

## **Compressor Less Pressurized System for Water Washing Of the Vehicles**

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### **Abstract**

The objective of this paper is to formulate the techniques to convert and utilize the waste pressurized hot gases which are “exhausted as waste gases that are dumped out into the environment” in the form of power as for gaining some more useful and economical purposes in various industries like Oil & Gas, Steel, Automobiles, Cement etc., in their industrial processes waste gases, steam, non-condensable gases or pressurized hot gases are exhausting out with certain pressures. Similar to waste heat, waste pressure can also be defined or taken as pressure energy. Utilization of that pressure energy in rotating the rotor of a turbine and generating electrical power that can be more economic and for company related domestic use.

The U.S. industrial sector accounts for about one-third of the total energy consumed in the United States and is responsible for about one-third of fossil fuel related greenhouse gas emissions. It is estimated that somewhere between 20 to 50% of industrial energy input is lost as waste heat in the form of hot exhaust gases, cooling water, and heat lost from hot equipment surfaces and heated products. As the industrial sector continues efforts to improve its energy efficiency, recovering waste heat losses provides an attractive opportunity for an emission free and less costly energy resource. This waste heat can be used.

## **Solar Operated Tricycle for Handicapped Person**

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### **Abstract**

Solar plays a vital role in our day to day life. We have developed the solar tricycle especially for handicapped person. In this paper it is discussed that how solar tricycle will help to reduce the effort of handicapped person. All the design specifications considered after analyzing the problems from the handicapped person. The main content of the tricycle is solar PV panel, brushless DC motor, charge controller, throttle and battery. This paper will discuss about the main idea of this project and to get a larger picture on what is the problem in current situations, what that we want to achieve in this project. This project is divided into some categories that are project background to describe the reasons to do this project, problem statement to inform the problem or weakness of the existing system, objective to make sure what actually this project must achieve and scope of this project to specify what will be used in this project.

## **Design and Manufacturing of Chip Breaker**

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Name of Guide: Mr. Rajnitu Rakshaskar.

### **Abstract**

Machining of metals is the most universal and major stage of manufacturing system. It involves forcing of the cutting tool through the excess material of the work-piece, thereby rendering work-piece to a desired shape and size. So in present modern technology processes, optimization of machining parameters is one of the key necessities. For the case of turning operation, unbroken chips pose a major obstacle for maintaining accurate machining processes. The continuous chip generated during turning operation deteriorates the work-piece precision and causes safety hazards for the operator. Effective chip control is necessary for automatic production system because any failure in chip control can cause the lowering in productivity and the worsening in operation due to frequent stop. Chip control in turning is difficult in the case of stainless steel because chips are continuous. So the development of a chip breaker for stainless steel is an important topic for the automation of turning operations. In this study, the role of different parameters like speed, feed and depth of cut are studied.

## **PERFORMANCE UPGRADATION OF VINTAGE BIKE USING MODERN TECHNIQUES**

Mr. Dongare Amol Prakash

Mr. Ganave Ghanashyam Anant

Mr. Sawant Sangit Bharat

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Name of Guide: Mr. Prasad V. Bapat.

### **Abstract**

In this paper we have studied the basic properties of gas generated through electrolysis of water and then used this gas in the bike as a fuel with gasoline by mixing it with air. This results the increased mileage of bike 30 to 60% and reduce the polluting contents from the exhaust gases. The threat posed by climate change and the striving for securities of energy supply are issues high on the political agenda these days. Governments are putting strategic plan motion to decrease primary energy use, take carbon out of fuels and facilitate modal shifts. Taking a prominent place in these strategic plans is hydrogen as a future energy carrier. Energy stored in hydrogen would be available at any time and at any place on Earth, regardless of when or where the solar irradiance, the hydropower, or other renewable sources such as biomass, ocean energy or wind energy was converted. Hydrogen gas combined with the standard air/fuel mixture increases the mileage. This form of alternative fuel is provided by a hydrogen generator mounted in the vehicle. Once set up is ready, the hydrogen gas (fuel) will be produced from water, an electrolyte compound, and electricity supplied from a battery provided. Here we are designing a mixed fuel two wheeler engine. In a conventional SI engine we are incorporating traces of hydrogen along with gasoline in order to minimum consumption of gasoline as well as to increase the power of vehicle. Here in addition, a hydrogen generating unit is made to produce hydrogen. It is actually an electrolysis unit having high grade stainless steel/graphite/semiconductors as electrodes in a closed container and mixture of distilled water & suitable ionic solution (KOH or NaOH) as electrolyte. Power for electrolysis is taken from an additional battery provided (12V). This battery can be recharged from a dynamo/alternator/motor provided on the vehicle.

## **MULTITOOL INDEXING MECHANISM FOR FABRIC PUNCHING MACHINE**

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Name of Guide: Mr. Pradip P. sharma

### **Abstract**

Fabric cutting machine is punching machine which produce circular fabric part. Only one tool can be placed on machine at a time. Major difficulty with this machine is idle time and changing of tool. This process become lengthy and labourer. We solve this problem by using multi tools indexing head. Fabric cutting machine works on electric power. Punch tool have bore which produce fabric piece of required dimensions. Worker remove fabric piece from fabric strip.

Multi tools turret head increase number of tools available for operation which reduce machine setup time. Multiple number of fabric piece punched at one time which increase operational speed. Conveyor motor allows movement of strip between two successive punch.

Conventionally fabric punching machine Shailesh brand mechanical Power Presses are coming in both C frame and Pillar type versions from 3 tons to 250 tons capacity in most economical type of construction with several std/optional features such as manual/auto lubrication. Systems; knockouts electronics hand safety; single/double or un-gearred versions as also pneumatic feeders/ straightness and de-coilers for automation Purpose.

## **AUTOMATIC BIKE STAND**

Mr. Pachupate kunal Suresh

Mr. Patil siddhesh manohar

Mr. Salvi viraj Suryakant

Mr. Surve manish Dattaram

Name of Guide: Prof. A. D. Chaudhari

Prof. A. A. Patange

### **Abstract**

In day to day life technology is growing rapidly in two wheelers. Due to conventional middle stand many minor accidents occurs such as if an individual cannot apply required amount of force to lift the vehicle he/she may lose balance and fall on the ground with vehicle on him/her. Hence we are replacing old stand, by automatic hydraulic stand. And we will give demonstration of Automatic bike stand.

The technical highlight of the enhancements is an electro hydraulic center-stand with automatic push-up effect. This new feature enables the rider, even with a passenger and fully loaded, to automatically raise the motorcycle simply by pushing a button, without even getting off his seat. This is accomplished by an electric pump that builds up pressure in a hydraulic system and moves out the center-stand without any manual handling required.

## **Design and Fabrication of Solar Operated Agriculture Weeder**

Mr. Rohit Bhatkar

Mr. Aniket Dhatakar

Mr. Akshay Guhagarkar

Mr. Vishal Rane

Name of Guide: Prof. Balagouda A. Patil

Prof. A. A. Patange

### **Abstract**

In this work our team make agricultural equipment which is useful for farmer, this equipment is known as solar operated agriculture weeder. In India most of people are farmer. For doing fieldwork maximum human power is used, but some present year's needs of workers are necessary but availability of workers are less for field work. So we will make solar operated agriculture weeder. These weeder is design by using inventor software. These weeder will remove grass between two row. It will remove multiple grasses in less time, so complicated work completed in less time. Today's world faces a huge "energy crisis" problem. To meet the future "energy demands", the use of non-conventional energy as an alternate solution is inescapable. In agriculture, weeding is an important task to protect the crops with this motivation, we have developed a solar powered agricultural weeder prototype. This prototype works on solar energy. The prototype was design considering parameters like desired weeding efficiency, low weight, low cost, user friendly nature, high operating time and for faster coverage of area For designing the prototype, the conventional weeding system was studied to understand the mechanism for weeding process. Design calculations were derived after adopting suitable assumptions. The prototype was fabricated according to the design parameters and field tested according to the standard conditions.

## **REDESIGN AND ANALYSIS OF FUEL FLOW VENT HOLE IN AN AIRCRAFT COMPONENT**

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MR. PAWASKAR FARHAN RAFIQUE

MR. KHAN RAIHAN NISAR  
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Name of Guide: MR. VINAYAK HIREMATH

### **Abstract**

This report represents design optimisation of a Fuel Flow Vent Hole (FFVH) located in the Wing Pivot Fitting (WPF) of an F-111 aircraft component. The aim is to determine the shape of the cutout that will maximize its fatigue life under the operating loading conditions. Shape optimisation of vent hole in an WPF assembly is performed using a shape optimization method. Using the shape optimization process, the fuel flow vent hole will give the better fatigue life. The optimum shapes of the vent hole are determined considering the fatigue life. An improved fatigue life is achieved for the optimal designs. The fatigue life of whole cutout is improved, thereby making the shape more evenly fatigue critical. It can also show that a shape optimization additionally produces a reduced weight WPF component, which is highly desirable for aerospace industries & also stress concentration design. This will allow us to achieve a considerable enhancement in fatigue performance. This will significantly contribute to the life extension program of the F-111 aircraft.

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## **INVESTIGATION ON THERMAL PROPERTIES OF COMPOSITE OF RICE HUSK, CORNCOB AND BAGGASSE FOR THERMAL INSULATION**

Mr. Mahesh Bhojane

MR. Vivek Janawalkar

Mr. Rohan Adivarekar

MR. Ketan Haraskar

Name of Guide: Mr. Ganamattaya Hikimath

### **Abstract**

This report represents design optimisation of a Fuel Flow Vent Hole (FFVH) located in the Wing Pivot Fitting (WPF) of an F-111 aircraft component. The aim is to determine the shape of the cutout that will maximize its fatigue life under the operating loading conditions. Shape optimisation of vent hole in an WPF assembly is performed using a shape optimization method. Using the shape optimization process, the fuel flow vent hole will give the better fatigue life. The optimum shapes of the vent hole are determined considering the fatigue life. An improved fatigue life is achieved for the optimal designs. The fatigue life of whole cutout is improved, thereby making the shape more evenly fatigue critical. It can also show that a shape optimization additionally produces a reduced weight WPF component, which is highly desirable for aerospace industries & also stress concentration design. This will allow us to achieve a considerable enhancement in fatigue performance. This will significantly contribute to the life extension program of the F-111 aircraft.

## **Experimental Analysis of Titanium Composites for Mechanical Properties**

Mr. Deoghare Vaibhav Rajendra

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Name of Guide: Prof. Rajnitu Raksharkar

### **Abstract**

Recently, titanium alloys are extensively used in the aerospace field such as jet-engine blades and emerging fields such as tools and sport products for their superior mechanical properties. These components are subjected to fatigue and could fail due to flaws or cracks initiated on the surface. Therefore, surface layer properties of the components such as compressive layer play a major role in the fatigue performance. Compressive residual stresses on the surface retard the growth of surface-initiated cracks to which greatly prolongs the component life. Several processes are available for introducing beneficial compressive residual stresses to component surface layers to increase the fatigue performance. In this study, an attempt has been to estimate the deflection, stresses under subjected loads using FEA. The objective of FEA analysis is to predict the mechanical properties and mechanical response of composite material and then it will be compared and verified with experimental results. This project is divided into some categories that are problem statement to inform the problem or weakness of the existing system, objective to make sure what actually this project must achieve and scope of this project to specify what will be used in this project.

## **Modification in Brake Liner Processing to Increase Productivity**

Mr. Abhijeet Shankar Gade      Mr. Mahaveer Bindyachal Jaswal  
Mr. Heramb Sanjay Karlekar      Mr. Vinit Sadanand Narvekar

Name of Guide: Prof. Mahesh Kale

### **Abstract**

Brake liners are composed of relatively soft but tough and heat resistance material with a high coefficient of dynamic friction typically mounted on a solid metal backing using high temperature adhesives or rivets. Before using brake liner in assembly it is needed to get finished the excess material on liner plate. Industry named “PETHE BRAKE MOTORS PRIVATE LIMITED”, uses two tools, one to get finished the right side and other to finish the left side because of which tool changing time gets added to actual working time. Hence, less products get finished in allocated time. Since the brake lining is applied on both sides of plate it requires excess time to get both sides finished. In addition to finishing time it takes time to change the tool, to get other side finished too. Here, in this project we are going to modify the tool in such a way that, excess time required for resetting of tool will be reduced and production rate will be increased without disturbing any other process parameter.

## **DESIGN AND MANUFACTURING OF MULTIFUNCTIONAL WOOD CARVING MACHINE**

Mr.Bothare Kalpesh Chandrakant

Mr. Gaikwad Sanjay Krushnarao

Mr. Gavde Roshan Shridhar

Mr. Kalwari Suyog Dilipkumar

Name of Guide: Prof. Prasad V. Bapat

### **Abstract**

In the market there is no any machine facilitating for cutting, grinding & buffing operations at a time. So we tried to manufacture the same with all these operations. This equipment describes about the implementation of redesign. Our project being the special purpose equipment, specially meant for having facility to machine the material using abrasion process machine by using the applications of Design for Manufacturing and Assembly methodology.

The machine designed and manufactured can perform multiple operations at the same time on wood with required speed and controlled or operated by motor. We are sure that the information contained in this paper would certainly prove useful for better insight in the scope and dimension of this project in its true perspective.

## **DESIGN AND FABRICATION OF MANUALLY OPERATED HYDRAULIC LIFTER**

Mr. Chivelkar Prasad Ravindra

Mr. Dalvi Vikrant Shivram

Mr. Kadam Yogesh Sandeep

Mr. Thavai Milind Sharad

Name of Guide: Prof. Balagouda A. Patil

Prof. Vinayak Hiremath

### **ABSTRACT**

The following report describes design of manually operated hydraulic lifter .Now a days we need to move materials from one place to another in less time and easily within the workshop or warehouse .So to carry this material a manually operated hydraulic lifter can be used. The lift table can be used as work platforms & raised or lowered to facilitate load transfer, For lifting and placing the material at a particular height the hydraulic cylinder arrangement is used.

Conventionally a hydraulic lift or jack is used for lifting a vehicle to change a tire, to gain access to go to the underside of the vehicle, to lift the body to appreciable height, and many other applications also, such as lifts can be used for various purposes like maintenance and many material handling operations. It can be of mechanical, pneumatic or hydraulic type .The lift can be operated by mechanical means by using pantograph so that the overall cost of the scissor lift is reduced. In our case our lift was needed to be designed a portable and also work without consuming any electric power so we decided to use a hydraulic paddle pump to power the cylinder Also such design can make the lift more compact and much suitable for medium scale work. Finally the design calculation of the hydraulic lifter was done and all responsible parameters were analyzed in order to check the compatibility of the design value

## FEA Based Comparative Analysis of Tube Drawing Process

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Mr. Kashte Vishal Vijay

Mr. Haldankar Pundalik Arjun  
Mr. Pawari Akshay Chandrakant

Name of Guide: Mr. Rajnitu Rakshaskar

### Abstract

Finite element analysis (FEA) simulations are extensively used in tube manipulation processes such as tube drawing, sinking and extrusion. FEA is one of the most important methods to simulate metal forming. This work aims to find the best geometry of die and plug to reduce the drawing force, and also find the residual stresses in the tube using FEA. Die has been designed with different semi-die angle and plug configurations which are all analysed through FEA. Geometric, contact to contact surface and material nonlinearity are involved in this problem. The material of pipe used is steel, die and plug material used is tungsten carbide. In tube drawing, the optimum semi-die angles are identified using FEA.

In this work, the cold drawing of tubes with fixed plug was simulated by using the commercial software Altair Hyper mesh for pre-processing and Simulia Abacus for solving and post processing of this study. The project intends to determine the drawing force and stress, and also helps in reducing lead time and try outs and providing products free of defects and with controlled mechanical properties.

## Optimization of cutting parameters for composite material

Mr. Gawade Pradeep Govind  
Mr. Satle Onkar Anil

Mr. Gawade Pradeep Govind  
Mr. Sawant Omkar Tukaram

Name of Guide: Mr. Anand Biradar

### Abstract

Drilling operation is widely used in the aerospace, aircraft and automotive industries, although modern metal cutting methods have improved in the manufacturing industries, but conventional drilling still remains one of the most common machining. In this study, focuses on the optimization of drilling parameters using the Taguchi technique to obtain minimum surface roughness (Ra), chip thickness and material removal rate. A number of experiment conducted using L9 orthogonal array on vertical machining centre. Experiments were perform on three titanium alloys  $Ti_2Mo_{0.5}Fe$ ,  $Ti_6Al_4V$  and  $Ti_{10}V_2Fe_3Al$  using HSS twist drill under minimum quantity lubrication (MQL). The measured results were collected and analyzed with the help of the commercial software package MINITAB17. Analysis of variance (ANOVA) was employed to determine the most significant control factors affecting the surface roughness, chip thickness and MRR. Depth of cut, spindle speed and feed rate were selected as control factors.

## **Modification of shoe brake machining process**

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Mr. Ghavte Kaustubh Madhusudan

Mr. Jog Bhushan Vinod

Mr. Katkar Tejas Suresh

Name of Guide: Mr. Mahesh Kale

### **Abstract**

A brake shoe is the part of a braking system which carries the brake lining in the drum brakes used on E.O.T. (Electric Overhead Traveling) Cranes, or the brake block in train brakes. When the brake is applied, the shoe moves and presses the lining against the outside of the drum. The friction between lining and drum provides the braking effort. Energy is dissipated as heat. Industry named "PETHE BRAKE MOTORS PRIVATE LIMITED" manufacture a brakes but during manufacturing as the size of shoe brake increases it get difficult to cast and the casting cost and machining time increases. Existing Casting of large homogeneous piece which contain four shoe is done because of large casting various type of defects are occurred and handling is also difficult. Here, in this project we are going to do casting of separate shoe and for machining that four separate shoe at same time fixture is design so casting and machining time reduces.



## **Dual axis passive mechanical solar tracking system**

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Mr. Patil Ajit

Mr. Jorwekar Ajinkya  
Mr. Lad Omkar

Name of Guide: Mr. Prashant Bhise

### **ABSTRACT**

Tapping energy has been the key to human evolution. This project is aimed at designing, constructing and testing of a single axis, variable speed passive solar tracking device. This is because all the solar trackers in use in the country are mainly imported. The design works on the principle that boils at very low temperatures i.e. somewhat lower than 34.44 °C thus generating great pressures even with just a small quantity of it evaporating. This pressure generated from the evaporation of some of the Normal pentane tilts the collector in the direction of the sun through a hydraulic cylinder pivoted to the collector base. The solar tracker was designed, constructed, and tested by mounting a solar Photovoltaic (PV) module on the tracker and comparison of the power output of the PV module on the tracker against that of a stationary PV module was made. Results showed that the tracking panel had an average relative performance of about 30% over the stationary module and a cost of over 40,000 cheaper than that of the imported one. It was thus concluded that the project was a success because the relative performance obtained is in agreement with reported performance is similar.