

A Project Report on

ANALYSIS OF COMPOSITE LEAF SPRING

Submitted in partial fulfillment of the requirements for the award of

Bachelor of Technology

In

Department of Mechanical Engineering By

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Nandamuru - 521369.

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ABSTARCT

Leaf springs are the vital parts of the automobile suspension system. These are manufactured by plain carbon steels. These steels are also called as conventional steels and these materials are having higher density values compared with the composite materials. However, the weight reduction of leaf springs enhances the automobile design criteria and parameters. For this project our aim is to reduce the weight ratio of conventional steel leaf spring with the compensation of leaf springs made of composite material. For weight reduction of leaf springs made of E-glass Epoxy and Jute glass fibres are taken in to the consideration. These leaf springs are analysed in CATIA and ANSYS software applications. The automobile industries are interested in composite material leaf springs to their strength, stiffness, and deformation and weight ratios. From this design and analysis we get the result of weight reduction up to 80% of convention steels and also got the strength, deformation values of composite leaf spring approximately equal to the plain carbon steels. The use of Leaf spring made of composite material in automobile enhances the life of leaf springs and increase the durability of leaf spring.

A PROJECT REPORT ON
**MODELLING AND FABRICATION OF MULTI-PURPOSE
AGRICULTURE ROBOT**

Submitted in partial fulfillment of the requirements for the award of the Degree of

Bachelor of Technology
in
Department of Mechanical Engineering

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ABSTRACT

Agriculture being one of the major occupations in India, it is very essential to discover and implement new idea in this field, though lot of work has been done in this area. It is unfortunate that, these ideas are not been implemented properly in actual field. This is due to high cost and is complicated for rural people. Multipurpose agriculture equipment is basic and major equipment involved in agriculture for maximum yielding.

This approach is to the designing of agricultural robots for various tasks. Certainly, robots are playing an important role in the field of agriculture for the farming process autonomously and manually controlled robots. In agriculture, the opportunity for the robots is enhancing productivity and robots are appearing in the field in large numbers. The proposed system focuses on implementing all the farming processes, especially in the field of ploughing and seeding with the help of the Multi-purpose robots. The components used in the robot were the Arduino unit, rack and pinion mechanism, motor drivers, etc. The robot gets a command from the remote controller where the work in the field has to be done. In continuation, the rest of the remaining process could be done automatically. In recent years the development of autonomous and semi-manual control robots in agriculture has experienced more interest. This robot will help the farmers in doing the farming process more accurately.

Conventional method of planting and cultivating the crops is a laborious process and hence for that reason there is a scarcity of labors, this result in delayed agriculture to overcome these difficulties. Multipurpose agriculture equipment is designed. Agriculture plays a vital role in the Indian economy. Over 70 % of the rural households depend on agriculture. Agriculture is an important sector of Indian economy as it contributes about 8.4% to the total GDP and provides employment to over 60% of the population. Indian agriculture has registered impressive growth overlast few decades.

Key Words: ploughing, drilling, seed sowing & water spraying.

A Project Report on
**FABRICATION AND ANALYTICAL ANALYSIS OF BIOGAS
DIGESTER**

Submitted in partial fulfilment of the requirements for the award of

Bachelor of Technology

In

Department of Mechanical Engineering

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ABSTRACT

Biogas production from animal waste is one of the oldest processes of gas generation for cooking applications in households. Abundantly these biogas plants and setups are observed in villages and rural areas with an aid of Anaerobic Digestion methodology. However, the cow dung biomass composition takes more hydraulic retention time for biogas yield. But in present study to overcome this hydraulic retention time we study and analyse on the kitchen waste and sugary waste compositions. Generally these wastes are produced from our households and restaurants. Through analytical analysis we are going to calculate how much biomass required and design specifications of portable biogas digester to generate equal amount of biogas production from cow dung composition. Because these waste have less hydraulic retention time and having high methane content compared to cow dung composition. By doing analytical analysis we observed that same quantity of biogas produced from cow dung composition is also produced from the kitchen waste and sugary waste with minimum quantity of biomasses. Finally through analytical analysis we generate the biogas from kitchen and sugary wastes equivalent to cow dung biogas production. This study enhances the effective usage of household, municipal, and restaurants wastes in the application of biogas production and increase the biogas usage rate instead of LPG.

A Project Report on
**MODELING AND ANALYSIS OF GRAIN BAGGING
THROUGH VACUUM MACHINE**

Submitted in partial fulfilment of the requirements for the award of

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A PROJECT REPORT ON
EXPERIMENTAL INVESTIGATION ON ENHANCEMENT OF HEAT TRANSFER IN
RADIATOR USING WATER & COPPER OXIDE NANOFLUIDS

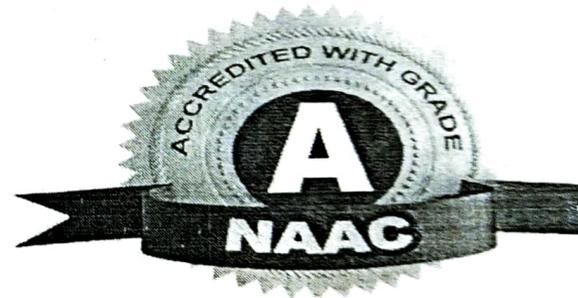
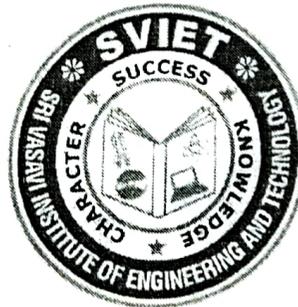
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2018-2022

ABSTRACT

Heat transfer – An ever-rejuvenating phenomenon from and for decades together. Though numerous approaches like geometrical modifications and heat transfer enhancing approaches are instigating, developing and pioneering the studies on heat transfer is remarkably new with innovating approaches. Every technique is unique and applicative dependent. Recent past is the evident for the suspension of high thermal conductive nanoparticles in conventional fluids in order to improve the heat removal from the various electro-mechanical components. Engine cooling is a primary requisite in automobile using radiator. Utilizing the enhances thermal properties of nanofluids would able to provide better thermal management to the engine. In the current study, copper oxide nanofluids are proposed to investigate the heat transfer performance with and without the influence of magnetic effect. Studies on magnetic effect are relatively very scared. 0.05% and 0.5% are concentrations are proposed to run the experiments, however anti- freezing elements are necessary to push the influence of phase change of working fluid. By inducing the magnetic flux on fluid flow direction may leads to improve the heat transfer rate and minimize the sedimentation phenomenon as well. It is estimated that by replacing conventional coolant with this nanofluids, reduction in the frontal area of radiator is done which gives more flexibility for industrial design, more eco-friendly vehicle which produces less drag and hence less the fuel cost.

A Project Report On

“MODELING AND ANALYSIS OF CAR WHEEL RIM”

Submitted in partial fulfilment of the requirements of the award of the degree of
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In

Department of Mechanical Engineering

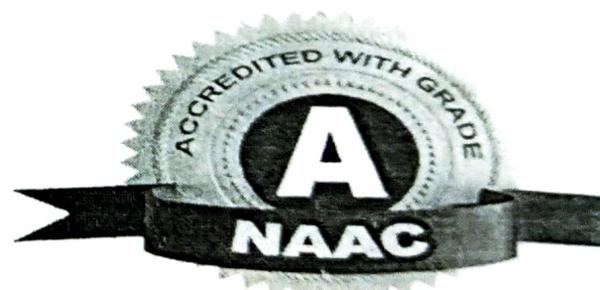
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2018 – 2022.

ABSTRACT

The purpose of the car wheel rim provides a firm base on which to fit the tyre. Its dimensions, shape should be suitable to adequately accommodate the particular tire required for the vehicle. In this study a tyre of car wheel rim belonging to the disc wheel category is considered. Design in an important industrial activity which influences the quality of the product. The Project is carried out to study the Equivalent Stress, Equivalent Strain, Deformation in car wheel rim for different materials such as Carbon fibre, E-Glass/Epoxy, Titanium aluminide. The wheel rim is designed by using modelling software CATIA V5 R21. In modelling the time spent in producing the complex 3-D models and the risk involved in design and manufacturing process can be easily minimized. So, the modelling of the wheel rim is made by using CATIA. Later this CATIA model is imported to ANSYS for analysis work. ANSYS 2021 R2 software is the latest used for simulating the different forces, pressure acting on the component and also for calculating and viewing the results. A solver mode in ANSYS software calculates the stresses, deflections, bending moments and their relations without manual interventions, reduces the time compared with the method of mathematical calculations by a human.

A PROJECT REPORT ON
DESIGN AND ANALYSIS OF A COMINATION TOOL
Submitted in partial fulfilment of the requirements for the award of the degree of

Bachelor of Technology
In
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2018-2022

ABSTRACT

The undertaken project work involves design and analysis of a COMBINATION TOOL to produce TABLE TOP NAME CARD HOLDER. The combination tool performs both cutting and non-cutting operations. It can be done in the following way. The piercing, notching, lancing & bending operations are performed in the first stage, and then the blank is kept in the inverted position in the second stage where another bending is carried out. The relative positions with the previously pierced holes are maintained during the bending operation, with locating pins.

A PROJECT REPORT ON
A PARAMETRIC HEAT TRANSFER
ANALYSIS ON METALS BY USING ANSYS
SOFTWARE

Submitted in partial fulfillment of the requirements for the award of the Degree
of Bachelor of Technology

In

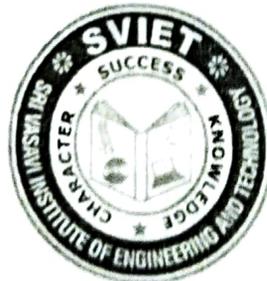
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Nandamuru-521369

2018 - 2022

ABSTRACT

Heat transfer is one of the important phenomena in any device .This report describes the variations of heat transfer rate based on their properties of material characteristics and conditions. The experimental investigation of thermal conductivity of metal rod is compared with numerical analysis (ANSYS). The numerical investigation with different parameters like materials, cooling fluids and heat flux magnitude.

Key words: - Thermal Conductivity, Heat Flux, ANSYS, Material, coolants.

A PROJECT REPORT ON
**FABRICATION AND ANALYSIS OF ELECTRIC
BICYCLE**

Submitted in partial fulfilment of the requirements for the award of the Degree of
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2018-2022

ABSTRACT

Increasing demand for non-polluting mechanized transportation has revived the interest in the use of electric power for personal transportation and also reduced reliance on automobiles. A low-cost alternative to an automobile is a bicycle. However, the use of bicycles has been limited to very short trips or as a recreational activity. This report describes the design of an electric assisted bicycle that will extend the range of a typical rider. The human electric bicycle is designed to provide electromagnetic propulsions to a bicycle therefore relieving the user of having to produce the energy required to run the bicycle. The system design is based on mechanically coupling a dc motor as the primary power source to drive the bicycle and electrically wiring the motor together with a dc rechargeable battery and efficient transmission from the source to the motor.

**A PROJECT REPORT ON
MODELING & FABRICATION OF E-BABY CRADLE SYSTEM**

**Submitted in partial fulfillment of the requirements for the award of the
Degree of Bachelor of Technology**

In

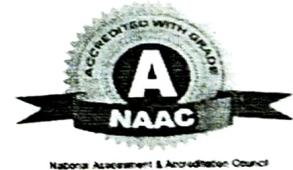
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A PROJECT REPORT ON
**FABRICATION & ANALYSIS OF
ELECTRO MAGNETIC BRAKING SYSTEM**

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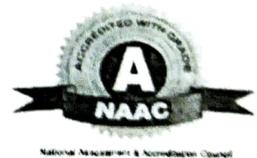
By

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ABSTRACT

Cradle is an appliance which uses to carry a baby and oscillate automatically with certain speed for comfort sleep of a baby. Baby's sleeps sound in mosses baskets or cradle, as they afford a limited sleeping atmosphere which helps them feel secure. E-Baby Cradle is a concept, which enables the movements of a carriage, to raise the cradle, automatic movement of cradle when baby is disturbed and much more. The equipment E- Baby cradle includes a 12V DC motor, links, and an oscillating bed and sensors. The electric powered motor will actuate the links by shaft. Links actuates the rod attached to the bed at constant speed. It will also ensure the cradle motion even when the baby cries or moves using sensors. Motor, link and sensors are attached to the side of the cradle frame. High strength, lightweight material is used for the manufacturing of Cradle. E-Baby cradle is the most cost effective, user friendly, automated mechanism for baby care in the modern families. Our project aims at the modeling and fabrication of an Electro Mechanical Cradle for the purpose of using it infamilies with medium income.

ABSTRACT

An electromagnetic brake is a new and revolutionary concept. These are totally friction less. Electromagnetic brakes are the brakes working on the electric power & magnetic power. Electromagnetic braking system is a modern technology braking system used in light motor & heavy motor vehicles. This system is a combination of electro-mechanical concepts. The frequency of accidents is now-a-days increasing due to inefficient braking system. It aims to minimize the brake failure to avoid the road accidents. An Electromagnetic Braking system uses Magnetic force to engage the brake, but the power required for braking is transmitted manually. The disc is connected to a shaft and the electromagnet is mounted on the frame. When electricity is applied to the coil a magnetic field is developed across the armature because of the current flowing across the coil and causes armature to get attracted towards the coil. In this research work, with a view to enhance to the braking system in automobile, a prototype model is created and analyzed. Different material of higher electrical conductivity will be studied as the brake disc material for this electromagnetic braking system using eddy current in ansys software to know the greater performance of the brake.

A Project Report on
MAGNETIC NANOFUIDS - A NEW APPROACH TO THERMAL
MANAGEMENT OF AUTOMOBILE RADIATOR

Submitted in partial fulfillment of the requirements for the award of the Degree of
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In
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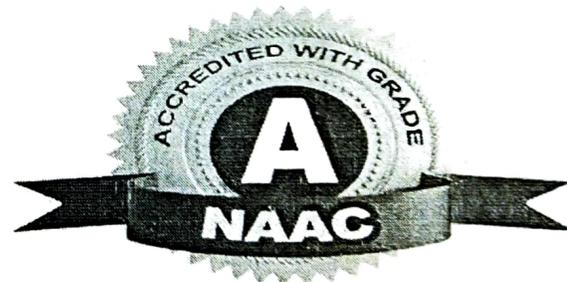
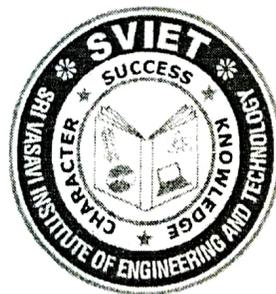
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2018 – 2022

ABSTRACT

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