

Design and Fabrication of PET Bottle Shredding Machine

Submitted by

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ABSTRACT

The report is about design of a Plastic Bottle Shredder which would help to cut the used PET Plastic bottles and would thereby help in waste management and disposal. This project aims to design a Plastic Bottle Shredder that cut of used bottles. This project involves the process of designing the shredder considering forces required for cutting and ergonomic factor that an operator needs. The design of this machine is such that it would require optimum load to cut bottles. This machine is widely used in industries and recycling plants. The introduction of plastic shredder machine will promote reduction of post-consumer plastic waste accumulation and serves as a system for wealth creation and empowerment through conversion of waste into economically viable products.

So our intension behind this project is to process the plastic waste as cheap as possible by cutting where it is made for reducing of labour work which results in cost reduction. A cutting machine is designed to reduce large solid material objects into a smaller volume or small pieces. In this project there describes about the experimentation of plastic bottle cutting machine and analysis of mechanism used in machine. Plastic bottle cutter is a machine used for cutting the plastic in small pieces to make waste management easier. We are making this project model for recycling of plastic wastage in domestic area; industries as well as it can be useful to the scrap collectors. This machine is solution of plastic waste space problem.

Keywords:- Shredder Machine , PET (Polyethylene Terephthalate) Bottles , Hopper ,
Cutting Tool , Electric Motor.

Design And Fabrication Of Agricultural Waste Shredder Machine

Submitted by

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Under the guidance of: Mr. Ashish D. Chaudhari

ABSTRACT

The scope of this project was to design and development of Shredder machine focus on chopping of coconut leaves, areca leaves, this chopped powder to prepare the vermin compost. The project began with collection of information and data on user lifestyle and current process by which they perform their job. Concepts was developed with reference of four different shredder machine and operating processes. Concept was developed considering the safety factor users operating environment and maintenance. Considering the users' needs and buying capacity, a prototype was fabricated. The machine consists of single-phase motor, spur gear, bearings, structural frame, cutter and dual shaft. The machine frame is built using mild steel and tungsten carbide is used for cutter tip preparation. Eight cutters are mounted on two shafts, which rotate parallelly driven by a spur gear. The power from the electrical motor is transmitted to cutter shaft through a belt drive. Cut is made inside the chopping house due to the effect of tensile, friction, and impact effect in chopping process. The waste gets chopped and powder is collected at the bottom.

Keywords: Agro Waste, Shredding Machine, Cutter, Spur Gear, Three- Φ Motor, Shaft, Compost

Semi- automatic file counting system

Submitted by

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ABSTRACT

The selected project is industrial project from JK files, khadpoli. In this project we are trying to solve the problem related to counting of files. The triangular files are being counted by means of their weight in the company. The bunch of files is place on the weighing machine & based on the approximate weight of the single file, files are counted. But there is uncertainty in weight of files, hence it leads to errors in counting. In order to overcome these errors and boosting the counting process we are providing semi-automatic file counting system. Our system consists conveyor system, hopper, vibratory system & IR sensor with its circuit. Files are loaded in the hopper & dropped on the conveyor. In order to avoid blocking of files the vibratory system is provided which will shake the hopper & control the feed rate. The conveyor is used to handle the files. IR sensor circuit is used to count the file. The files are counted due to the interruption in IR.

Keywords : Triangular file, counting, sensor, hopper, etc

Coco Fiber Extraction Machine

Submitted by

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ABSTRACT

The scope of this project was to design and develop a coconut fiber extraction machine for farmers and small scale coir industries in India to provide an effective solution to the difficulties in existing process, reduce time and labour cost and to develop a compact coconut fiber extraction machine which could be used in remote villages so that unutilized husks from such areas could be tapped and fiber could be made available to the Coir Industry directly. This project was taken up to develop a promotional strategy for a new innovation and generate public awareness regarding the availability of a coconut fiber extraction machine in the market at a reasonable cost.

Concept was selected by considering the users operating environment and maintenance, which could be used in small scale coir industries and in the farm sector. Considering the user's needs and buying capacity, a design is made. This machine works with beater blades action, in which one shaft rotates at the certain rpm carrying beater blades and by progressing the husk through these blades the defibering of husk takes place. The shaft is driven by the electric motor through belt drive. Beater blades are mounted on a shaft such that it effectively progress towards the outlet port. The fibers extracted are collected at the outlet port. The feeding of the husk is through the hopper. Feeding is done manually.

Validation was carried out with the user group and the feedback was positive. It was noticed that there is potential market for this product. Further work could be carried in terms of aesthetics, material and weight reduction by adopting advanced manufacturing techniques.

Keywords: Coconut fiber extraction machine, Defibering.

Design and Fabrication of Hopper for Orderly Arrangement of Drill Bits

Submitted By

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Under the guidance of: Mr. Prasad Bapat

ABSTRACT

The industry in which we are doing our project is JK FILES, INDIA PVT LTD. The basic idea of the mechanism is to Semi-automate the existing traub machine indexing mechanism. The current situation of the indexing mechanism is that the drill bits which are cropped out from the machining centre does not fall in an organized manner, this therefore results in more man hours for rearranging the finished drill bits. Before arranging the finished drill bits they are made to fall through a funnel type guide mechanism which further extends to an slider and an out tray which primarily helps in guiding the finished drill bits and helps in rearranging the further drill bits with the help of a slider having width same as that of the drill bits diameter. Further the drill bits are guided to an out tray for orderly arrangement having dimensions to collect a defined set of drill bits.

Design and fabrication of bar feeding mechanism for Traub machine

Submitted by

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Under the guidance of: Mr. Prasad Bapat

ABSTRACT

The industry in which we are doing our project is JK FILES, INDIA PVT LTD. Our project is industrial project, we are trying to solve problem of the industry i.e. JK files. We are working of the drill bits. The feeding rod in the Traub Machine is currently done manually .This results in maximizing the working hours thereby increasing production time and cost. The subject is undertaken as a part of B.E mechanical project. The introduction of automation of the feeding of this Traub Machine will reduce production time drastically. A chain drive mechanism used to do the same. Basically the chain carries push mechanism which causes the forward movement of the rods sub sequentially arranged into the machining head of the Traub Machine. This is one of the automation processes by using the DC motor. The bar feeding mechanism is our project, which is fixed with the motor. The motor controls the ms round bar in the mechanism automatically by using the electronic automations. The ms round bar can be moved in the mechanism with the regular time interval. The time interval can be determined by the keypad, which is interfaced with the controlling unit. The controlling unit will control the motor through the motor controller. This results ease in the process of feeding the bar in Traub machine. Thus this automatic bar feeding mechanism will reduce the manual workout and also the production time and cost.

Keywords : Bar feeding, Traub machine, belt, pulley, Three- Φ motor

Design and Analysis of Prosthetic Leg

Submitted By

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Under the guidance of: Mr. Pradip Sharma

ABSTRACT

Prosthetic legs are artificial devices which substitutes missing leg of the amputee. This helps the patient to perform the day to day activities. As we know that prosthetic legs are not a new field, but many prosthetic legs like myoelectric prostheses are expensive for many peoples from developing countries like India. As more technology used in prostheses, cost also get increased with it. So it is necessary to reduce cost by using simple but effective mechanism without losing quality of performance.

The main objective for the project was to design a low cost, above knee prosthetic leg and analyze design against various loading conditions. This project focused on designing simple, durable and reliable prosthetic leg. The cheaper alternative solutions for existing prosthetics were found by us like use of cost affordable materials. Our aim was to design simple knee by using four bar linkage mechanism. With the help of foot insert and flex pad we achieved better foot movements. This system of foot successfully controls the amount of dorsiflexion and act as damper.

As actual manufacturing of leg is difficult task and for single leg production it is too much expensive, we made one prototype to show our design.

Keywords:-Prosthetic leg, amputee, myoelectric prostheses, four bar linkage mechanism.

Modification and fabrication of box transfer mechanism

Submitted by

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Under the guidance of: Mr. Mahesh Kale

ABSTRACT

This project aims for the utilization of kinematic synthesis (type, dimensional and number) to fabricate a working physical model of an eight link transport mechanism. The mechanism to be developed in its simplest form would perform the function of transporting boxes/articles which are being fed onto two rails and are moved ahead one by one. The eight bar mechanism allows moving more than one article as compared to its four bar counterpart. Transport mechanisms generally move material and their application lies in various industries manufacturing, assembly, packaging etc. also this model can be used in small scale industries. According to the cost and required space this model is compact and economic option for other conveyor system. The objective of our project is to produce a mechanism that delivers this stop and move motion using mechanical linkages. This machine is basically works on the principle of Single Slider Crank Mechanism and four bar chain mechanism. The advantage of our system over the conveyor system is that the system has a time delay between moving packages and this delay can be used to introduce any alterations in the package or move the package for any other purpose and likewise. While in conveyor system such actions cannot be performed unless programmed module is used to produce intermittent stopping of the belt which basically is costly. The prototype design requires electric motor, shafts and the frame of which the frame and platform on which the packages are moved is fabricated. Completely programmed machines are accessible for both setting up the cases, putting them on the wrappers and sustaining the gathering to the wrapping machine.

Key words: Crank mechanism, crank unit, inertia force balance, Material handling, Productivity

Design and Fabrication of Coconut Dehusking Machine

Submitted By

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Under the guidance of : Mr. Balagouda A. Patil

Mr. Mahesh R. KAlE

ABSTRACT

Coconut husk is used in coir industry, shell as a fuel, copra as food, coconut water as nutritious liquid. The dehusking of a coconut is regarded as the most time consuming, tiring, and difficult operation to perform and involves much human drudgery. Dehusking with traditional hand tools like machete or a spike depends on the skill of worker and involves training. Nowadays there is shortage of such skilled workers. The mechanized or the power operated machines are developed to eliminate the drawbacks of manual tools. This present work aims to design and develop a semiautomatic coconut dehusking machine with eliminating the above mentioned drawbacks of the existing tools and machines. The machine conceived shall have main parts like dehusking unit mounted on a frame with electric motor as a power source along with speed reducing unit. The dehusking unit shall have a pair of cylindrical rollers with tynes (cutting pins) on its surface. These rollers will rotate in opposite direction with different speeds so that the tynes will penetrate into the husk and tear it away from the shell. The proper tearing of husk from shell occurs when the coconut offers good mesh with the tynes and it depends on the depth of insertion of nut into rollers and profile of tynes. Also the suitable profile of tynes is required for effective dehusking. These tynes shall be attached to the cylinders with fasteners so that replacement can be easily done.

Keywords: Coconut, Dehusking, Tynes, Husk, Cylinders.

An Experimental Investigation and Performance Behaviour Of CI Engine Using Nano Additives

Submitted by

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Under the guidance of: Mr. Vinayak Hiremath

ABSTRACT

Biofuels are considered as eco-friendly fuels and can readily replace fossil fuels while helping to reduce greenhouse gas emissions and promoting sustainable rural development. Although India is an oil producer and exporter, the development of renewable energies is a strategic goal for public authorities, which are giving new impetus to this sector to replace the fossil energy resources of which are becoming increasingly scarce. The life cycle of Seed-based biodiesel production includes the stages of cultivation, oil extraction, and biodiesel production. The impact categories studied were global warming, Energy return-on-energy investment (EROEI), human health, and ecosystem. Life-cycle analysis revealed that the use of castor for biodiesel production could have many advantages like an energy return-on-energy investment (EROEI) and a positive contribution to climate-change reduction as revealed by a positive carbon balance. Owing to the increasing cost of petroleum products, fast depletion of fossil fuel, environmental consideration and stringent emission norms, it is necessary to search for alternative fuels for diesel engines. The alternative fuel can be produced from materials available within the country. Though the vegetable oils can be fuelled for diesel engines, their high viscosities and low volatilities have led to the investigation of its various derivatives such as monoesters, known as bio diesel. It is derived from triglycerides (vegetable oil and animal fates) by transesterification process. It is biodegradable and renewable in nature.

Keywords: Biodiesel; Vegetable Oil; Transesterification; Combustion; Performance.

Performance and Combustion Characteristics of CI Engine Using Composite Material in Diesel Blends.

Submitted By

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Under the guidance of: Mr. Vinayak Hiremath

ABSTRACT

In this work, biodiesel (ethyl ester) was prepared from waste cooking oil collected from a local restaurant in konkan region. The biodiesel was characterized by its physical and fuel properties including density, viscosity, flash point, cetanenumber water and sediment content, glycerine content, Production of biodiesel from waste cooking oil for diesel substitute is particular important because of decreasing trends of economical oil reserves, environmental problem cause due to fossil fuel used and high price of petroleum product in the international market.

We are conducted six trials with different proportional blends. The blends are BD5, BD10, BD15 and BD15 with composite material (N- Butenol), BD20 with N- Butenol and BD25 with N- Butenol. The testing is done on 4 stroke single cylinder water cooled Diesel Engine.

In that, Mechanical Efficiency at BD5, BD 20 + 10% N- Butenol and BD 25 + 15% N- Butenol increases. Brake thermal efficiency at BD5, BD 20 + 10% N- Butenol and BD 25 + 15% N- Butenol increases and Indicated thermal efficiency slightly increases. The Brake power was decreases also Brake Specific Fuel Consumption was decreases.

Keywords:-Waste cooking oil, Biodiesel, Composite material, Performance Characteristics, Combustion Characteristics.

Analysis and Characterization of Suitable Material for Poppet Valve

Submitted By

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2. Mr. Mukadam Walim Abdul Rehman (M835)
3. Mr. Pawaskar Ameen Mohammad Shafi (M843)
4. Mr. Waje Subodh Subhash (M863)

Under the guidance of: Mr. Rajnitu R. Rakshaskar

ABSTRACT

The main role of the poppet engine valve is to ensure the gases exchange process for all the engine speeds. In this project we are going to propose a suitable material for the poppet valve which will improve a life span of the poppet valve. With the analysis of suitable material of the poppet valve by studying the various properties such as its high temperature resistivity, wear resistivity, corrosion resistivity etc.

A composite material is a combination of two or more different materials, it gives superior quality than its constituents. Composite materials can be used not only for structural applications, but also in various other applications such as automobiles, aerospace, marine, etc. The reinforcement material is embedded into a matrix. The reinforcement does not always serve a purely structural task (reinforcing the compound), but is also used to change physical properties such as wear resistance, friction coefficient, or thermal conductivity. The reinforcement can be either continuous, or discontinuous. Discontinuous MMCs can be isotropic, and can be worked with standard metalworking techniques, such as extrusion, forging, or rolling. We are generating new material for poppet valve with base material aluminiums and adding reinforcement material like graphite, boron carbide, fly ash to increase aluminium properties. This material is tested for different tests like hardness, tensile and thermal conductivity for analyzing change in these respective properties.

Keywords :- Composite material, poppet valve, testing, etc.

Analysis and characterization of suitable material for poppet valve

Submitted by

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Keywords :- Composite material, poppet valve, testing

Analysis and Estimation of Energy Saving in Cooling Tower Pumps

Submitted by

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Under the guidance of: Mr. Rajnitu Rakshaskar

ABSTRACT

The selected project is industrial project from Finolex Industries Ltd. Ratnagiri. In this project we are trying to solve the problem related to excess power consumption due to excess of cooling water flow. They supply cooling water to their different plant sections from cooling tower sump by using centrifugal pumps. There are two pumps having capacity each of 3000 m³/hr. and one pump of capacity 1500 m³/hr. There are all three pumps and two pumps are used at a time with combinations. But our main focus is at the combination of two pumps of 3000 m³/hr. flow rate which is called as 'full load' (total 6000 m³/hr. flow rate). While using full load capacity pumps there is some amount of extra flow than desired which leads to extra power consumption. To achieve the required flow we need to study flow rates in different sections, find out extra flow and finally analyse and design the desired capacity pump to reduce the power consumption.

Key Words- Centrifugal pumps, Flow rates, Flow analysis, Power consumption etc.

Rotary Mechanism for collecting and arranging the drill bits

Submitted by

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4. Mr. Tawde Devesh Dilip (M862)

Under the Guidance of: Mr. Anand Patange

ABSTRACT

This project is based to design and fabricate the rotary mechanism to avoid the functioning of drill bits. The actual work for making this mechanism is to collect and arrange the drill bits in sequencing manner in the triangular hub. As the project is considered to be a concept, the collecting and arranging of drill bits are manually worked out at the traub machine where the drill bits fall out in improper manner. The mechanism consists of a various operating parts which are helpful for collecting and arranging the drill bits. The mechanism has a stacking disc which is the main part of the mechanism whereas the other parts are the helping hands for it. The stacking disc is operated over the traub machine's power where the disc has four rectangular bit collector which is having a push pin attached to the end of the collector. The traub machine cuts the drill bits in a fraction seconds as the disc is situated near by the fall out of drill bits. The collecting matters the arranging of the drill bits and it is possible by the stacking disc by using the rotary mechanism.

Keywords: Stacking Disc, Stack holders, Push pins, Drill bits etc.

Design and Fabrication of Grass Cutter Machine

Submitted by

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Under the Guidance of: Mr. Anand Patange

ABSTRACT

This project summarizes and reviews technological development for making efficient and cost effective grass cutter. The Motive of the project work is to design and fabricate the best solution for grass cutting by utilizing the manual power with chain drive and bevel gear mechanism. The proposed grass cutter machine works on pedal drive. The cutting action is achieved by horizontal cutter and this cutter runs with maximum speed 350 rpm. In this machine, the chain drive mechanism is used to transmit the maximum power from pedal to cutter with maximum rpm, with the help of suitable bevel gear arrangement. Suitable braking system is installed on chassis to control the vehicle over hilly area and wavy surfaces. The grass cutter machine is fabricated with the addition of bicycle chassis.. This is a new innovative concept mainly used in lawn cutting field. The components that are used for manufacturing grass cutter are cutter, chain drive mechanism, sprocket, Bevel gear, chassis and Braking system.

Keywords: Cutter Blades, Chain Drive Mechanism, Braking System, Chassis etc.

Modification of Rasp File Cutting Machine to Enhance the Productivity

Submitted By

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Under the Guidance of: Mr. Anand Biradar

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ABSTRACT

J. k. Talabot Ltd, Khadpoli is a File manufacturing company. It manufactures tools and hardware products. The company produces and distributes hand tools and other hardware items, including files and rasp. JK Talabot operates in India. Currently they are employed a machines. Those various files are made on various machine. Rasp files are made on GR press machine. On that GR press machine wastage of time taking place. So the company faces some type of issue like productivity, skilled labour requirement, more time consuming, wastage of material. In the company various types of rasp files are manufactured. So if the production changes machine set up also need to be change and it is time consuming. The forward stroke of GR press machine head are achieved with the rack and gear arrangement. So we removed this arrangement and replace it with the Hydro-Pneumatic System and control the both forward and reverse stroke of head movement as per our methodology. So we can reduce the cycle time and setup time to increase the productivity.

Keywords : Hydro-Pneumatic System, Head movement, Files, etc.