

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**  
BELAGAVI - 590018  
2017 -2018



**A Project Report**  
**On**  
**“Energy Harvesting Shoes”**

Submitted in the partial fulfillment of the requirement for the  
VIII Semester project work – 10MEP85 for the award of degree of

**Bachelor of Engineering**  
in  
**Mechanical Engineering**

By

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**1GV14ME009**  
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Under the Guidance of  
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**Dr.T.THIMMAIAH INSTITUTE OF TECHNOLOGY**  
**(Formerly Golden Valley Institute of Technology)**  
**Department of Mechanical Engineering**  
**Kolar Gold Fields – 563120**

# Dr.T.THIMMAIAH INSTITUTE OF TECHNOLOGY





(Formerly Golden Valley Institute of Technology)  
Oorgaum Kolar Gold Fields – 563120


DEPARTMENT OF MECHANICAL ENGINEERING.

## CERTIFICATE

Certified that the **Project work** entitled "*Energy Harvesting Shoes*" is a bona fide work carried out by **Ajith HL- 1GV14ME003, Basavaraj S Daboji- 1GV14ME009, Mudamallappa Nedalagi- 1GV14ME028 and Prem Kumar v - 1GV14ME030**, in the partial fulfillment for the award of degree of Bachelor of Engineering **Mechanical Engineering** of the **Visvesvaraya Technological University**, Belagavi during the year 2017-18. It is certified that all corrections/suggestions indicated for the assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirement in respect of **Project Work – 10MEP85** prescribed for the Bachelor of Engineering Degree.

  
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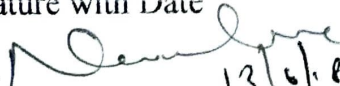

  
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## ABSTRACT

This report consists of designing and fabrication of an energy harvesting shoe using active materials for power generation from the shoe sole. The active material as PZT has been employed and modified to be appropriately embedded in the shoe sole. When the mechanical pressure is applied to the embedded shoe sole while walking would extract mechanical vibration energy and convert extracted energy to electrical energy directly from the piezoelectric structure inserted in shoe sole via a rectifier to a storage battery. The power processing system regulates the harvested electrical energy and accumulates the generated electrical energy to sufficient voltage level for powering portable electronic devices for later use. The simulation and experimental results of energy harvesting circuit and efficiency of the extracted ambient vibration energy by PZT in terms of electrical voltages during single step and continuous walking for a period of time will be tabulated.

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**

**“Jnana Sangama”, Belagavi-590018**



**A**

**PROJECT REPORT**

**ON**

**“ANALYSIS OF HEAT TRANSFER THROUGH  
PERFORATED FINS”**

Submitted in Partial fulfillment of the Requirements for the award of the Degree of Bachelor  
of Engineering

**In**

**MECHANICAL ENGINEERING**

For the academic year 2017-18

**Submitted By**

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**DEPARTMENT OF MECHANICAL ENGINEERING  
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DEPARTMENT OF MECHANICAL ENGINEERING



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1. ....

2. Sanjay ka

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## Abstract

It is very important to dissipate unwanted heat generated in mechanical devices such as IC engines, radiators, electronic IC's etc. to the atmosphere. Extended surfaces are widely used in many engineering application because of easy in construction, less space requirement, light weight etc. This study examines heat transfer augmentation from a rectangular fin embedded with circular perforation under natural convection compared to the equivalent solid (none perforated) fin using ANSYS. Fins with different perforation diameters and number of perforations keeping length constant are examined. The parameters considered were geometrical dimension and thermal properties of fin such as material properties, convective heat transfer coefficient. Study showed that as perforations increases, heat transfer rate also increases up to certain dimension and then starts decreasing. It is also observed that heat transfer enhancement of the perforated fin increases with increase in diameter of perforation and number of perforation.

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**

**“Jnana Sangama”, Belagavi-590018**



**A**

**PROJECT REPORT**

**ON**

**“FABRICATION OF FRICTION AND WEAR TESTING MACHINE”**

Submitted in Partial fulfillment of the Requirements for the award of the Degree of  
Bachelor of Engineering

**In**

**MECHANICAL ENGINEERING**

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## ABSTRACT

Friction and wear behaviours of ball bearings made from carbon-chrome steel were experimentally simulated using a modified ball-on-disc tribometer. The test was performed over a broad range of applied loads ( $W$ ), sliding velocities ( $v$ ) and sliding distances ( $L$ ) under gas lubricated conditions using a Lead Screw Method. The results found that gas blown to the sliding surfaces in air effectively reduced the coefficient of friction as compared with the air lubrication at higher applied load, sliding speed and sliding distance. In addition, a specific wear rate is constant throughout the tests under gas lubricated conditions. However, under air lubrication, the specific wear rate decreases with increasing applied load, sliding speed and sliding distance. By using the optimal design parameters, a confirmation test successfully verify the lubrication reduced average coefficient of friction and simultaneously improved wear resistance about 24% and 50%, respectively. This is in accordance with a significant reduction of wear scar diameter and smoother worn surface on a ball.

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**

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**A**

**PROJECT REPORT**

**ON**

**“FABRICATION OF MUTLIPURPOSE AGRICULTURAL  
EQUIPMENT”**

*Submitted in Partial fulfillment of the Requirements for the award of the Degree of  
Bachelor of Engineering*

**In**

**MECHANICAL ENGINEERING**

For the academic year 2017-18

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<b>CHARAN. V</b>	<b>(1GV14ME010)</b>
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**In**

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DEPARTMENT OF MECHANICAL ENGINEERING



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1. Dr. P. D. Sudersanan

2. Sanjay K.V

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1. Dr. P. D. Sudersanan  
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2. Sanjay K.V  
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## Abstract

India is an agricultural country cultivating more number of ground nuts, corns, cereals etc., in the village sides of the country. The available automatic machines are imported from foreign countries. The imported machines are not only bulk in size but also costing around rupees one Lakh. In this project an attempt has been made for the design and fabrication of maintenance free multipurpose agricultural equipment exclusively for small farmers at cost not exceeding rupees 20000 per unit. The different components of above multipurpose machine are modelled using one of the parametric modelling software Creo parametric 1.0. The modelled components are fabricated and assembled together to form a complete machine. A study has been carried out to develop multipurpose agriculture equipment for performing major agricultural operations like goods carrying, spraying pesticides, sowing, seeding, weeding and cutting operations to increase the efficiency and reduce land preparation and handling cost.

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**

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**A**

**PROJECT REPORT**

**ON**

**“EVALUATION OF MECHANICAL PROPERTIES OF HYBRID FRP LAMINATES”**

Submitted in Partial fulfillment of the Requirements for the VIII Semester of the Degree of Bachelor of Engineering

**In**

**MECHANICAL ENGINEERING**

For the academic year 2017-18

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DEPARTMENT OF MECHANICAL ENGINEERING



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## ABSTRACT

The term Composite Material can be defined as a material composed of two or more different materials, with the properties of the resultant material being superior to the properties of the individual materials that make up the composite. Glass Fibre Reinforced Polymers (GFRPs) are the fibre reinforced polymers made up of plastic matrix reinforced with the fine fibres of glass. Fibre glass is a lightweight, strong and robust material used in different industries, due to its excellent properties. Aramid is a synthetic fibre made from the polymer Aromatic Polyamide. These fibres have the best Tensile strength to Density ratio. They are of the lowest density which is about 40% lower than the glass density. Here the Mechanical Characteristics of Aramid fibre, Glass fibre and a new Hybrid reinforcement which simulates the stress-strain characteristics of conventional fibre reinforcement, are analysed. In this project, the Hybrid specimens are manufactured to the combination of Glass fibre and Aramid fibre, loading impregnated using Epoxy resin. The specimens are produced by Hand lay-up process (Wet lay-up process). Hand lay-up process is the process adopted for manufacturing the FRP materials with constant cross-section. The mechanical characteristics studied in this present work are Tensile, Compression, Bending and Impact strengths. Using ASTM (American Society for Testing and Methods) standards, here the specimens are prepared, tested and the practical results are compared with their respective theoretical results which can be obtained from various formulae.

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**A  
PROJECT REPORT  
ON**

**“FABRICATION AND STUDY OF  
DIFFUSER AUGMENTED WIND TURBINE”**

Submitted in Partial fulfillment of the Requirements for the award of the Degree of  
Bachelor of Engineering

**In  
MECHANICAL ENGINEERING**

For the academic year 2017-18

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DEPARTMENT OF MECHANICAL ENGINEERING



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**Signature with Date**

**Name of the External Viva Examiners**

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## ABSTRACT

Wind Energy is becoming a significant source of energy throughout the world. This ever increasing field will potentially reach the limit of availability and practicality with the wind farm sites and size of the turbine itself. Therefore, it is necessary to develop innovative wind capturing devices that can produce energy in the locations where large conventional horizontal axis wind turbine (HAWT) are too impractical to install and operate. A diffuser augmented wind turbine (DAWT) is one such innovation. This study examines the practicality of the diffuser augmented wind turbine relative to the conventional horizontal axis wind turbine. The diffuser augmented wind turbines have been studied to increase the mass flow rate through the rotor which results in improved energy extractions from the wind. In conventional horizontal axis wind turbine the blades absorb some kinetic energy from the wind, it is noted that the turbine absorbs 100% of the available kinetic energy only if the downstream wind speed becomes zero. However, zero wind speed at downstream is a physically impossible condition, since the wind loses all of its kinetic energy after passing through the rotor, it cannot flow any further causing obstruction to the incoming wind. This project aims to design the structure of the diffuser such that more wind is drawn over the rotor by reducing the obstruction caused by downstream wind. Thereby, increasing the efficiency of the wind turbine and also reduces the noise produced in conventional wind mills.

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**

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**A**

**PROJECT REPORT**

**ON**

**“OPTIMIZATION OF DRILLING PARAMETERS ON GLASS-KEVLAR HYBRID COMPOSITE”**

Submitted in Partial fulfillment of the Requirements for the award of the Degree of Bachelor of Engineering

**In**

**MECHANICAL ENGINEERING**

For the academic year 2017-18

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**DEPARTMENT OF MECHANICAL ENGINEERING**



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**Signature with Date**

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## Abstract

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In today's scenario, composite like Fiber Reinforced Polymer is a standout amongst the most alluring and profitable material among all the designing materials. The reason for using these composites is their superior properties and their influential application in aerospace industries, aircraft structural components, etc. The present learning about machining of Glass – Kevlar FRP composites is in a moving stage for its ideal usage in different fields of uses in the monetary perspective.

Hence, the hypothetical mechanics have ended up over whelming in this field to attain to completely mechanized substantial scale assembling cycles. Composites fluctuate in their machining direct as a consequence of their mechanical and physical properties that basically depend on upon the kind of fiber, content of fiber, alignment of fiber, and inconsistency in the matrix material. To join components by rivets and joints the basic requirements is good quality holes, for which drilling operation is performed. Drilling of Glass – Kevlar FRP by the conventional methods is a complicated machining process, to achieve good quality hole, as glass fibers are used in the material. Likewise, composite overlays are viewed as difficult to machine materials. Drilling process is highly depended on the cutting parameters (i.e. Feed, Speed, and Drill material), tool geometry, instrument and work piece material, delamination along with torque and thrust force. Optimization is done to get the nominal measures for all parameters. The drilling parameters like spindle speed and feed rate are improved by considering various performance qualities, such as surface roughness of the work piece, delamination occurred while drill along with thrust force. Understanding the machining behavior of the work-piece results in Least waste and defects. To evaluate thrust force and torque, motionless and active analysis of the work-piece is done.

In this perspective, an attempt has been made to develop a vigorous approach for the optimization of multiple responses in Glass – Kevlar FRP composite drilling. For persistent quality change and logged off quality control, strategy of experimentation has been chosen in light of Taguchi's orthogonal configuration along with shifting procedure control constraints like, spindle speed.



**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**

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**A**

**PROJECT REPORT**

**ON**

**“ROOF CRUSH RESISTANCE OF PASSENGER CAR”**

Submitted in Partial fulfillment of the Requirements for the VIII Semester of the Degree  
of Bachelor of Engineering

**In**

**MECHANICAL ENGINEERING**

For the academic year 2017-18

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<b>FAIYAZ FARID ANSARI</b>	<b>(1GV13ME015)</b>
<b>MOHAMED ILIYAS</b>	<b>(1GV14ME026)</b>
<b>AMATHUL UMAL QAIR.H</b>	<b>(1GV14ME059)</b>

**Under the Guidance of**

**Dr. NARASIMHA. C**

**ASSOCIATE PROFESSOR**

**Department of Mechanical Engineering, Dr. TTTT**



**DEPARTMENT OF MECHANICAL ENGINEERING**

**Dr. T.THIMMAIAH INSTITUTE OF TECHNOLOGY**

**Oorgaum, KOLAR GOLD FIELDS – 563 120**

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**

**“Jnana Sangama”, Belgaum-590018**



**A**

**PROJECT REPORT**

**ON**

**“DESIGN AND ANALYSIS OF ROOF CRUSH  
RESISTANCE OF PASSENGER CAR”**

Submitted in Partial fulfillment of the Requirements for the VIII Semester of the Degree  
of Bachelor of Engineering

**In**

**MECHANICAL ENGINEERING**

For the academic year 2017-18

Submitted By

**MOHAMMED NADEEM**

**(1GV12ME024)**

**FAIYAZ FARID ANSARI**

**(1GV13ME015)**

**MOHAMED ILIYAS**

**(1GV14ME026)**

**AMATHUL UMAL QAIR.H**

**(1GV14ME059)**

Under the Guidance of

**Dr. NARASIMHA. C.**

**ASSOCIATE PROFESSOR**

**Department of Mechanical Engineering, Dr. TTTT**



**DEPARTMENT OF MECHANICAL ENGINEERING**

**Dr. T.THIMMAIAH INSTITUTE OF TECHNOLOGY**

**Oorgaum, KOLAR GOLD FIELDS – 563 120**

# Dr. T.THIMMAIAH INSTITUTE OF TECHNOLOGY

Oorgaum, KOLAR GOLD FIELDS – 563 120

DEPARTMENT OF MECHANICAL ENGINEERING

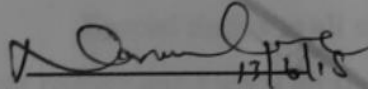


## CERTIFICATE

This is to certify that the Project entitled “DESIGN AND ANALYSIS OF ROOF CRUSH RESISTANCE OF PASSENGER CAR” has been carried out by

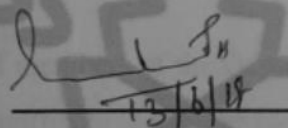
MOHAMMED NADEEM (1GV12ME024)  
FAIYAZ FARID ANSARI (1GV13ME015)  
MOHAMED ILIYAS (1GV14ME026)  
AMATHUL UMAL QAIR.H (1GV14ME059)

the students of **Dr. T.THIMMAIAH INSTITUTE OF TECHNOLOGY** in partial fulfillment for the award of **Bachelor of Engineering in Mechanical Engineering** of the Visvesvaraya Technological University, Belgaum during the year **2017-2018**. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the Report deposited in the departmental library.

  
13/6/18

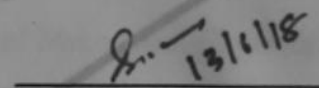
Guide

Dr. Narasimha. C

  
13/6/18

Head of The Department

Dr. P.D. Sudersanan

  
13/6/18

Principal

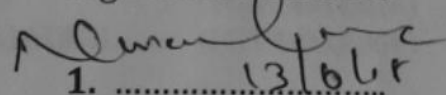
Dr. Syed Ariff

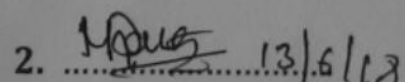
Name of the External Viva Examiners

1. Dr. NARASIMHA. C

2. M. S. SATISH

Signature with Date

  
1. .... 13/6/18

  
2. .... 13/6/18

## ABSTRACT

Before 2009, rollover in vehicle accidents had not been significantly studied not only because its rate is lower than other types of accidents but also because it had been easy to meet the rollover regulation, the FMVSS 216 Roof Crush Resistance target. The regulation only requires that the strength-to-weight ratio (SWR) be 1.5, i.e., it was acceptable when the roof could withstand a force of only 1.5 times the vehicle's weight. In other words, rollover is not considered an important safety factor. However, presently the situation has completely changed. Rollover is now considered a key safety factor. Recently the number of rollover incidents has been increasing, reaching as much as the number of front, side and rear accidents. Furthermore, the IIHS has begun to require that the roof must withstand a force of 4.0 times the vehicle's weight, a more severe restriction than FMVSS. To satisfy this requirement, many manufactures, universities and institutes are studying the topic. This paper focuses on changing the body structure to minimize injury to the occupant when rollover occurs and help rollover safety performance become excellent. This paper draws on a simple analysis that is based on general factors changes in the material, the addition of welds and additional reinforcements. The best result will be determined, as described by this paper.

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**

**“Jnana Sangama”, Belagavi-590018**



**A**

**PROJECT REPORT**

**ON**

**“Elimination of Work Loosening and Shearing of Bolts in 35 Ton  
Dumper Rear Axxle”**

*Submitted in Partial fulfillment of the Requirements for the award of the Degree of  
Bachelor of Engineering*

**In**

**MECHANICAL ENGINEERING**

For the academic year 2017-18

**Submitted By**

<b>Muniswamy. R</b>	<b>(1GV13ME049)</b>
<b>Rakesh. A</b>	<b>(1GV14ME061)</b>
<b>Remesh Krishnan</b>	<b>(1GV13ME050)</b>
<b>Maradona</b>	<b>(1GV15ME405)</b>

**Under the Guidance of**

**Mrs. ANITHA DEVI S H, M.Tech,**

**Assistant Professor**

**Department of Mechanical Engineering, Dr. TTIT**



**DEPARTMENT OF MECHANICAL ENGINEERING  
Dr. T.THIMMAIAH INSTITUTE OF TECHNOLOGY**

**Oorgaum, KOLAR GOLD FIELDS – 563120**

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**  
**Jnana Sangama, Belgaum – 590014**



**Elimination of Work Loosening and Shearing of Bolts in 35 Ton Dumper  
Rear Axle**

**A PROJECT REPORT**

*Submitted by*

<b>Muniswamy. R</b>	<b>(1GV13ME049)</b>
<b>Rakesh. A</b>	<b>(1GV14ME061)</b>
<b>Remesh Krishnan</b>	<b>(1GV13ME050)</b>
<b>Maradona</b>	<b>(1GV15ME405)</b>

*In Partial fulfillment for the award of the degree of*

**BACHELOR OF ENGINEERING**

*in*

**Mechanical Engineering**

Under the Guidance of  
**Mrs. Anitha Devi S H**  
Assistant Professor



**Dr. T Thimmaiah Institute of Technology**  
**Oorgaum, Kolar Gold Fields – 563120**

**MAY 2017-2018**

# Dr. T. THIMMAIAH INSTITUTE OF TECHNOLOGY

Department of Mechanical Engineering

Kolar Gold Fields-563120



## CERTIFICATE

This is to certify that the Project entitled "Elimination of Work Loosening and Shearing of Bolts in 35 Ton Dumper Rear Axxle" has been carried out by

**Muniswamy. R** (1GV13ME049)

**Rakesh. A** (1GV14ME061)

**Remesh Krishnan** (1GV13ME050)

**Maradona** (1GV15ME405)

The students of **Dr. T. THIMMAIAH INSTITUTE OF TECHNOLOGY** in partial fulfillment for the award of **Bachelor of Engineering in Mechanical Engineering** of the Visvesvaraya Technological University, Belgaum during the year 2017-2018. It is certified that all corrections/suggestions indicated for internal assessment have been incorporated in the report deposited in the departmental library.

.....  
*Anitha Devi S H*  
14/6/18  
**Signature of Guide**  
Anitha Devi S H

.....  
*Dr. NARASIMHA C*  
**Signature of HOD**  
Dr. NARASIMHA C  
Head of the Department  
Dept. of Mechanical Engineering

.....  
*Dr. Syed Ariff*  
14-6-18  
**Signature of Principal**  
Dr. Syed Ariff

Name of Examiners

1. Dr. NARASIMHA C
2. M. S. SATISH

Signature with Date

1. *Dr. NARASIMHA C*  
14/6/18
2. *M. S. SATISH*  
14/6/18

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E-mail: singrauli@rm.beml.co.in

Ref : EKT/A/ 35/  
Dated : 29.05.2018.

*The Principal,*

Dr. T. Thimmaiah Institute of Technology,  
Kolar Gold Fields – 563 120.

Dear Sir,

Sub: **PROJECT WORK.**

Ref : Dr. TTIT/2017-18/Project/HOD/Mech/dnk Dtd : 02.02.2018.

With reference to the above, the following BE (Mechanical Engineering) Students of your college have completed their Project Work titled:

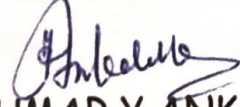
**“ELIMINATION OF WORK LOOSENING  
AND  
SHEARING OF BOLTS ON 35 TONS DUMPER  
REAR AXLES”.**

under the guidance of Shri. A. RAMACHANDRAN, Senior Manager, Manufacturing Engg. / Hydraulic Shop, EM Division, BEML Limited, K.G.F- 563 115, for the period from **27/03/2018 to 26/05/2018.**

Sl. No.	NAME's	REG. No.
01	RAKESH. A	IGV14ME061
02	REMESH KRISHNAN	IGV13ME050
03	MUNISWAMY. R	IGV13ME049
04	MARADONA. R	IGV15ME405

Thanking you,

Yours faithfully,  
For BEML LIMITED, K.G.F

  
(KUMAR Y ANKOLEKAR)

Manager - Training  
**KUMAR Y ANKOLEKAR**

Manager Training  
**BEML Limited**

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BEML Nagar, Kolar Gold Fields - 563 115, Karnataka, India

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008205654745



## ABSTRACT

In this present work we are dealing with the BEML BH 35-10 dumper REAR AXLE problems and its experimentations. BH 10M is one of the best dumpers manufactured by barath earth movers limited. A dumper is a vehicle designed for carrying bulk material, often on building sites. Dumpers are distinguished from dump trucks by configuration: a dumper is usually an open 4-wheeled vehicle with the load skip in front of the driver, while a dump truck has its cab in front of the load. The skip can tip to dump the load; this is where the name "dumper" comes from. They are normally diesel powered. A towing eye is fitted for secondary use as a site tractor. Dumpers with rubber tracks are used in special circumstances and provide a more even distribution of weight compared to tires. Continuous tracks allow the operator to carry heavier payload on slick, snowy, or muddy surfaces, and are popular in some countries.

By Analysing the customer's field complaints data we concluded that, shearing of bolts in the rear axle components are the 80% of all failure problems. The rear axle assembly is used on wheel-drive vehicles. The rear axle assembly is often mistakenly called differential where the differential is the only part of rear axle assembly. In BH 10M rear axle assembly, shearing of bolts occurs in Rear break assembly and Final drive assembly. In final drive assembly failure occurs because of POOR QUALITY OF LOCK PLATE, POOR QUALITY OF BOLTS & PRE-LOADING CONDITION.

In rear brake assembly failure occurs because of TORQUE RETENTION AND CLAMPING FORCE, DRILLING AND TAPPING QUALITY & TORQUE TIGHTENING OF BOLTS. These problems are overcome by controlling the existing manufacturing process, Assembling process and the testing process.

The most common mode of failure is overloading: Operating forces of the application produce loads that exceed the clamp load, causing the joint to loosen over time or fail catastrophically. Overtorquing might cause failure by damaging the threads and deforming the fastener, though this can happen over a very long time. Undertorquing can cause failures by allowing a joint to come loose, and it may also allow the joint to flex and thus fail under fatigue.



A Project Report  
On  
“Design and Fabrication of Tin Can Crusher”

Submitted in the partial fulfillment of the requirement for the  
VIII Semester project work – 10MEP85 for the award of degree of

**Bachelor of Engineering**

in

**Mechanical Engineering**

By

PAUL ALEXANDER	1GV13ME044
VENUNATHASWAMY M	1GV13ME065
ANN PRISCILLA HOOVER	1GV13ME072
RAHUL M	1GV13ME079

Under the Guidance of  
Ms.KAUSAR SULTANA E. Assistant Professor,  
Department of ME, Dr.T.T.I.T, K.G.F.



**Dr.T.THIMMAIAH INSTITUTE OF TECHNOLOGY**

(Formerly Golden Valley Institute of Technology)

Department of Mechanical Engineering

Kolar Gold Fields – 563120

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**

BELAGAVI - 590018

2017-2018



**A Project Report  
On**

**“Design and Fabrication of Tin Can Crusher”**

Submitted in the partial fulfillment of the requirement for the  
VIII Semester project work – 10MEP85 for the award of degree of

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**Under the Guidance of**

**Ms.KAUSAR SULTANA E. Assistant Professor,  
Department of ME, Dr.T.T.I.T, K.G.F.**



**Dr.T.THIMMAIAH INSTITUTE OF TECHNOLOGY**

**(Formerly Golden Valley Institute of Technology)**

**Department of Mechanical Engineering**

**Kolar Gold Fields – 563120**



(Formerly Golden Valley Institute of Technology)

Oorgaum Kolar Gold Fields – 563120

DEPARTMENT OF MECHANICAL ENGINEERING.

CERTIFICATE

Certified that the Project work entitled "*Design and Fabrication of Tin Can Crusher*" is a bonafied work carried out by Paul Alexander- 1GV13ME044, Venunathaswamy M- 1GV13ME065, Ann Priscilla Hoover- 1GV13ME072 and Rahul M - 1GV13ME079, in the partial fulfillment for the award of degree of Bachelor of Engineering Mechanical Engineering of the Visvesvaraya Technological University, Belagavi during the year 2017-18. It is certified that all corrections/suggestions indicated for the assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirement in respect of Project Work – 10MEP85 prescribed for the Bachelor of Engineering Degree.

.....  
Signature of Guide

Ms. Kausar Sultana E

.....  
Signature of HOD

Dr.P.D. Sudersanan

.....  
Signature of Principal

Dr. Syed Arif

PRINCIPAL  
Dr. T. Thimmaiah Institute of Technology  
Oorgaum, K.G.F. - 563 120,  
Signature with Date

Name of Examiners

1. Dr. NARASIMHA - C
2. M.S. SATISH
- 3.

1. [Signature] 13/6/18
2. [Signature] 13/6/18
- 3.

## **ABSTRACT**

This report consists of designing and fabrication of manually operated aluminum tin can crusher. A can crusher can be defined as "A device used for crushing aluminum cans for achieving 65% volume reduction and reduces transportation costs". Generally, crusher is made up of steel. The main aim of a can crusher is to smash an empty aluminum can into the smallest unit possible. Anyone who drinks a couple of sodas a week may never see the need to compact the cans, but others who are heavy drinkers may find these devices very helpful. Canteens, restaurants, bars, catering halls, cinema halls and recycling plants are places where a can crusher is pretty much a must. Can crusher are the most efficient, convenient, space saving and easy way to reduce your aluminum waste while fulfilling recycling duty. They are convenient, fun, easy to use and friends of the environment. Crush the can and save the space, time and energy

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**

**“Jnana Sangama”, Belagavi-590018**



**A**

**PROJECT REPORT**

**ON**

**“DESIGN AND FABRICATION OF PEDAL POWERED AGRI  
CUTTER MACHINE”**

*Submitted in Partial fulfillment of the Requirements for the award of the Degree of  
Bachelor of Engineering*

**In**

**MECHANICAL ENGINEERING**

For the academic year 2017-18

**Submitted By**

<b>RAGHAVENDRA A</b>	<b>(1GV14ME032)</b>
<b>SHIVARAJ KUMAR S</b>	<b>(1GV14ME046)</b>
<b>SIVA KUMAR R</b>	<b>(1GV14ME048)</b>
<b>CHARAN S</b>	<b>(1GV13ME091)</b>

**Under the Guidance of**

**Dr. H. G. SHENOY**

**Professor of Mechanical Dept & Vice Principal Dr. TTIT**



**DEPARTMENT OF MECHANICAL ENGINEERING  
Dr. T. THIMMAIAH INSTITUTE OF TECHNOLOGY**

**Oorgaum, KOLAR GOLD FIELDS – 563120**

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**

**“Jnana Sangama”, Belagavi-590018**



**A**

**PROJECT REPORT**

**ON**

**“DESIGN AND FABRICATION OF PEDAL POWERED AGRICULTURAL CUTTER MACHINE”**

Submitted in Partial fulfillment of the Requirements for the award of the Degree of  
Bachelor of Engineering

**In**

**MECHANICAL ENGINEERING**

For the academic year 2017-18

**Submitted By**

<b>RAGHAVENDRA A</b>	<b>(1GV14ME032)</b>
<b>SHIVARAJ KUMAR S</b>	<b>(1GV14ME046)</b>
<b>SIVA KUMAR R</b>	<b>(1GV14ME048)</b>
<b>CHARAN S</b>	<b>(1GV13ME091)</b>

**Under the Guidance of**

**Dr.H.G. SHENOY**

**Professor of Mechanical Dept & Vice Principal Dr.TTIT**



**DEPARTMENT OF MECHANICAL ENGINEERING**

**Dr. T.THIMMAIAH INSTITUTE OF TECHNOLOGY**

**Oorgaum, KOLAR GOLD FIELDS – 563 120**

# Dr. T.THIMMAIAH INSTITUTE OF TECHNOLOGY

Oorgaum, KOLAR GOLD FIELDS – 563 120

DEPARTMENT OF MECHANICAL ENGINEERING



## CERTIFICATE

This is to certify that the Project entitled “DESIGN AND FABRICATION OF PEDAL POWERED AGRI CUTTER MACHINE” has been carried out by

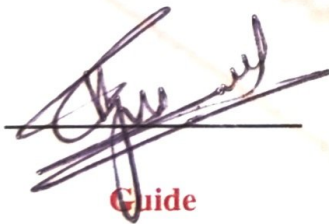
**RAGHAVENDRA A** (1GV14ME048)

**SHIVARAJ KUMAR S** (1GV14ME046)

**SIVA KUMAR R** (1GV14ME048)

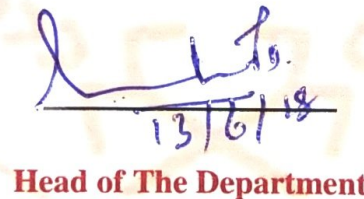
**CHARAN S** (1GV13ME091)

the students of **Dr. T.THIMMAIAH INSTITUTE OF TECHNOLOGY** in partial fulfillment for the award of **Bachelor of Engineering in Mechanical Engineering** of the Visvesvaraya Technological University, Belgaum during the year **2017-2018**. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the Report deposited in the departmental library.



Guide

**Dr. H.G. Shenoy**



Head of The Department

**Dr. P.D. Sudersanan**



Principal

**Dr. Syed Ariff**

Name of the External Viva Examiners

1. Dr. P.D. Sudersanan

2. Sarjaya K. M.

Signature with Date

1. [Signature] 13/6/18

2. [Signature] 13/6/18



## ABSTRACT

This project aims at developing highly cost effective and natural pedal powered agricultural cutter machine which would cater to the needs of the people of rural society. The previous model which is already in current operation is powered by manually operating shaft system, which involves much human work and time. Hence we have developed an upgraded version by providing pedal and chain drive system to reduce much human efforts.

The main intention of this project is to provide the rural households with low cost machinery. The major advantage of this project is human effort is reduced and the machine can also be customized.

Pedal powered agri cutter machine is the new innovative and effective concept mainly to serve the rural sector its is simple in construction and its working process is very easy, and it is mainly used to cut fodder for the catles.

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**

**“Jnana Sangama”, Belagavi-590018**



**A**

**PROJECT REPORT**

**ON**

**“FUEL FROM NON-BIODEGRADABLE MATERIAL”**

*Submitted in Partial fulfillment of the Requirements for the award of the Degree of  
Bachelor of Engineering*

**In**

**MECHANICAL ENGINEERING**

For the academic year 2017-18

**Submitted By**

**SAYED MD SADIQ**

**(1GV14ME041)**

**SURESH N A**

**(1GV14ME050)**

**VARSHITHA U**

**(1GV14ME053)**

**YATHISH KIRAN K V**

**(1GV14ME058)**

**Under the Guidance of**

**Mrs. ANITHA DEVI S H, M.Tech,**

**Assistant Professor**

**Department of Mechanical Engineering, Dr. TTIT**



**DEPARTMENT OF MECHANICAL ENGINEERING**

**Dr. T.THIMMAIAH INSTITUTE OF TECHNOLOGY**

**Oorgaum, KOLAR GOLD FIELDS – 563120**

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**  
BELAGAVI - 590018  
2017 –2018



**A Project Report  
On  
“FUEL FROM NON-BIODEGRADABLE MATERIAL”**

**Submitted in the partial fulfillment of the requirement for the  
VIII Semester project work – 10ME85 for the award of degree of**

**Bachelor of Engineering**

**in**

**Mechanical Engineering**

**By**

**SAYED MD SADIQ**

**1GV14ME041**

**SURESH N A**

**1GV14ME050**

**VARSHITHA U**

**1GV14ME053**

**YATHISH KIRAN K V**

**1GV14ME058**

**Under the Guidance of  
Mrs. ANITHA DEVI S H, M.Tech Assistant Professor,  
Department of Mechanical Engineering, Dr.T.T.I.T, K.G.F.**



**Dr.T.THIMMAIAH INSTITUTE OF TECHNOLOGY  
(Formerly Golden Valley Institute of Technology)  
Department of Mechanical Engineering  
Kolar Gold Fields – 563120**

# DR.T.THIMMAIAH INSTITUTE OF TECHNOLOGY





(Formerly Golden Valley Institute of Technology)  
Oorgaum Kolar Gold Fields – 563120


DEPARTMENT OF MECHANICAL ENGINEERING.

## CERTIFICATE

Certified that the **Project work** entitled “**Fuel From Non-Biodegradable Material**” is a bona fide work carried out by **Sayed MD Sadiq- 1GV14ME041, Suresha N A- 1GV14ME050, Varshitha U- 1GV14ME053 and Yathish Kiran K V- 1GV14ME058**, in the partial fulfillment for the award of degree of Bachelor of Engineering **Mechanical Engineering** of the **Visvesvaraya Technological University, Belagavi** during the year 2017-18. It is certified that all corrections/suggestions indicated for the assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirement in respect of **Project Work – 10ME85** prescribed for the Bachelor of Engineering Degree.

.....  
  
Signature of Guide  
Mrs. Anitha Devi S H

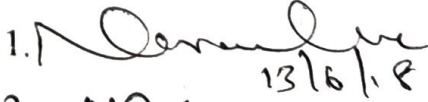

.....  
  
Signature of HOD  
Dr. P.D. Sudersanan

.....  
  
Signature of Principal  
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## ABSTRACT

Plastics have woven their way into our daily lives and now pose a tremendous threat to the environment. Over a 100 million tonnes of plastics are produced annually worldwide, and the used products have become a common feature at overflowing bins and landfills. Though work has been done to make futuristic biodegradable plastics, there have not been many conclusive steps towards cleaning up the existing problem. Here, the process of converting waste plastic into value added fuels is explained as a viable solution for recycling of plastics. Thus two universal problems such as problems of waste plastic and problems of fuel shortage are being tackled simultaneously. In this study, plastic wastes (low density polyethylene) were used for the pyrolysis to get fuel oil that has the same physical properties as the fuels like petrol, diesel etc.

Pyrolysis runs without oxygen and in high temperature of about 300°C which is why a reactor was fabricated to provide the required temperature for the reaction. The waste plastics are subjected to depolymerization, pyrolysis, thermal cracking and distillation to obtain different value-added fuels such as petrol, kerosene, and diesel, lube oil etc. Converting waste plastics into fuel hold great promise for both the environmental and economic scenarios. Thus, the process of converting plastics to fuel has now turned the problems into an opportunity to make wealth from waste. The hazards of plastic waste is well known to us. The conversion of oil from plastic has dual benefits. First of all, the oil produced can be used as a fuel for domestic purposes and also in vehicles and industries when further refined. Secondly the various types of pollution caused due to waste plastics can be minimized. Plastic in the first place is manufactured from natural gas specifically from ethane which is a constituent of natural gas. Therefore, the waste plastic can be converted back into it. For the process of conversion, a machine can be used which will heat the plastic to a temperature so that it melts and does not burn.