

Faculty	Dr. M. V. Nagarhalli
Title of Research Paper	EFFECT OF INJECTION PRESSURE ON EMISSION AND PERFORMANCE CHARACTERISTICS OF KARANJA BIODIESEL AND ITS BLENDS IN C.I. ENGINE
Journal	INTERNATIONAL JOURNAL OF APPLIED ENGINEERING RESEARCH, DINDIGUL, Volume 1, No 4, 2011
ISSN No	ISSN 09764259
Abstract	Experimental work has been carried out to analyze the emission and performance characteristics of a single cylinder 3.67 kW, compression ignition engine fuelled with mineral diesel and diesel Karanja biodiesel blends at fuel injection pressures of 190 bar, 200 bar and 210 bar. The brake thermal efficiency, brake specific energy consumption (BSEC) are calculated and the emissions measured were carbon monoxide (CO), carbon dioxide (CO ₂), hydrocarbon (HC), and oxides of nitrogen (NO _x). The results of experimental investigation with biodiesel blends are compared with that of baseline diesel. The results indicate that the CO emissions were almost constant, HC emissions decreased by upto 25 % for B40, NO _x emissions decreased by 30-39 % for biodiesel blends. The efficiency decreased slightly for blends in comparison with diesel. The BSEC was slightly more for B20 and B40. The results of the investigation indicate that biodiesel can be used as an alternative to diesel in a compression ignition engine without any engine modifications. The performance of the engine improved at a biodiesel blend of 40% and an injection pressure of 200. The use of locally available renewable fuel helps in saving vital foreign exchange and self reliant.

Faculty	Dr. M. V. Nagarhalli
Title of Research Paper	PERFORMANCE OF DIESEL ENGINE USING BLENDS OF ESTERS OF JATROPHA AND KARANJA- A NOVEL APPROACH
Journal	International Journal of Advanced Engineering Technology, Vol.III/ Issue III/July-Sept, 2012/51-54
ISSN No	E-ISSN 0976-3945
Abstract	Research till now has mainly been concentrated on using blends of diesel-biodiesel in diesel engines. In the present investigation an attempt has been made to use blends of two biodiesel oils to run a single cylinder, 4 stroke, constant speed, D.I. diesel engine. Blends of transesterified jatropa and karanja have been used in different proportions (10% to 90%) and neat biodiesel were tested for performance, brake thermal efficiency, brake specific energy consumption (bsec) and their emissions CO, HC, NO _x . at an injection pressure of 200 bar and 210 bar. The results are compared with that of neat diesel. The results indicate that HC and CO emissions were lower at 200 bar and K20-J80 blend. NO _x emissions were higher at blends than diesel. The brake thermal efficiency was higher than diesel at both the injection pressures used. Hence, blends of jatropa and karanja can be used in existing diesel engines without any engine modifications.

Faculty	Dr. M. V. Nagarhalli.
Title of Research Paper	PREDICTION OF PERFORMANCE & EMISSION OF CASTOR OIL BIODIESEL IN DIESEL ENGINE
Journal	International Journal of Mechanical and Production Engineering, Volume-1, Issue-1, July-2013
ISSN No	ISSN: 2320-2092
Abstract	The resources of petroleum as fuel are dwindling day by day and increasing demand of fuels, as well as increasingly stringent emission regulations, pose a challenge to science and technology. This aspect has drawn the attention to conserve and stretch the oil reserves by conducting research on alternative fuels. Therefore, in this paper the prospects and opportunities of using methyl esters of castor oil as fuel in an engine are studied. In the present work tests were conducted on a four stroke, single cylinder, D.I. diesel engine with Diesel and various blends of castor oil biodiesel. The results of performance and emission tests are compared for various blends of castor oil biodiesel with that of neat diesel. The results indicate that at blend B60, Brake Specific Energy Consumption (BSEC) is lowest with highest exhaust gas temperature and lowest smoke opacity as compared to other blends

Faculty	Dr. M. V. Nagarhalli
Title of Research Paper	PERFORMANCE EVALUATION OF INTERMITTENT SOLID ADSORPTION REFRIGERATION SYSTEM RUNNING ON SOLAR ENERGY
Journal	International Journal of Innovative Research in Science, Engineering and Technology, Volume 3, Special Issue 4, April 2014
ISSN No	ISSN : 2319 – 8753
Abstract	International environment protection initiatives have led to the intensification of research efforts on development of ozone and global warming safe refrigeration technology. In recent years, increasing attention is being given to the use of waste heat and solar energy in energizing refrigerating systems. Solar powered refrigeration and air conditioning have been very attractive during the last twenty years, since the availability of sunshine and the need for refrigeration both reach maximum levels in the same season. This paper is dedicated to the development of the thermally driven single effect, valveless adsorption refrigerator which uses activated carbon and methanol as adsorption pair driven by solar energy which is extremely portable. Where activated carbon and methanol is best suitable pair for the adsorption refrigeration process. Also refrigerant (methanol) has zero ozone depletion potential and very low global warming potential. Thus the refrigerator is eco-friendly. As there are no valves involved cost will be reduced. There are no moving parts involved in the system. Our goal is to develop an affordable, robust refrigerator that uses passive solar energy to maintain temperatures of water from 5°C to 10°C. COP of system is between 0.12 to 0.15. The refrigeration thus produced could be utilized for cooling water required for different domestic and industrial purposes. The mechanism, if extended, can produce further low temperatures also. Previous work on solar refrigerator has demonstrated the feasibility of the system. Work till date on such type of refrigerator shows various different pairs can be used as adsorbate-adsorbent for carrying out cooling effect but still so much scope is there for research. Because COP of such systems and temperature achieved by them is far away from the need of current era of refrigeration.

Faculty	Dr. M. V. Nagarhalli
Title of Research Paper	Experimental Investigation of Four Stroke SI Engine using Oxyrich Air Energizer for Improving its Performance
Journal	International Journal for Science and Advance Research In Technology - <i>Volume 2 Issue 2 -FEB.2016</i>
ISSN No	ISSN: 2395-1052
Abstract	<p>Over the past century, need and development of micro-power devices have necessitated the need for studies to look further into mediums that can enhance combustion processes of fuels by optimizing system parameters. This is essential so as to utilize the high specific energy content of liquid hydrocarbon fuels. As we know that main source of pollution is oxides nitrogen (NOx) so method or apparatus is develop which is used as pre-processing unit for the automobile mainly. This method and apparatus for reducing the emissions and improving the performance of an internal combustion engine. An input air stream is separated into an oxygen-enriched air stream and a nitrogen-enriched air stream. The nitrogen-enriched air stream is received by a holding chamber. The oxygen-enriched air and a combustible fuel are provided to a combustion chamber of the internal combustion engine and a combustion process is initiated. After a predefined time delay, a volume of nitrogen-enriched air is provided from the holding chamber to the combustion chamber to be used during the rest of the combustion process or we can also used separated nitrogen for other useful application such as air-conditioning or cooling purpose.</p>

Faculty	Dr. M. V. Nagarhalli
Title of Research Paper	Power Generation by Suspension System Used in Automobile
Journal	International Engineering Research Journal (IERJ) Special Issue 2 Page 1461-1464, 2015,
ISSN No	ISSN 2395-1621
Abstract	<p>The total work of project is about creating a system which can convert the locomotive motion of suspension system into rotary motion & from that generating electricity that is battery charging. Although suspension's piston will be never in continuous locomotive motion but there is always small change in position of piston. The system will have flywheel to store energy. The conversion of locomotive motion of piston can be converted by the rack & pinion, ratchet & pawl mechanism. Rack & pinion will convert the locomotive motion into rotary motion; ratchet & pawl mechanism will use only forward motion for charging of battery.</p>

Faculty	Dr. M. V. Nagarhalli
Title of Research Paper	PREDICTION OF PERFORMANCE AND EMISSION OF CASTOR OIL BIODIESEL IN DIESEL ENGINE
Journal	International Journal of Mechanical and Production Engineering, Volume-1, Issue-1, July-2013
ISSN No	ISSN: 2320-2092
Abstract	The resources of petroleum as fuel are dwindling day by day and increasing demand of fuels, as well as increasingly stringent emission regulations, pose a challenge to science and technology. This aspect has drawn the attention to conserve and stretch the oil reserves by conducting research on alternative fuels. Therefore, in this paper the prospects and opportunities of using methyl esters of castor oil as fuel in an engine are studied. In the present work tests were conducted on a four stroke, single cylinder, D.I. diesel engine with Diesel and various blends of castor oil biodiesel. The results of performance and emission tests are compared for various blends of castor oil biodiesel with that of neat diesel. The results indicate that at blend B60, Brake Specific Energy Consumption (BSEC) is lowest with highest exhaust gas temperature and lowest smoke opacity as compared to other blends

Faculty	Dr. M. V. Nagarhalli
Title of Research Paper	Emission And Performance Characteristics Of Karanja Biodiesel And Its Blends In A C.I. Engine And It's Economics
Journal	ARPJ Journal of Engineering and Applied Sciences, VOL. 5, NO. 2, FEBRUARY 2010 ISSN 1819-6608
ISSN No	ISSN 1819-6608
Abstract	In the present investigation experimental work has been carried out to analyze the emission and performance characteristics of a single cylinder 3.67 kW, compression ignition engine fuelled with mineral diesel and diesel-biodiesel blends at an injection pressure of 200 bar. The performance parameters evaluated were break thermal efficiency, break specific energy consumption (BSEC) and the emissions measured were carbon monoxide (CO), carbon dioxide (CO ₂), hydrocarbon (HC), and oxides of nitrogen (NO _x). The results of experimental investigation with biodiesel blends were compared with that of baseline diesel. The results indicate that the CO emissions were slightly higher, HC emissions decreased from 12.8 % for B20 and 2.85 % for B40, NO _x emissions decreased up to 39 % for B20 and 28 % for B40. The efficiency decreased slightly for blends in comparison with diesel. The BSEC was slightly more for B20 and B40. From the investigation it can be concluded that biodiesel can be used as an alternative to diesel in a compression ignition engine without any engine modifications.

Faculty	Yogesh L. Maske
Title of Research Paper	DESIGN AND ANALYSIS OF ROTARY AUTOMATED CAR PARKING SYSTEM
Journal	IJSRD - International Journal for Scientific Research & Development
ISSN No	Vol. 4, Issue 04, 2016 ISSN: 2321-0613
Abstract	<p>In metropolitan cities, parking of vehicles has become a major concern in crowded areas and to cope up with this problem, we need a good parking system. Different types of vehicle parking systems are implemented worldwide namely Multi-level Automated Car Parking, Automated Car Parking System, Volkswagen Car Parking, etc. The present project work is aimed to develop a working model of a Rotary Automated Car Parking System for parking 8 cars. This system has been implemented to reduce the excess use of land space which is already very scarce in metro cities. The chain and sprocket mechanism is used for driving the parking platform and a motor shall be implemented for powering the system and indexing the platform. Analysis of pallet, hanging rod, joint and frame is done in ANSYS (Static Structural).Automation of the model is done using RFID sensor which includes Unique Id Cards, Receiver and Arduino Microcontroller. Planners, developers, architects are finding out solutions to tackle this problem of parking, so we took this opportunity to bring the technology of automated parking to where it is needed.</p> <p>Keywords: Rotary automated car parking, chain and sprocket mechanism, ansys static structural, automation, RFID sensor, Arduino.</p>

Faculty	Shubhangi shelke (Shubhangi Shankar Jarag)
Title of Research Paper	Heat Transfer Performance of a Vertical Thermosyphons Heat Pipe Heat Exchanger using Hybrid Nanofluid for Automobile Engine Exhaust Heat
Journal	International Journal of Current Engineering and Technology
ISSN No	E-ISSN 2277 – 4106, P-ISSN 2347 – 5161
Abstract	<p>Waste heat is produced in a process by way of chemical reaction or fuel combustion, and then released into the atmosphere even it is possible that this waste heat can be recycled and reused for other economic and useful purpose. The heat recovering strategy depends on the temperature of the waste heat gases and the economics involved. Direct and indirect benefits are involved in heat recovery. Waste heat recovery has a directly has effect on the performance of the process and indirect benefits involve reduction in pollution, equipment size and auxiliary air consumption. This study concentrates on the recovery of waste exhaust heat from internal combustion engine with higher temperature. The objective of this work is to study thermosyphons heat pipe technology for the heating of fresh air by using recovered heat from engine exhaust and to develop a thermosyphons heat pipe heat exchanger experimental setup. The performance of heat pipe heat exchanger charged with (50% BN + 50% ZnO) /H₂O nanofluid increases with increase in source temperature. Maximum effectiveness and heat gain at condenser section observed for proposed heat pipe heat exchanger is up to 0.18 and 1331.33W respectively.</p>

Faculty	Ligade Rahul Rajendra
1.Title of Research Paper	Thermo-Mechanical Analysis of Aluminium and Mild Steel during Friction Drilling
Journal	STM Journals, Trends in Mechanical Engineering & Technology, Aug 2016
ISSN No	e-ISSN: 2231-1793, p-ISSN: 2347-9965
Abstract	Friction drilling is a non-machining method of making holes in metal, in which the material is melted by adding high pressure and friction energy. Friction drilling uses very heat resistant cemented carbide, pointed but not sharp object. This device is pressed against a target material with both high rotational speed and high pressure. The process reshapes all the material so that no material is lost. The sleeve that is about three times longer than the original diameter of the target material makes it possible to make very strong bolt joints in thin material. The objective of this paper is to study the thermo mechanical analysis of aluminium and mild steel during friction drilling, experimentally. The tool speed used is in the range of 2000 to 5000 rpm and feed rate in the range of 50 to 110 mm/min. Two different test materials, aluminium and MS-0.18C are used for investigation. Coupled field analysis is used to do analysis in Ansys. This study aims to provide deeper understanding of the friction drilling process.

2.Title of Research Paper	Experimental Investigation of PTFE Composite Material with Different Filler Materials
Journal	STM Journals, Trends in Mechanical Engineering & Technology, Aug 2016
ISSN No	e-ISSN: 2231-1793, p-ISSN: 2347-9965
Abstract	Experimental investigation of PTFE (Polytetrafluoroethylene) composites with different filler materials such as glass fiber, molybdenum disulphide, graphite carried is out in this study. This study exhibits tribological properties such as wear and coefficient of friction of PTEF composite material. Pin on disc tribometer is used to conduct the wear on PTFE polymer composite. Test is conducted on 10 mm diameter PTFE pin against EN31 counter face. Wear and friction experiment were carried out on the pin-on-disc apparatus at ambient condition. Variables like; load 1 to 3 kg, sliding velocity 0.5 to 2 m/s, glass filled percentage, graphite percentage and molybdenum percentages were studied. In this study, a comparative analysis of three different combinations of materials studied for wear are; PTFE + 25% glass filled, PTFE + 25% glass filled +5% graphite, PTFE+25% glass filled +5% molybdenumdisulphide.

Faculty	Mr. SWAMI MAHESH SANGMESHWAR
1. Title of Research Paper	Analytical Analysis and Numerical Prediction of Seven DOF Human Vibratory Model for the Various Cars Driving Posture
Journal	International Journal of Engineering and Innovative Technology(IJEIT), 2014
ISSN No	2277-3754
Abstract	<p>Vibration has become an important consideration in engineering. Development of industries and vehicles make the subject even more important. In today's world every family has a car therefore it become essential to study the phenomenon of vehicle vibration and its effects on humans. In vehicle system occupational drivers might expose themselves to vibration for the long time. This may cause illness of the spine such as chronic lumbago or low back pain. Therefore, it is necessary to evaluate the influence of vibration to spinal column and to make appropriate guidelines or counter plans. In ISO 2631 assessment of vibration effects to human in the view of adverse health effect was already presented. However, it is necessary to carry out further research to understand the effect of vibration to the human body to examine their validity and to prepare for the future revision. This paper shows the detail measurement of human response to vibration, and the modeling of the seated human body for the assessment of vibration risk. The vibration transmissibility's from the seat surface to the spinal column and to the head is measured during the exposure to the vertical excitation. A simplified model having 7 DOF is constructed so that transmissibility's of the model fit to those of experiment. In the present paper, vehicle vibration analyses are carried out. For this analysis it was proposed to perform the vibration tests for different vehicle models. Vibration data for each model at three different conditions which are road, speed and tyre infiltration conditions were taken by using fast Fourier transform (FFT). The spectrum obtained is used for further analysis for determining acceleration levels at different frequencies. By referring ISO 2631[6], Human comfort chart, the comment is made regarding the acceleration level. Mostly lower frequencies of vibration of vibration ranging from 0 to 80Hz are affecting in Human body. This paper focus on literature review of Human body vibration proposes a heuristic or a new approach to analyses impact of vibration on driver seating posture.</p>

Faculty	Mr. Mahesh Shahaji Pol
1. Title of Research Paper	Review on Navigation of Mobile Robot in Cluttered Environment
Journal	International Journal of Artificial Intelligence and Computational Research (IJAI CR), January 2014
ISSN No	0975-3974
Abstract	<p>Now a day's mobile robots are widely used in many applications. Navigation of mobile robot is primary issue in robotic research field. When we deals with static and dynamic environment there are many navigation techniques are used for mobile robot. The main aim of navigation of mobile robot is to give shortest and safest path with avoiding obstacles with the help of suitable navigation technique according to application. In this paper, according to complexity of environment we use navigation technique such as "Fuzzy logic, Neural network, Genetic algorithm (GA), Ant Colony Optimization (ACO), Particle Swarm Optimization (PSO), Artificial Intelligence System (AIS), Cuckoo Search, Deliberative and Pseudo reactive technique. In this paper, we also deal with different sensor for navigation of mobile robot such as ultrasonic sensor, Infrared sensor, digital compass sensor etc.</p>

Faculty	Mr. Mahesh Shahaji Pol
2. Title of Research Paper	Using an AI Technique Navigation and Path Planning for Mobile Robot on Webots Platform
Journal	IOSR Journal of Mechanical and Civil Engineering (IOSR-JMCE), January 2014
ISSN No	2278-1684
Abstract	<p>The mechanics of robotics science consistently dealing with one most successful creation of this discipline i.e. mobile robotics. To control navigation strategies for mobile robot is the very common area of research in robotics. Aim of this investigation is to observe the range of requirements as well as recognize with major areas within the scale and to discuss proper systems for achieving these requirements. In recent, mobile robotics is one of the most favorable areas for research, in which how to control the motion inside environment; study well. To create collision free navigational path for mobile robot on working platform without physical interaction between human; recurrent neural network (RNN) techniques is implemented with sensors, which mobilize the environment data at the stage of path formation. AI (RNN) technique covers a continuum degree of technologies based on application. In this article, various prehistoric methodologies and several progressive space sciences with engineering techniques, as well as development and control of navigation system well defined. For theoretical and experimental analysis Webots simulation software is used. Finally, RNN simulation result shows the effectiveness of the control algorithms.</p>

Faculty	Prof. P. N. Deshmukh
1.Title of Research Paper	Evaluation of Crashworthiness for SAE Materials under Ductile to Brittle Transition Temperature (DBTT)”
Journal	International Journal of Engineering and Technology (IJET), November 2014
ISSN No	0975-4024
Abstract	<p>The concept of crashworthy coaches came into existence after a crash. This demands, avoid vehicle deformation of other/central parts. For this, the behaviour of plastic deformation of the material is necessary to be known. So, these results are required to study the crashworthy behaviour of the structure. In this research,Comparative study has been taken on the automotive materials of SAE 1026, SAE 4140, SAE 5120 and SAE8620. This paper presents the results of fracture toughness, impact energy and stress required for crack propagation from Charpy v-notch impact test and tensile test. The mechanical behaviour of SAE 1026, SAE 4140, SAE 5120 and SAE 8620 are important to describe response during actual loading condition properties used in the crash analysis of the component. The Charpy impact test was conducted at temperature ranging from room temperature 24°C, 0°C, -20°C, -40°C, -60°C. Specimens oriented in T-L direction are tested. The materials SAE 1026, SAE 4140, SAE 5120 and SAE8620 shown that the ductile to brittle transition temperature, based on 19.5 J, 10.5 J, 113 J, 59.5 J, absorbed energy is about 1.2°C, -3°C, -38°C, -10°C respectively.</p>

Faculty	Prof. P.N.Deshmukh
2.Title of Research Paper	Design Improvement of Handle Bar Assembly of an Automobile using FEA,
Journal	International Journal of Engineering sciences and Research Technology (IJESRT), September 2014
ISSN No	2277-9655
Abstract	<p>Designing the handle bar assembly of a two wheeler holds many challenges together with valuation of the structural strength of the mating components. While the handle bar is subjected to buckling, the housing and the other frame experiences tensile, compressive and shear stress. The situations during braking and the forces generated due to road bumps and pot holes can increases the problem. This work shall focus on conducting linear stress analysis while evaluating and rationalizing the loads. Finite element analysis of handle bar assembly is carried out using Altair solver code RADIOSS. In this study the handle bar assembly is excited with acceleration obtained from road load data to evaluate the strength of mountings on handle-bar. Model is prepared using Catia V5R20, Pre processor Hyper Mesh and Post processing is done using Hyper View. The Finite element analysis outcomes are also well allied by the experimental results in which failure site and pattern is accurately matched. Further modifications have been made in design to come across the strength requirement.</p>

Faculty	Prof. P.N.Deshmukh
3.Title of Research Paper	Effects of Dimensional Tolerances on ogive shaped casing
Journal	International Journal of innovative research in Science, Engineering and Technology, May 2016
ISSN No	(Online):2319-8753 , (Print): 2347-6710
Abstract	<p>Ogive shape warhead, used in missiles by defense organizations since 1951 is mostly used for wars. Give shape warhead being cylindrical in shape can carry a large number of fragments and can send explosives in maximum directions hence are most widely used. This is a explosive type warhead. Ogive shape warhead being cylindrical got manufacturing defects that need to be work on. Due to its ogive shape, explosives carried by them are not exploded in respective directions. This defect is arising due to improper tolerances and dimensioning of the warhead.</p> <p>As the shape of the casing is ogive and fragments being cubical they are in need of proper tolerances for explosion in desired direction. To give respective tolerances, inclination of fragments, capacity of casing are to be found out, simultaneously left side radius and right side radius respectively. Once both the radii, inclination of fragments and capacity are known tolerances can be given in proper manner. For finding out these parameters programming is carried out in Matlab language. Once they are known tolerances can be given.</p>

Faculty	Prof. P.N.Deshmukh
4.Title of Research Paper	Numerical Simulation of decay of swirl inside turbulent flow through pipe
Journal	International Journal of innovative research in science, engineering and technology
ISSN No	2347-6710
Abstract	<p>Swirling flows find their applications in combustion chambers of jet engines, turbo-machinery, mixing tanks, etc. Swirl are the vortices that can exist inside the cylinder. These vortices are occurred during the inlet stroke when the piston moves down at that time inlet air passes over the inlet ports. Swirl vortices created by depending on the inlet port design in the cylinder when the ports are closed. In combustion swirl reduces the soot emission. Ignition delay affected by the swirl and it also affects the injection pressure. The single phase swirling flow in the straight pipe has been investigated since long.This investigation refers detailed experimental measurements using laser-Doppler anemometry (LDA) in a swirling flow through a straight pipe for wide range of Reynold No.This data is used for development of basic modelling approach using RNG K-ϵ model with standard and enhanced wall treatment available in commercial available tool like Fluent 16.2. Efforts are taken to improve the existing prediction bycapturing swirl decay rate in better manner by modelling anisotropic turbulence. Another purpose of this study is to understand the swirl decay which is directly function of swirl number at inlet, the flow pattern induced by geometry, the distance from the pipe inlet, upstream turbulence data and nature of the inlet swirl profile i.e. Solid body rotation, concentrated vortex & modified wall jet. This helps to model swirl – wall interaction resulted velocity profile which leads to accurate prediction of backpressure & turbulent mixing occurs in upstream of Diesel engine based after treatment devices.</p>

Faculty	Prof. P.N.Deshmukh
5.Title of Research Paper	Design, Optimization and stiffness Analysis of DE Adaptor for Alternator
Journal	International Journal of innovative research in science, engineering and technology
ISSN No	2347-6710
Abstract	An alternator helps to convert mechanical energy to electrical energy. Adaptor is the part of alternator which is mounted on the driving end side. Alternator is connected to engine's flywheel housing through Drive End Adaptor. During operation of the alternator, DE adaptor undergoes various types of loads. There are several technical requirements for designing the DE adaptor. Stiffness and modal frequency are the main technical requirements for DE adaptor. These requirements depend on various geometrical parameters such as numbers of rib, dimension of rib, flange thickness(frame fixing), flange thickness(flywheel housing), flange PCD(SAE), flange PCD-Alternator side, number of hole, material. The intent of this paper is to investigate the effect of each parameter and therefore the combination of various parameters on stiffness and modal frequency. This paper will provide the guidelines to the designer for designing DE adaptor for different ratings.

Faculty	Prof. P.N.Deshmukh
6.Title of Research Paper	Asses,Analysis and Improve shift quality of five speed automated manual transmission for LCV
Journal	International Journal of innovative research in science, engineering and technology
ISSN No	2347-6710
Abstract	In most recent couple of years, vehicles producers are enhancing execution of transmission framework along these lines enhancing gearshift quality. This additionally incorporates lessening the measure of grip operations and rehashed gear moving endeavors in manual transmission. Robotized manual transmission frameworks are created This has point of interest of both MT and AT. With enhancing innovation towards refinement, gearshift quality has ended up a standout amongst the most essential outline criteria for any transmission framework, which will decrease endeavors for changing riggings and guarantee smooth transmission without torque interference. It is fundamentally chosen by synchronizers in the transmission that capacity as a contact grasps and comes without hesitation when vehicle administrator needs a proportion change. The fundamental point of this paper is to get to, examine and enhance Shift nature of five velocity robotized manual transmission for LCV. For examination, parameters from existing synchronizer and grip, gear box were utilized. Same was confirmed utilizing MSC Adams/View of software and handball power required to change the gears was lessened.

Faculty	Mr. Pankaj S. Desle
1.Title of Research Paper	A Review on Development of Wheelchair Cum Stretcher
Journal	International Journal of Research in Advent Technology Vol.2, No.8, August 2014
ISSN No	2321-9637
Abstract	<p>The number of patients in India is increasing day by day. So in hospitals patients need to be shifted from wheelchair to stretcher, stretcher to beds, bed to wheelchair, or vice versa; which creates unsafe conditions for patients. Also transferring the patients from wheelchair to stretcher, stretcher to beds, bed to wheelchair is always an issue for the attendant or nurse. Sometime during handling, patient and hospital staff suffer from many problem like stresses are produced in the body, some time chances to sleep down the patient. It is required to eliminate all types of possibilities. Understanding the various issues regarding the mobility equipment, the better design will be an asset for the medical field and a helping hand for disabled individuals. There is a need for a wheelchair cum stretcher to facilitate the disabled patient's mobility and to provide novel medical equipment for use in the Indian hospitals. The present research work proposes a development of wheel chair cum stretcher which will follow the standard specification of both wheel chair and stretcher with considering the issues like safety, hygienic, cleaning and functionality.</p>

Faculty	Mr. Pankaj S. Desle
2.Title of Research Paper	Design and development of Effective Low weight racing bicycle frame.
Journal	International journal of innovative research in science engineering and technology, volume 3, Issue 12, December 2014.
ISSN No	2319-8753
Abstract	<p>A Bicycle frame is prominent part in whole racing cycle system which is subjected to static and dynamic loads. The dependency of the performance is directly proportionate to weight of the cycle and frame structural design, Optimization of weight and structure of the frame is the best scope of optimizing the overall performance of the racing cycle, A monocoque design is advisable in racing utility hence we are targeting towards composite design and how its frame can be optimizes by using static and dynamic FEA Analysis. Using the knowledge from literature review, we can know how the CAD model is prepared.</p>

Faculty	Mr. Pankaj S. Desle
3.Title of Research Paper	Development and Analysis of Wheelchair Cum Stretcher Using CAE Software
Journal	International Engineering Research Journal (IERJ) Special Issue 2 Page 2083-2087, 2015
ISSN No	2395-1621
Abstract	<p>The percentage of patients in India is increasing day by day. In hospitals patients need to be shifted from wheelchair to stretcher, stretcher to beds, bed to wheelchair, or vice versa; which creates unsafe conditions for patients. Transferring patients in hospitals is a common problem for the caretakers. Transferring the patients from wheelchair to stretcher or to the medical bed is always an issue for the attendant or nurse. Understanding the various issues regarding the mobility equipment and introducing a better design will be an asset for the medical field and a helping hand for disabled individuals. There is a need for a wheelchair cum stretcher to facilitate the disabled patient's mobility and to provide novel medical equipment for use in the Indian hospitals. For this purpose author is developed a wheel chair cum stretcher which follow the standard specification of both wheel chair and stretcher with considering the issues like safety, hygienic, cleaning and functionality. When wheel chair converts into stretcher for lifting purpose we used lifting mechanism and actuators which also help to maintain the stability of the structure by providing rigid support to the structure. To develop the design of wheel chair cum stretcher author used CAD software and to analyze the design will use CAE software and validation of structure will be done by experimentation.</p>

Faculty	Mr. Pankaj S. Desle
4.Title of Research Paper	Design and development of Effective Low weight racing bicycle frame using FEA, alternate material
Journal	International Engineering Research Journal (IERJ) Special Issue 2 Page 2022-2027, 2015
ISSN No	2395-1621
Abstract	<p>A Bi-cycle frame is prominent part in whole racing cycle system which is subjected to static and dynamic loads. The dependency of the performance is directly proportionate to weight of the cycle and frame structural design, Optimization of weight and structure of the frame is the best scope of optimizing the overall performance of the racing cycle, A monocoque design is advisable in racing utility hence we are targeting towards composite design and how its frame can be optimizes by using static and dynamic FEA Analysis. The paper deals with the performance improvement of the existing racing bicycle frame with certain design changes (trying different materials & changing structure).The parts are developed with Computer Aided Design software (CATIA) & analysis is done using Hyper mesh & ANSYS software. Aluminum alloy 6061 is used to replace the existing Mild Steel material and study the results. Analysis is done under static and dynamic load conditions. The loads studied are static start-up, static peddling, and vertical impact.</p>

Faculty	Mr. Sumit. V. Dubal
1.Title of Research Paper	"Review on Stresses in Cylindrical Pressure Vessel and its Design as per ASME Code"
Journal	International Journal of Engineering Trends and Technology (IJETT) V11(6),300-305 May 2014
ISSN No	2231-5381
Abstract	<p>High pressure is developed in pressure vessel so pressure vessel has to withstand several forces developed due to internal pressure So selection of pressure vessel is most critical. For safety purpose the pressure vessel has to be designed according to ASME standards. In general the cylindrical shell is made of a uniform thickness which is determined by the maximum circumferential stress due to the internal pressure. Since the longitudinal stress is only one-half of this circumferential stress, these vessels have available abeam strength which makes the two-saddle support system ideal for a wide range of proportions. The structure is to be designed fabricated and checked as per ASME. By knowing these stresses, it is possible to determine which pressure vessel is designed for internal pressure alone, and to design structurally adequate and economical stiffening for vessel which require it. The section VIII, division 1 and division 2 are used in design. Division 1 correspond to 'design by rule and Division 2 correspond to 'design by Analysis' In this paper, the horizontal pressure vessel supported on saddles is designed according to the guidelines given in Div 1 and Div 2. Efforts are made in this paper to understand the various stresses developed in pressure vessel and design the pressure vessel using ASME codes & standards to legalize the design.</p>

Faculty	Mr. Sumit. V. Dubal
2.Title of Research Paper	Finite Element Analysis of Reactor Pressure Vessel under Different Loading Conditions
Journal	IEEE, Feb 2015
ISSN No	INSPEC Accession Number: 15305390
Abstract	<p>Reactor Pressure Vessel is a closed container designed to hold gases or liquids at a pressure above 0.10 MPa, higher than atmospheric pressure. Due to operating conditions, high stresses are developed in Pressure vessel which results in cracking and bursting of vessel. Analytical and experimental techniques have some limitations such as cost associated with multiple prototypes and experimental iterations. In this work an approximate stresses that exist in cylindrical pressure vessels supported on two saddles support are calculated under the different boundary conditions by using Finite Element tool. Different load cases are considered and static structural analysis is done in order to calculate stresses in vessel. The thickness of vessel components are varied till the maximum von-misses stress is within the limits. As the thickness of components increases, maximum stress reduces within certain limits.</p>

Faculty	Ms. Jagruti Dilip Rane.
1.Title of Research Paper	Analysis for Alternatives of Geometry for the Intake Side of the Sump to Enhance Performance of Centrifugal Pump
Journal	IJREAT International Journal of Research in Engineering & Advanced Technology, Volume 2, Issue 4, Aug-Sept, 2014
ISSN No	ISSN: 2320 – 8791
Abstract	The marginal increment in the discharge for the Centrifugal Pump tends to depreciate with each marginal rise in capacity of the pump; especially for the higher order pumps (25HP and above). The prominence of vortices along with turbulent flow at the regions in the suction pipe affects the flow of water and consequently the discharge. The discharge could further drop if the sum is not favorably designed for aiding the intake through the suction pipe. This work would focus on Design alternatives for minimizing the vortices within the suction pipe and enhancing the discharge through possible use of a manifold at the suction end. Alternatively, efforts would be pursued for addressing the design of the sump (Tank) for facilitating the flow of water at the suction end while smoothing out the in-rush of water at the extreme end of the suction pipe.

Faculty	Mrs. Savita A. More
1.Title of Research Paper	Optimization of Suspension System to Minimize the Shock Response - A Theoretical Aspect
Journal	Journal of Multi Disciplinary Technologies ,Vol 6 No.1, Jan 2012,Pg. 18-23
ISSN No	0974-1771
Abstract	The shock response is important criterion to be considered in vehicle design for passenger comfort as well as the goods carried by it. Most of the work is carried out for finding the shock response spectrum for a single degree of freedom system. This paper deals with the reduction of shock response of an equipment mounted on a vehicle. A procedure of the calculation of the shock response of the equipment mounted in the vehicle is presented and the optimization procedure is given. The procedure can be used for the mounting of the equipment in the vehicle. Depending on the shape and duration of the shock pulse, optimization can be carried out. Shock response of a linear 4-DOF vehicle model is minimized by optimizing the equipment suspension system parameters for the excitation due to ground undulations. The vehicle is modeled as a system of linear springs and the goal is to minimize the motion of the equipment being carried in the vehicle. The kinetic energy of equipment is chosen as an objective function. The stiffness and positions of the equipment suspension spring are the design variables and suspension system of the vehicle is considered as the design parameter. Response of the mounted equipment is calculated as a transient response to half sine wave through the use of Duhamel's integral for each of the modes of vibrations. The effect of the variation of each design parameter is considered separately and the optimum value of each variable is fixed, a program in MATLAB is developed.

Faculty	Mrs. Savita A. More
2.Title of Research Paper	A Review on- EMPLOYING COMPUTATIONAL TECHNIQUES FOR DETERMINING THE NATURE OF MODALFREQUENCIES AND CORRESPONDING STRESSES FOR GEAR HOUSING USING MSC NASTRAN
Journal	International Journal of Scientific Research & Management Studies (IJSRMS), Vol. 1 ,Issue 9, Pg. 283-288, May 2013
ISSN No	2349-3771
Abstract	The gear housing protects the components of gearbox. It provides the fluid tight casing to hold the lubricants and provides support to moving components. Gear housing or gearbox failure is the main problem for the vehicle manufacturer. In order to prevent failure the natural frequency and natural mode shapes should be known. The design for Gear Housing or the Case for Transmission gears call for analysis for Structural strength and/or Vibrations occurring due to the excitation by the Engine. For this work, the Vibrations experienced by the housing would be the area of concern for study. Finite Element Modeling shall be engaged as an Analytical tool to evaluate the nature and magnitude of the vibrations. Modal Analysis in the three directions shall be assessed while Frequency Response Function analysis shall be conducted to determine the stresses induced due to vibrations. The material properties shall be assigned suitably while performing the simulation. Appropriate values shall be assigned to the design parameters for effecting the best design suitable for damping the vibrations. Parameters for Mass or stiffness or damping shall be varied for checking the effect on the performance. Experimental investigation is planned for validating the thesis.

Faculty	Mrs. Savita A. More
3.Title of Research Paper	A Research on- EMPLOYING COMPUTATIONAL TECHNIQUES FOR DETERMINING THE NATURE OF MODALFREQUENCIES AND CORRESPONDING STRESSES FOR GEAR HOUSING USING MSC NASTRAN
Journal	International Journal of Scientific Research & Management Studies (IJSRMS),Vol 2 Issue 2,Pg. 1-19
ISSN No	2349-3771
Abstract	The gear housing protects the components of gearbox. It provides the fluid tight casing to hold the lubricants and provides support to moving components. Gear housing or gearbox failure is the main problem for the vehicle manufacturer. In order to prevent failure the natural frequency and natural mode shapes should be known. The design for Gear Housing or the Case for Transmission gears call for analysis for Structural strength and/or Vibrations occurring due to the excitation by the Engine. For this work, the Vibrations experienced by the housing would be the area of concern for study. Finite Element Modeling shall be engaged as an Analytical tool to evaluate the nature and magnitude of the vibrations. Modal Analysis in the three directions shall be assessed while Frequency Response Function analysis shall be conducted to determine the stresses induced due to vibrations. The material properties shall be assigned suitably while performing the simulation.

Faculty	Mrs. Savita A. More
1.Title of Research Paper	Experimental & Finite Element Analysis of Pine Wood Used In Vibratory Conveyor
Journal	International Journal of Advance Research & Innovative Ideas in Education ,Vol 2,Issue-4, 24 July,2016,Pg. 599-610
ISSN No	2395-4396
Abstract	To convey material from one place to another different conveyor systems are available in industries, such as belt conveyor, chain conveyor, vibratory conveyor etc. Considering the application of sorting, lumping, screening, drying, vibratory conveyors are used to serve the purpose. Most of the vibratory conveyor use pine wood as its material for supporting element (planks). Pine wood has advantages over regular wood like high strength to weight ratio, good shock resistance & insulating property against heat, sound& electricity. Also pine wood is more dimensionally stable compared to regular wood. To find out causes of failure of supporting element of vibratory conveyor, experimental & finite element analysis of pine wood is important in present case.

Faculty	S.U. Ratnaparkhi
1.Title of Research Paper	Vibration analysis of composite plate
Journal	International Journal of Modern Engineering Research (IJMER Vol.3, Issue.1, Jan-Feb. 2013 pp-377-380 ISSN: 2249-6645
ISSN No	2249-6645
Abstract	Most of the structural components are generally subjected to dynamic loadings in their Working life. Very often these components may have to perform in severe dynamic environment where in the maximum damage results from the resonant vibrations. Susceptibility to fracture of materials due to vibration is determined from stress and frequency. Maximum amplitude of the vibration must be in the limited for the safety of the structure. Hence vibration analysis has become very important in designing a structure to know in advance its response and to take necessary steps to control the structural vibrations and its amplitudes. The present study involves extensive experimental works to investigate the free vibration of woven fiber Glass/Epoxy composite plates in free-free boundary conditions. The specimens of woven glass fiber and epoxy matrix composite plates are manufactured by the hand-layup technique. Elastic parameters of the plate are also determined experimentally by tensile testing of specimens. An experimental investigation is carried out using modal analysis technique, to obtain the Natural frequencies. Also, this experiment is used to validate the results obtained from the FEA using Ansys. The effects of different parameters including aspect ratio, and fiber orientation of woven fiber composite plates are studied in free-free boundary conditions in details. This study may provide valuable information for researchers and engineers in design applications. .

Faculty	S.U. Ratnaparkhi
2.Title of Research Paper	Review on e-brake system for cable trolley system
Journal	International Journal Of Research In Aeronautical And Mechanical Engineering ISSN -2321-3051 Vol.3 Issue.3, March 2015. Pgs: 1-4
ISSN No	2321-305
Abstract	The goal of this project is to provide an emergency braking system which will stop the descent of the trolley automatically and allow for a manual, controlled descent to be performed by an occupant of the trolley if needed. The braking system must be reliable, be able to operate after long period of non-use and operate without destruction of major braking system components when used. The concept in which a brake calliper applies braking force directly to a secondary cable was selected. A provision for manual operation of the calliper is added to the system.

Faculty	S.U. Ratnaparkhi
3.Title of Research Paper	Review on Active Electro-hydraulic Thruster Brake for Application of Lifting Machine
Journal	International Journal of Engineering Trends and Technology (IJETT), V19(1),1-3 Jan 2015. ISSN:2231-5381
ISSN No	2231-5381
Abstract	Thruster brake is device to retard the speed of moving machinery and stop it accurately to desire position. The braking force is applied to brake shoe by pre-stressed compression spring. The convectional thruster brake employs either an electro-mechanical thruster or passive hydraulic thruster. The electro mechanical thruster utilize electro mechanical solenoid to apply braking force, where as hydraulic thruster brake is applied a force via thruster that is operated by hydraulic force. The value of hydraulic force is fixed irrespective of load to under braking force or over braking force leading to slip the load i.e. improve load positioning or over force braking leading to excessive and un-necessary brake wear.

Faculty	S.U. Ratnaparkhi
4.Title of Research Paper	Review of Low Temperature Air Generation from Vehicle Suspension System
Journal	International Journal of Latest Research in Engineering and Technology (IJLRET) ISSN: 2454-5031(Online) Volume1 Issue7 December 2015 PP 08-13
ISSN No	2454-5031
Abstract	<p>Nowadays we require fuel efficient car which is possible only when load on the system is less. Hence to reduce the load on the system we have to reduce the load on the engine using the kinetic energy generated in suspension system. Current air conditioning systems can reduce the fuel economy of high fuel economy vehicles. With the help of the piston-cylinder arrangement it is possible to convert the compression and expansion in suspension to reciprocating motion which will compress air at high pressure. The pneumatic single acting cylinder is used for this project to compress the air. The output air from the pneumatic cylinder is collected through temperature sensors and this compressed air is stored inside the storage tank. After this research we concluded in car there is a lot of fuel burnt only for working of A.C. while driving the car. By using this compressed air we can run the air conditioning system in the car and save the fuel..</p>

Faculty	S.U. Ratnaparkhi
5.Title of Research Paper	Mold flow simulation of belly pan for feeding and warpage analysis
Journal	International Journal of Advance Research and Innovative Ideas in Education (IJARIE), Vol-2 Issue-5 2016 ISSN(O)-2395-4396 PP-202-212
ISSN No	2395-4396
Abstract	<p>Belly Pan discovers their applications in Automobile and in aerospace. Vehicles Quarter and Half fairings are combined with the Belly dish. Paunch container redirects the wind current far from under the engine.it is utilized to diminished streamlined lift, cools the motor and gives corrective look to the vehicle. Old stream reproduction programming is utilized to investigate Filling, Wrapping and to get the entryway area of mold. The Analysis can be done with the beginning of the stream channels, for example, Barrel, spout, sprue, runners, and entryways until the cavity is totally filled. Change has been made to the part outline and sustains frameworks in the mold taking into account the examination. The investigation incorporates the area of the entryway at the part outline, size of sprue, runners and doors. Autodesk Moldflow Insight (AMI) programming is utilized to examine the procedure parameters taking into account 4 level and 5 component Orthogonal Array. The five parameters of programming are Mold Temperature, Melt Temperature, Injection Time, Packing Pressure and Packing Time. The principle point of this anticipates is to Analyze Feeding and War page of Belly dish by utilizing Mold stream reproduction programming. Pressing Pressure is the most powerful Parameter on the war page. IR traps, Welding lines. These imperfections can be dictated by utilizing programming. Programming helps in limited essential examination utilized as a part of the configuration of plastic item, shape outline and generation of plastic components.</p>

Faculty	S.U. Ratnaparkhi
6.Title of Research Paper	Determining The Geometrical Pattern For Applying Adhesive For A Brake Shoe Joint While Minimizing The Grammage Per Unit Area
Journal	International Journal of Informative and Futuristic Research (IJIFR) ISSN: 2347-1697(Online) Volume 3 Issue 12 Aug 2016 PP 4479-4485
ISSN No	2347-1697
Abstract	The adhesive joint for the disc brake shall be the subject of study for this dissertation work. The brake system is expected to endure the shear forces during braking at the operating speed of the vehicle. The adhesive joint shall be analyzed using computational tool in the CAE domain - Hyperworks. The virtual model for the brake shoe joint shall consist of the base, the liner and the adhesive layer keeping the mating parts in place. Pre-processing for analysis shall be carried out using Hyper Mesh while generating suitable mesh and assigning the loads and boundary conditions for the Finite Element Model. The FE model shall be solved using RADIOSS/ Optistruct followed by post-processing using Hyper View. The geometry or the configuration of the adhesive layer shall be altered to investigate three variants – Horizontal stripes, vertical stripes and criss-cross stripes. The results shall be reviewed with a plan for experimentation for the suitable variant. Realizing the objective of using minimal adhesive to perform the intended function shall be the focus of this work.

Faculty	Mr. Suraj B. Patil
Title of Research Paper	STRUCTURAL ANALYSIS OF CHASSIS: A REVIEW
Journal	IJRET: International Journal of Research in Engineering and Technology, Volume: 04 Issue: 04, Apr-2015
ISSN No	eISSN: 2319-1163 pISSN: 2321-7308
Abstract	Nowadays, transportation industry plays major role in the economy of modern developing and industrialized countries. The goods and materials carried through heavy trucks are dramatically increasing. In this paper an effort is made to review on static structural analysis of chassis. It surveys most recent literature published within last 2 years. The review aims to provide insight into truck chassis analysis and act as a guide for researchers working on Finite Element Analysis (FEA). Truck chassis forms the structural backbone of commercial vehicle. The main function of truck chassis is to support the components and payload placed on it. There are many factors to consider while designing heavy truck chassis, material selection, strength, stiffness and weight. The present study reviewed the literature on chassis analysis and presented the findings in the subsequent sections

Faculty	Mr. Suraj B. Patil
Title of Research Paper	Structural Analysis of Trailer Frame and Modification for Weight Optimization
Journal	International Engineering Research Journal (IERJ) Special Issue 2, Nov -2015
ISSN No	ISSN 2395-1621
Abstract	<p>In the current scenario automobile engineering and transportation vehicles require safety and energy efficiency. Articulated vehicle is vehicle which has a permanent or semi-permanent pivoting joint in its construction allowing the vehicle to turn more sharply. These vehicles are always used for transportation of heavy load, so bear this heavy load chassis of vehicle plays important role. The purpose of this work is to simulate and forecast the structural response of the trailer of articulated vehicle, in terms of stress and displacement, under constraining conditions, which aim at reflecting the actual duty cycle of the vehicle. This study aims to investigate the critical points of stresses that lead to or induce failure. To analyze, finite element method (FEM) is used for modelling and stress analysis. Finite element analysis of trailer frame revealed the stress distribution on trailer frame. Modifications have been made to current trailer frame which leads to optimization of trailer. These modifications or optimization leads to optimization of weight of trailer along with reduction in stress values leading to safe design.</p>

Faculty	Mr. S. U. Jagtap
Title of Research Paper	PERFORMANCE ANALYSIS OF CASEMENT TYPE VERTICAL AXIS WIND TURBINE
Journal	ASME INTERNATIONAL CONFERENCE DECEMBER 5-6, 2013, BANGALORE, KARNATAKA
ISSN No	GTINDIA2013-3752
Abstract	<p>Increasing worldwide demand for electricity requires the need for harnessing different kinds of renewable energies like wind energy. An increase in prevalence of vertical axis wind turbine (VAWT) has renewed interest in developing the new configurations of vertical axis wind turbines for better performance. This paper describes the performance analysis of a casement type vertical axis wind turbine (CTVAWT). The model of CTVAWT has been manufactured and tested to predict the performance. The performance analysis of CTVAWT was carried out by varying the control parameters such as wind speed and casement angle. The effect of each control parameter on the response parameters i.e. torque and power have been analyzed (by conducting various experiments of CTVAWT).The torque and power increases with increase in casement angle up to 40 degrees further decrease with increase in casement angle. From this analysis the newly developed CTVAWT is working efficiently at 40 degrees.</p> <p>Keywords: - Casement Type Vertical Axis Wind Turbine, Wind speed, casement angle, torque and power</p>

Faculty	Mr. S. U. Jagtap
Title of Research Paper	VIBRATION ANALYSIS OF DEFECTIVE ROLLING CONTACT BEARINGS
Journal	INTERNATIONAL ENGINEERING RESEARCH JOURNAL, SPECIAL ISSUE 2 PAGE 5192-5196, 2015
ISSN No	2395-1621
Abstract	<p>Rotary machines are recognized as crucial equipment in various industries, such as power stations, chemical plants and automotive industry that require precise and efficient performance. In this fault diagnosis of high speed rolling element bearings due to localized defects using response surface method has to be done. The localized defects as spalls on outer race, on inner race, and on rolling elements are considered for this study, the mathematical formulation accounted for tangential motions of rolling elements and inner and outer races with the sources of nonlinearity such as Hertzian contact force and internal radial clearance. The nonlinear stiffness is obtained by the application of Hertzian elastic contact deformation theory. The mathematical formulation predicts discrete spectrum having peaks at the characteristic defect frequencies and their harmonics. Experimentation has also been performed to validate the results obtained from the mathematical model and it shows that the model can be successfully used to predict amplitude ratios among various spectral lines with localized surface defects. Combined parametric effects have been analyzed and their influence has been considered with design of experiments and surface response methodology is used to predict the dynamic response of rotor bearing system. Keywords—Hertzian contact force, outer race, inner race.</p>

Faculty	Mr. Sagar K. Kalukhe
Title of Research Paper	CFD Analysis of Heat Recovery System for Window Air-Conditioning
Journal	International Conference On Emerging Trends in Technology and it's Applications, Feb 2014
ISSN No	ISBN-978-81-923777-7-3
Abstract	<p>Refrigerators and air conditioning (AC) units are the need of the day to store the food items and to get comfort conditions due to large change in the climatic conditions. These are the only units which consume lot of energy in the domestic residences. It is great concern of the society/nation towards the opportunities to save the energy through various ways and attempts in order to limit the carbon emissions. In this paper a window AC is simulated to recover the waste heat available at the condenser utilizing the same for drying the kitchen food waste. The simulation of heat recovery duct of window AC is presented using ICEM and FLUENT software. For heat recovery convergent duct is used. The convection is the mode of heat transfer; the side walls of duct are adiabatic and maintained at ambient temperature. The geometry used is very simple, similar to convergent nozzle.</p>

Faculty	Mr. Sagar K. Kalukhe
Title of Research Paper	Experimental Investigation of Heat Transfer Analysis of Ribbed Duct for Thermal Performance Enhancement
Journal	International Journal of Science, Engineering and Technology Research (IJSETR)
ISSN No	Volume 4, Issue 4, April 2015/ISSN: 2278 – 7798
Abstract	<p>Abstract -In this paper a study of heat transfer enhancement of Divergent plain duct and divergent ribbed duct investigated by experimentally. The turbulence intensity of fluid flow increased due to obstacles present in the flow passage. For heat transfer enhancement active and passive methods are used. Passive method uses the insertion of fins, ribs, bumps, dimples, baffles, wires etc. in the flow passage to improve the heat transfer rate. In this paper rib is used as a tabulator. These ribs are arranged in staggered arrangement inner surface of duct .The divergent duct has an angle of 1.145 degree to give the minimum pressure drop and friction factor. The measurement was conducted within the range of velocity from 3.2 to 16 m/s. (Reynolds's No. 5000-25000).The thermal performance like Nusselt Number, Reynolds number and Heat transfer coefficient of divergent rib duct compared with plain divergent duct under the pressure drop, mass flow rate due to steam-wise acceleration or retardations.</p> <p>Key Words: Divergent Duct, Nusselt Number, Reynolds Number, Heat transfer coefficient, Ribs, Heat transfer Coefficient.</p>

Faculty	Mr. Sagar K. Kalukhe
1.Title of Research Paper	Experimental Study and CFD Analysis of Heat Recovery System for Window Air Conditioning
Journal	International Conference on Energy Efficient Technologies for Sustainability (ICEETS), April 2016
ISSN No	ISBN:978-1-5090-1534-4
Abstract	<p>The heat recovery duct of Window air-conditioning unit is simulate to recover the waste heat from the condenser and uses the same for drying the kitchen food waste. The combination of convergent and square duct is used for heat recovery. The artificial roughness is created on the heat transfer surface to enhance the heat transfer. The ribs were attached to the wall perpendicular to the direction of flow. The local heat transfer and pressure drop characteristics of hot air through plain and ribbed duct have been investigated by experimentally as well as numerically for Reynolds number of 42,305. The numerical thermal performance of heat recovery system for plain and ribbed duct has been compared with that of the experimental. The comparison shows that, because of the ribs the thermal performance of the system is increases by 28%.</p>

Faculty	Mr. A. K. Mahindrakar
Title of Research Paper	BOND GRAPH ANALYSIS OF THE ENGINEERING SYSTEMS USING 20-SIM SOFTWARE TOOL
Journal	[IJESAT] INTERNATIONAL JOURNAL OF ENGINEERING SCIENCE & ADVANCED TECHNOLOGY, Volume 2, Issue 5, 2012
ISSN No	ISSN:2250-3676
Abstract	This paper introduces bond graph analysis of engineering system. Bond graph analysis provides a generalised technique for modelling and analysis of the systems. This is suitable for the analysis of more complex systems. In this paper the fundamental theory of bond graph and its model with simulation using 20-sim software is explored.

Faculty	Mr. A. K. Mahindrakar
Title of Research Paper	Power Generation by Suspension System Used in Automobile
Journal	International Engineering Research Journal (IERJ) Special Issue 2 Page 1461-1464, 2015
ISSN No	ISSN 2395-1621
Abstract	The total work of project is about creating a system which can convert the locomotive motion of suspension system into rotary motion & from that generating electricity that is battery charging. Although suspension's piston will be never in continuous locomotive motion but there is always small change in position of piston. The system will have flywheel to store energy. The conversion of locomotive motion of piston can be converted by the rack & pinion, ratchet & pawl mechanism. Rack & pinion will convert the locomotive motion into rotary motion; ratchet & pawl mechanism will use only forward motion for charging of battery.

Faculty	Mr. A. K. Mahindrakar
Title of Research Paper	A Review of Automatic Blackboard Cleaning System
Journal	International Journal of Engineering Technology, Management and Applied Sciences February 2016, Volume 4, Issue 2,
ISSN No	ISSN 2349-4476
Abstract	This technique was selected by us by taking into consideration some comfort for Teachers while cleaning the blackboard. It is seen that while doing this they often have to cover their mouth with one hand while cleaning the black-board by the other. By thinking over it we realized that we can really do something for them. So we decided to implement our course study and some extra knowledge and with the help of electrical and mechanical concept our project came into picture. The project automatic blackboard cleaning system can clean the blackboard automatically and reduces the time consume in hand erasing As the name suggests our project basically works on combined principles of mechanical and electronics. The growth of technologies requested higher performance machine in order to fulfill human needs and market. This project is implemented to make human work easier and can reduce the use of human power because of its potential applications. This appertains to new and useful improvements and more particularly to an apparatus whereby blackboards can be cleaned in an easy and convenient manner.

Faculty	Mr. A. K. Mahindrakar
Title of Research Paper	REVIEW ON SOLAR FOOD CUTTER WITH SHAFT MOUNTED SPEED REDUCER FOR AGRICULTURAL FIELD APPLICATION
Journal	INTERNATIONAL JOURNAL OF RESEARCH IN AERONAUTICAL AND MECHANICAL ENGINEERING Vol.3 Issue.1,January 2015.
ISSN No	ISSN (ONLINE): 2321-3051
Abstract	Indian agriculture has a lot of dependency on farm labour for many kinds of operation. The main products of the farm are needed to be harvested. Now-a-days the cutting of fruits; flowers and vegetables are done by snips. Hence the main purpose now-a-days is to reduce the labour hours. Thus taking into account the fact that the development of a portable, light weight multi-purpose agricultural cutter using solar powered 12volts D.C motor is required. For this purpose the development of the cutter and then the shaft mounted speed reducer gear box is to be done. After development of cutter, the stress developed at the cutting edge and force acting on entire linkage will be measured. Then these stresses will be evaluated in ansys by applying proper boundary condition. Again different material will be tested and examined for manufacturing.

Faculty	NIKHIL S KULKARNI
Title of Research Paper	Experimental and T-Test (Testing Hypothesis) Approach in Vibration Reduction
Journal	International Journal of Mechanical Engineering and Robotics Research, Vol. 3, No. 3, pp. 611-618, July 2014.
ISSN No	ISSN 2278 – 0149
Abstract	Producing a noiseless and vibration free devices is a need of the day. The vibration causes rapid wear of machine parts such as bearings and gears. Unwanted vibrations may cause loosening of parts from the machine. Because of improper design or material distribution, the wheels of locomotive can leave the track due to excessive vibration which results in accident or heavy loss. Sometimes because of heavy vibrations proper readings of instrument cannot be taken. Vibration can be used for useful purposes such as vibration testing equipment's, vibratory conveyors, hoppers, and comparators. Vibration is found to be very fruitful in mechanical workshops such as improving the efficiency of machining, casting, forging and welding techniques. The transfer of noise can also be reduced by decoupling the components in such a way that the noise path is interrupted. This can be achieved by adding noise reducing treatments to the structure such as elastic elements, masses, local shielding or damping layers. In the present investigation, the use of viscoelastic damping layers as a noise reducing measure in rotating machinery is considered. Here in this investigation the result obtained will give frequency value in random manner and the use of t-test (testing hypothesis) will show us weather vibrations are reduced or not <i>Index Terms</i> —Viscoelastic material, T-test, FFT analyser, Vibration reduction

Faculty	Sushil Dhamade
Title of Research Paper	DESIGN AND DEVELOPMENT OF NEW CATALYTIC CONVERTER
Journal	INTERNATIONAL JOURNAL OF EMERGING TECHNOLOGIES AND APPLICATIONS IN ENGINEERING, TECHNOLOGY AND SCIENCES (IJ-ETA-ETS)
ISSN No	ISSN: 0974-3588 JAN 16 – JUNE 16 Volume 9 : Issue 1
Abstract	<p>Air pollution generated from mobile sources is a problem of general interest. Majority of the engines today employ combustion of fuels, derived from crude oil as a source of energy. Our aim is to reduce these emissions with maximum efficiency and minimum cost. Catalytic convertor system converts exhausts into less harmful emissions by oxidation and reduction process. This can be achieved more efficiently with higher temperature and greater surface area. This is to be done by replacing conventional platinum or palladium (pt\pd) Catalyst by titanium dioxide and cobalt oxide (TiO₂\CoO) Catalyst coated on wire, mesh substrate. Catalyst provides better oxidation, reduction, reaction and wire mesh provides greater surface area due to spiral flow which is not achieved in conventional catalytic converter. So, as per global warming scenario and overall environmental conditions this new catalytic convertor could be a perfect solution in efficient and cost effective way.</p>

Faculty	Sushil Dhamade
Title of Research Paper	DESIGN AND OPTIMIZATION OF EDDY CURRENT BRAKING SYSTEM
Journal	INTERNATIONAL JOURNAL OF EMERGING TECHNOLOGIES AND APPLICATIONS IN ENGINEERING, TECHNOLOGY AND SCIENCES (IJ-ETA-ETS)
ISSN No	ISSN: 0974-3588 JAN 16 – JUNE 16 Volume 9 : Issue 1
Abstract	<p>The eddy-current is created by the relative motion between a magnet and a metal (or alloy) conductor. The current induces the reverse magnetic field and results in the deceleration of motion. The proposed mechanism implements this phenomenon in developing a braking system. The potential applications of the braking system can be a decelerating system to increase the safety of an elevator or any guided rail transportation system. To provide scientific investigation for industrial application of magnetic braking, this study presents four systematic engineering design scenarios to design a braking system. The constant magnetic field is the simplest and easiest design to implement. The optimal magnetic field distribution is obtained by minimizing the deceleration effort. The piecewise-constant magnetic field distribution offers a compromise between performance and magnetic field requirements. The advantages of the section-wise guide rail are tolerable deceleration; and simple design requirement and manufacturing processes. In the study, an experimental braking system using constant magnetic field is built to demonstrate the design procedure.</p>

Faculty	Sushil Dhamade
Title of Research Paper	Design Of Automated Sand Handling And Mixing System
Journal	INTERNATIONAL JOURNAL OF EMERGING TECHNOLOGIES AND APPLICATIONS IN ENGINEERING, TECHNOLOGY AND SCIENCES (IJ-ETA-ETS)
ISSN No	ISSN: 0974-3588 JAN 16 – JUNE 16 Volume 9 : Issue 1
Abstract	In sand casting processes, molding sand mixture is prepared manually which is very time consuming and requires more man power. Also, it is required to maintain quality of mixture as per requirement i.e. moisture content and bonding elements content proportion in sand. The appropriate mixture of sand plays an important role in production quality i.e. fine finish of castings. To achieve this optimization, a systematic sand handling system is required. Therefore, our objective is to design a sand handling system which will move / handle the sand and maintain the contents of sand mixture as per requirement.

Faculty	Mr. Nitin D. Pagar
Title	Investigations of Dynamic Characteristics of Eccentric Rotary Shaft of Wankel engine
Journal	Journal of Mechanical Design and Vibration (JMDV)
ISSN No	ISSN (Print):2376-9564, ISSN (Online): 2376-9572, 2014, 53-59, Publisher: Science and Education Publishing, USA
Abstract	<i>Accurate prediction of critical speeds in rotating machinery is of great importance to designer and many attempts have been made to calculate it exactly. At the design stage it is necessary to predict accurately the dynamic behavior of rotating system of rotating parts of Wankel engine in order to avoid resonant conditions at operating speeds. Critical speed of a rotating shaft differs from its non-rotating natural frequency. The main reason for this difference is known to be the gyroscopic momentum. So it is quite great important to determine the natural frequency of the eccentric shaft in non-rotating condition (free-free condition) i.e. degrees of freedom are not restricted. In this study the natural frequency and mode shapes are predicted for the eccentric shaft in free-free condition (non-rotating) by using the commercial software package (ANSYS) in its modal analysis option. And results obtained from it are compared with experimental modal analysis (FFT analyzer). The verified results leads to the prediction of the dynamic behavior of the eccentric shaft viz. design calculations, natural frequencies, mode shapes.</i>

Faculty	Mr. Nitin D. Pagar
Title of Research Paper	Numerical Investigations on Characteristics of Stresses in U-Shaped Metal Expansion Bellows
Journal	International Journal of Metals , Hindawi Publication Corp.USA
ISSN No	ISSN (Print) 2314-680X, Vol.2015, Paper no.- 957925.
Abstract	<i>Metal expansion bellows are a mechanical device for absorbing energy or displacement in structures. It is widely used to deal with vibrations, thermal expansion, and the angular, radial, and axial displacements of components. The main objective of this paper is to perform numerical analysis to find various characteristics of stresses in U-shaped metal expansion bellows as per the requirement of vendor and ASME standards. In this paper, extensive analytical and numerical study is carried out to calculate the different characteristics of stresses due to internal pressure varying from 1MPa to 2MPa in U-shaped bellows. Finite element analysis by using Ansys14 is performed to find the characteristics of U-shaped metal expansion bellows. Finally, the results of analytical analysis and finite element method (FEM) show a very good agreement. The results of this research work could be used as a basis for designing a new type of the metal bellows.</i>

Faculty	Mr. Nitin D. Pagar
Title of Research Paper	A Combined Numerical and Experimental Investigation on the Effect of Dynamics Characteristics of Metal Expansion Bellows
Journal	Journal of Vibration Engineering & Technologies , JVET/CW/718 A [The Vibration Institute of India]
ISSN No	ISSN (Print/online):2321-3558 , Indexing SCIE / Web of Science/ Scopus [Accepted]
Abstract	<i>The main objective of this paper is to determine the dynamics characteristic such as axial natural frequencies, modal frequencies and mode shapes of U-shaped bellows as well to study the effect increase in number of convolution on the dynamics characteristic. In this paper an analytical, numerical and experimental studies are performed to find the axial natural frequencies of the bellows. Numerical analysis is performed as per the presented mathematical model in MATLAB and modal analysis is performed by using ANSYS15.The deformation and axial natural frequency of bellows with 8, 9 and 10 convolutions are obtained by F. E. Analysis for various modes when bellows subjected to different end conditions. As per the simulated and experimental results of modal analysis it is seen that the range of axial frequencies with less number of convolutions shows maximum deformation and larger number of convolutions shows a minimum deformation. Finally, the results of analytical and F.E analysis (FEA) shows a very close match with experimental analysis. The results of this research work could be used as a basis for designing a new type of the bellows for various applications.</i>

Faculty	Mr. Nitin D. Pagar
Title of Research Paper	Hot Spot Stress Assessment At Fillet Welded Joint Using Different Finite Element Weld Modeling Techniques and Its Validation
Journal	World Journal of Engineering research and Technology, <i>WJERT</i> , 2016, Vol. 2, Issue 6.
ISSN No	ISSN 2454-695X
Abstract	<i>Welded structures like compressor structure are mostly subjected to static loads as they support the compressor and its mountings. Stresses at hot spot (weld toe) are very important to ensure structural integrity and safety. Structural hot spot stress approach is preferred in this paper for stress analysis of weld region due to its accuracy and simplicity. Due to complexity, Finite element analysis of welded connections has become difficult. For representation of local stress distribution around weld and welded joint stiffness, accurate weld modeling technique along with structural stress calculation methods needed. This methodology should be accurate with minimum modeling and computation efforts. Fillet welded joints are studied in this paper as it is widely used in structures. Various weld modeling techniques with shell elements are studied. The structural hot spot stresses at weld toe are calculated using extrapolation method. The experimental testing is performed using strain gauges and FEA results are validated. From analysis of FEA and experimental results a modeling technique is proposed which is accurate with minimum modeling efforts. Increased thickness model is an effective weld modeling technique for fillet welded joint.</i>

Faculty	Mr. Nitin D. Pagar
Title of Research Paper	Balance Cut Analysis for Stress and Balance Capacity of a Turbocharger Turbine Wheel
Journal	International Journal of Current Engineering and Technology , Vol.6, No.4 (Aug 2016)
ISSN No	E-ISSN 2277 – 4106, P-ISSN 2347 – 5161 ©2016 INPRESSCO
Abstract	<i>Turbochargers are used to increase the output power of the engine and make use of the exhaust gases to rotate the impeller which is coupled to the turbine wheel by a shaft. The turbine wheels being manufactured by the process of casting are subjected to possess unbalance in them, which is mainly with respect to the mass distribution. The uneven distribution of material across the wheel back face acts as a stress raiser which may lead to wheel burst in critical conditions. Balancing machines with grinding units are used to balance the turbine wheel with the right amount of material being removed in the units of gram millimeter which is termed as the balance capacity. To achieve maximum material removal, higher values of balance capacity need to be achieved without compromising the stress values of the wheel. Various parameters are considered for achieving the target. The tool used for obtaining the optimum value of the parameters is the design of experiments. The response surface optimization is used in which the design of experiments generates design points for each parameter and gives the optimum value of the parameters to achieve the expected balance capacity and also ensure that the stress is within the acceptable range.</i>

Faculty	Mr. Nitin D. Pagar
Title of Research Paper	Design Optimization and Development in Air Pollution Control Device
Journal	<i>International Journal of Engineering Research and Applications</i>
ISSN No	<i>ISSN : 2248-9622, Issue 7(Version 4), July 2014, pp.84-88</i>
Abstract	<p><i>Electrostatic Precipitators (ESP) is the device used to remove the dust particles from the processed gases coming out of boilers in cement industries, and iron core industries. There are many governing factors that affect the efficiency from that one major reason is to fully filled hopper. When hopper fills 70 % of its full limit the precipitation process stopped of that particular hopper. For remedy dust removal efficiency is increased by hopper vibrator at the time of emptying bagasse ash from the hopper. The maximum displacement is getting by using different hopper wall thicknesses, stiffener spacing as well as different configuration vibrators. Due to minimum time to complete project there are many difficulties to test at every stage to improve the design and this results in increased project cost. For this situation there is one simple way to improve the design of equipment's through simulation in ANSYS and validation by actual physical measurements. This project presents FEA approach for modeling and analysis the hopper of electrostatic precipitator using Static, Modal and Harmonic analysis. Actual model testing is done for the validation of results. The results coming out from the FEA analysis and testing are discussed.</i></p>