stress and maximum principal stress. By using Aluminium Silicon Carbide (Al-SiC) composite and Aluminium 7075-T6 (Al7075-T6) alloy weight reduction is around 64% when compared with White cast iron. Almost 3% of the weight is reduced in Aluminium 7075-T6 (Al7075-T6) alloy when compared with Aluminium Silicon Carbide (Al-SiC) composite.

Keywords: Steering Knuckle, Finite Element Analysis, Aluminium metal matrix, Al7075-T6 alloy.

Paper ID: 22BA01

Recent Advancements in Human Resource Outsourcing

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Abstract: Human Resource Management (HRM) is a collective term for all the formal systems created to help in managing employees and other stakeholders within a company. They mainly perform three major functions such as recruitment and selection, payroll, employee engagement, and retention which helps in increasing productivity through its employees. Despite the changes in the external environment or post-COVID, the major functions and styles of the HRM don't change it remains the same. There was a huge transformation in the HR department from Task-Oriented Nature to Strategy focused or People-focused from the 1980s. Task-oriented places emphasis on the task at hand, whereas the people-oriented prioritizes the individuals doing it. Task-oriented leaders are more likely to impose a method on their team, whereas people-oriented leaders will work with them to decide how things should be done. Human Resources are identified as the most valuable resources or assets compared to other resources. As it's considered to be a valuable resource, Employees don't find sufficient time to be people-focused. Due to such situations management has come out with various solutions like HR Outsourcing which acts as a great tool to cater to all HR Needs. This helps to reduce time and resources spent on transactions and administration and in order to be focused on strategic activities also moreover, it helps to focus on their business globally without any hassles.

Keywords: Human Resource Management, Human Resource Outsourcing

Paper ID: 22BA02

A Study on Consumer Behavior towards Online Shopping in Chennai

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Abstract: The modern world is founded on information and technology, and the internet has shown to be the most effective medium for exchanging ideas and learning about the world quickly. People in Chennai are using online shopping because of the simple access to internet facilities and their hectic schedules. It is convenient for them in many ways. The process of purchasing goods and services over the internet is known as online shopping. Online retailers can sell their items to consumers who make purchases via the internet with the help of the World Wide Web. Consumers can purchase a wide range of products from the comfort of their own homes. Around the years, online shopping has risen to enormous proportions all over the world. This study is being conducted to determine the motivations for online shopping, to assess the risks associated with online buying, and to better understand consumer attitudes toward online shopping and satisfaction. A self-created questionnaire was used to conduct the survey, which drew 120 responses from Chennai residents. The respondents are chosen using a random sampling technique and range in age from students to professionals to business people to housewives. The information gathered is examined and explained using simple percentages, tables, graphs, and charts. According to the conclusions of this study, people in Chennai are shifting to online shopping due to easy access to internet capabilities and because it is more convenient than traditional shopping. Phishing scams, on the other hand, are caused by the inability to touch and feel the merchandise. The most unfavorable issues for online customers are deceptions, and online shoppers' satisfaction levels are not up to par. According to the survey, businesses can get a competitive advantage by devising innovative tactics to overcome disliking aspects, allowing them to deliver complete satisfaction to clients and keep online buyers.

Keywords: Consumer, Internet, Online Shopping, Comfort

Paper ID: 22BA03

A Study of Consumer Behaviour on Fast Food in Chennai

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Abstract: Fast food industry is one of the world's fastest growing sectors in food industry. However, over a period of time, with a growth in the number of nuclear families, economic growth and increasing per capita income as well as globalization, fast food culture gained prominence in India. The study reveals that 64% of the respondents visit fast food outlets once in a week and majority of the respondents spent more than 15% of their monthly income on fast food and the most favorite cuisine preferred by the respondents is western junk foods. They also expressed that the discount offered at the fast food outlets are considered as the effective promotional activity.

Keywords: Consumer behavior, Fast Food

Paper ID: 22BA04

A Study on Risk Return Analysis of Selected Stocks of Textile and it Industry

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Abstract: The stock markets in India are contributing an enormous extent in progress of the economy. The IT sector and textile sector engages major shares among other sectors in Indian stock trading scenario. The study examines the correlation between risk and return of the nifty-50 with IT and textile stocks of 6 companies. India's one of the superior stock exchanges i.e., National Stock Exchange (NSE). In this study different nifty-50 and IT and textile stock indices have been used to examine the risk return trade off of nifty-50 with that of Infosys, Oracle financial services software, RS software, Ginni filaments, Trident LTD, KPR mills LTD. The study is based on secondary data. The data for the analysis has taken from the yahoo finance website over a period of 4 years from January 1, 2018 to December 31, 2021. In this analysis for testing the presence or absence of risk return trade off in the Indian equity markets and for testing hypothesis, different methods like correlation, regression, and descriptive statistics have been employed.

Keywords: NSE, Nifty-50, Textile, IT

Paper ID: 22BA05

Mutual Fund Growth and Development

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Abstract: A study on Mutual Fund was undertaken to find out their future. Investments goals vary from person to person. Indian Mutual Funds industry offers a plethora of schemes and serves broadly all types of investors. The Mutual Fund industry is significantly expanding in the Indian sub-continent region. In recent years, exponential growth is observed. Mutual funds are considered to be one of the important segments of the Indian capital and financial markets. It generates quite a significant amount of revenue and helps to mobilize the savings of the people. This leads to capital formation and growth in the industry as well. This paper throws light upon the entire mutual fund industry across the country. It also states the several phases of growth and expansion of the mutual fund industry across decades. Having mentioned the same, it also makes a state-wise comparison of the major cities in which the funds are mobilized and capital formation is acquired. This penetration of the mutual fund industry among the citizens of India is attractive; it boosts economic growth and development at the same time.

Keywords: Capital formation, mutual funds, financial markets, capital markets, growth, development.

Paper ID: 22BA06

A Study on Stress Management during COVID-19 Period

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Abstract: The COVID-19 pandemic, also known as the corona virus pandemic, is a global pandemic of corona virus disease 2019 (COVID-19) caused by severe acute respiratory syndrome corona virus 2 (SARS-CoV-2). The novel virus was first identified from an outbreak in Wuhan, China, in December 2019. The World Health Organization (WHO) declared a Public Health Emergency of International Concern on 30 January 2020 and a pandemic on 11 March 2020. As of 24 June 2022, the pandemic had caused more than 542 million cases and 6.32 million confirmed deaths, making it one of the deadliest in history. It is often referred to in news media as the "coronavirus pandemic" despite the existence of other human coronaviruses that have caused epidemics and outbreaks. COVID-19 spread is emotionally challenging for many people, changing day-to-day life in unprecedented ways. All sections of society – including employers and employees – should play a role to protect themselves and each other and help prevent further spread of the disease. WHO is providing advice and updated information on COVID-19, and on how employers can protect their employees, what measures they should take in the workplace and other related factors. The sudden emergence of the COVID-19 pandemic is dealing a severe blow to state economies, businesses and workers. The COVID-19 outbreak is rapidly changing the workplace. As the race to containment continues, millions of people are moving their work spaces to their homes as states ask employers to offer flexible work arrangements, such as teleworking, and develop plans to ensure continuity in government. Stressful life situations such as pandemics can have significant negative implications for the mental health and psychological functioning of an individual. Decreased overall physical and mental well-being after WFH were associated with physical exercise, food intake, communication with coworkers, children at home, distractions while working, adjusted work hours, workstation set-up and satisfaction with workspace indoor environmental factors.

Keywords: Covid-19 pandemic, Stress for work from home to the employees and employers, Stress management.

Paper ID: 22BA07

A Study on Employee Absenteesim with Special Refernce to Annam Education, Thoothukudi

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Abstract: The purpose of this paper is to review the literature on employee absenteeism as a form of withdrawal behavior apart from turnover. Studies examining the psychometric properties of absence measures are reviewed, along with the relationship between absenteeism and personal, attitudinal, and organizational variables. Studies exploring the reasons for absenteeism are examined according to the unit of analysis studied in the research. Programmatic efforts to reduce employee absenteeism are also reviewed. Throughout the paper emphasis is placed on the indices used by investigators to measure absenteeism, and the problems that have arisen in the literature through the use of multiple indicators of absenteeism. The review concludes with suggestions for research that are of both theoretical and practical concern.

Keywords: Absenteeism, Performance, Productivity& Employees' attitudes

Paper ID: 22BA08

A Study on Impact of Reward System on Employee Performance Special Refernce to Angel Automobiles Thoothukudi

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Abstract: The main purpose of the research was to analyse the impact of rewards on the employee performance. Every organization has rewards and reward system to attract and retain their high performing employees. The key intention of rewards is to motivate and increasing their work engagement which increase the overall performance of employees. This research explores how different rewards increase the overall performance in employees working in different work environment under a common roof. The specific objective of the study was to assess the rewards that are being used by angel automobiles and to provide recommendations to the management so they could further improve upon their existing rewarding structure. The current research has adopted both qualitative and quantitative approach of analysing the result of the study. The quantitative data was collected through primary survey questionnaire that were distributed among the employees of angel automobiles. Microsoft excel software is used to analyse the collected data in which percentage analysis and chi-square analysis were performed.

Keywords: Reward System, Intrinsic Rewards, Extrinsic Rewards, Employee Performance.

Paper ID: 22BA09

Migrant Labour: Covid Era Hitches

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Abstract: Covid-19 hitches, which harm the lifestyle of the productive group, especially migrant workers who are important to the growth of the economy, have a huge influence on people all over the world. The majority of migrant workers come from rural areas with low socioeconomic status. Today's migrant workers not only struggle with unemployment but also a number of other issues. Millions of migrant workers had to contend with the loss of money, food shortages, and worry about their future due to Covid difficulties, which forced companies and workplaces to go down across the nation. Thousands of them can then be seen starting to walk home because there are no vehicles available because of the lockdown. Low-income households are particularly troubled by these effects because they are less equipped to deal with the recession-related earnings losses, as they have no other options and no access to social security. Most of these workers make barely enough to cover their basic needs, and they lack any other protections for their income in the event that they lose their positions. This study intends to examine the issues encountered by migratory workers during the COVID-19 pandemic. The Kanyakumari district was chosen as the study area by the researchers in an effort to explore the notion and offer answers to the issue.

Keywords: Migrant Labourer, Covid-19, Job security, income, pathetic condition.

Paper ID: 22BA10

Cryptocurrency's Influences on Indian Digital Economy

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Abstract: One of the fields that benefit from the technologies and online connections is the financial and business sector. A growing number of online users has activated virtual world concepts and created a new business phenomena. Thus, new types of trading, transactions and currencies have been arising. One of the remarkable financial forms that have been emerged in the past few years is Cryptocurrency. Cryptocurrency is an innovative concept of federalized virtual currency. It has pivoted out to be a new avenue of investment instrument in India analogous to gold. Indeed though the government has not articulated anynonsupervisory body or legislation regarding crypto currency trading and sale in India, the government restricts the steal and sell of crypto currencies like bitcoin, litcoin, etc. Cryptocurrencies raise colourful limitations on their actually in Indian markets. Due to the rapid development of information and communication technologies, many activities in our daily life have been merged online and they become more flexible and more effective. A huge growth in number of online users has activated virtual word concepts and created a new business phenomenon which is cryptocurrency to facilitate the financial activities such as buying, selling and trading. Cryptocurrency represent valuable and intangible objects which are used electronically in different applications and networks such as online social networks, online social games, virtual worlds and peer to peer networks. The use of virtual currency has become widespread in many different systems in recent years. This study focuses on understanding what crypto currency is all about and its impact on the Indian digital economy.

Keywords: Crypto currency, Block chain technology, impact on Indian Economy.

Paper ID: 22BA11

Impact of Inflation Rate on the Performance of Stock Exchange Sensitivity Index of the Bombay Stock Exchange (BSE)

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Abstract: Stock Exchanges play a crucial role in the development of the economy. In the last few years, the capital market of India has developed in terms of strong growth momentum, driven by a vigorous economic demand, consumption, and savings rate. The stock market indices are influenced by a number of macroeconomic variables such as interest rate, inflation, fiscal policy, economic growth rate, GDP, etc. An attempt has been made through this study to analyze how the important macroeconomic variable – Inflation influenced the stock exchange sensitivity index of the Bombay Stock Exchange (BSE) in India for the past 10 years from 2011 to 2021. The direction and degree of relationship between inflation rate and stock returns have also been studied. It found that there is a remarkable degree of correlation between inflation and return.

Keywords: Inflation, Sensex, Macro Economic Variables, Market Return

Paper ID: 22BA12

Branding and Lead Generation via Digital Marketing for B2B Service Company

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Abstract: B2B lead generation is a process that identifies potential customers for your product or service and attracts them to buy. It is an important function of B2B marketing teams and sales teams. Digital Marketing plays an important role in producing leads and is one of the most effective ways to do so. Tools like LinkedIn, email, social media, etc., are used to generate leads through Digital Marketing. And there are many subs tools.

Keywords: Lead generation, Digital Marketing, B2B

Paper ID: 22BA13

A Study on Impact of Training and Development on Employees in Kurian Abraham Private Limited

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Abstract: Modern business organizations are dealing with a rapidly changing environment, which requires radical changes for the organizations to adopt those changes for the purpose of survival. To overcome the scenario, the organizations should have the ability to achieve excellence with a competitive advantage. For this, the organizations can use resources such as technology, equipment, human resources, and capital. Out of available resources, the human resource is considered the best resource, because all other resources can be effectively utilized by this. Thus, it becomes vital and a strategy to meet competitive advantage in modern business. The performance of the organization mostly depends on the performance of the human resources. During the past three decades, researchers made a tremendous effort to establish the link between training and development with organizational performance. The study made an attempt to get an overall understanding of training and development in Kurian Abraham Private Limited (KAPL) using a sample of 100 employees. The study indulged in understanding the nature and importance of training and development, detailed step-by-step procedures of identifying the needs, planning and conducting the training programs, and collecting requirements, suggestions, and views of employees on the training programs. The data was collected through a structured questionnaire with a Likert five-point scale and it was analysed with the help of statistical tools such as the Percentage method, Chi-square test, and Correlation. The findings indicated that training policy is well designed in the company and training & development activities help the organization to maintain its employee retention rate and they are positively correlated. The association between the achievement of learning objectives and effectiveness of training on employer's productivity is found using Chi-Square analysis and found that they are associated. The study concluded that the employees are highly motivated by the training program and through that they are developing themselves which in turn will help to increase the productivity of the organization.

Keywords: Kurian Abraham Private Limited, Human resource, Productivity, organization