VISVESVARAYA TECHNOLOGICAL UNIVERSITY
JNANA SANGAMA, BELGAUM – 590014

" EVALUATION OF CAGE SUSPENSION GEAR PARTS AND STEELWIRE ROPE "

A PROJECT PHASE II REPORT

(15ME85)

Submitted by

Ajay Babu R	**(1GV16ME400)**
Arvindh Kumar S	**(1GV16ME404)**
Shanthraj Guthal B	**(1GV16ME430)**

In partial fulfillment for the award of the degree of

BACHELOR OF ENGINEERING

In

Mechanical Engineering

Carried out at NIRM

Under the Guidance of

Dr. Narasimha C
Associate Professor
Dr. TTIT

Dr. A. Rajan Babu
Principal Scientist, CTS
Head, DDCG,
Officer-in-Charge, NIRM

Dr. T.Thimmaiah Institute of Technology
OORGAUM, KOLAR GOLD FIELDS – 563120

2018-2019

VISVESVARAYA TECHNOLOGICAL UNIVERSITY
JNANA SANGAMA, BELGAUM – 590014

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Dr. T.Thimmaiah Institute of Technology

OORGAUM, KOLAR GOLD FIELDS – 563120

DECEMBER 2018-2019

Dr. T. THIMMAIAH INSTITUTE OF TECHNOLOGY

Oorgaum, Kolar Gold Fields – 563120

Department of Mechanical Engineering

CERTIFICATE

This is to certify that the Project Entitled

"EVALUATION OF CAGE SUSPENSION GEAR PARTS AND STEEL WIRE ROPE"

is a bonafide work carried out by

AJAY BABU R	ARVINDH KUMAR.S	SHANTHRAJ GUTHAL.B
(1GV16ME400)	(1GV16ME404)	(1GV16ME430)

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 2018-2019. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the Report deposited in the department library.

Signature of Guide	Signature of HOD	Signature of Principal
(Asst Prof. Dr. Narasimha C)	(Prof. Dr. P D Sudersanan)	(Dr. Syed Ahmed)

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

Name of the External Viva Examiners	Signature with Date
1. Manjunatha Babu N S	1. 15/6/19
2. M S Satish	2. 15/6/19

National Institute of Rock Mechanics
(Ministry of Mines, Govt. of India)
Registered Office
P.O. - Champion Reefs,
Kolar Gold Fields -563117,
Karnataka, India.

नेशनल इन्स्टीट्यूट ऑफ रॉक मैकेनिक्स
(खान मंत्रालय, भारत सरकार)
पंजीयन कार्यालय,
कोलार गोल्ड फील्ड्स - 563117,
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NIRM/RO/CTS/IT/2019-20/10

Date: 31st May 2019

Certificate

This is to certify that the following students from **"Dr. Thimmaiah Institute of Technology"**, KGF, pursuing final year ***BE*** degree course in ***Mechanical Engineering*** has successfully completed eight months project work from the period October 2018 to May 2019 at **NATIONAL INSTITUTE OF ROCK MECHANICS**, KGF. Their topic for the project work was ***"Evaluation of cage suspension gear parts and steel wire rope".***

Sl. No.	Name	Register number
1	Ajay Babu R	1GV16ME400
2	Arvindh Kumar S	1GV16ME404
3	Shanthraj Guthal B	1GV16ME430

It was found that during their project training period, their conduct was good and interest towards the assigned work was excellent. We wish them good luck in their future endeavors.

For National Institute of Rock Mechanics

(A RAJAN BABU)
A. Rajan Babu
Officer-in-charge, Registered Office
Principal Scientist, Centre for Testing Services
(I/c), Seismotectonics & Slope Stability Cell
(Ministry of Mines, Govt. of India)
Champion Reefs, KGF 563 117

Abstract

This project involves in detail study of the cage suspension gear parts and steel wire rope for safe operations, by this study, a detailed evaluation of cage suspension gear parts and steel wire rope condition is determined which in turn gives safety of men and machinery in the mining operations.

Destructive tests are carried out to the specimen's failure, in order to understand a specimen's performance or material behavior under different loads. In this method specimens are broken or damaged, intentionally. Destructive testing is most suitable, and economic, for objects which will be mass-produced, as the cost of destroying a small number of specimens is negligible. It is usually not economical to do destructive testing where only one or very few items are to be produced. Non-Destructive Testing (NDT) techniques are used in science and industry to evaluate the properties of a material, component or system without causing damage. It is the testing of materials, for surface or internal flaws or metallurgical condition, without interfering in any way with the integrity of the material or its suitability for service. The goal of this project is to evaluate the condition of cage suspension gear parts such as Bridle Chains, Right angle double jaw chase block, Chase plate, Distribution plate, King type detaching hook, D Shackles with Pins and steel wire rope for safe operations in mining industry before it reaches the failure condition.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

Jnana Sangama, Belgaum – 590014

"Design and Fabrication of Automatic Tire Pressure Inflation System"

A PROJECT PHASE II REPORT
(15MEP85)
Submitted by

Deepak Raj M	1GV14ME013
Keerthana N	1GV15ME017
Nandini S Y	1GV16ME416

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, M.Tech

Assistant Professor

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

2018-2019

VISVESVARAYA TECHNOLOGICAL UNIVERSITY
Jnana Sangama, Belgaum – 590014

"Design and Fabrication of Automatic Tire Pressure Inflation System"

A PROJECT PHASE II REPORT
(15MEP85)
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2018-2019

Dr T THIMMAIAH INSTITUTE OF TECHNOLOGY

Oorgaum, Kolar Gold Fields – 563120

Department of Mechanical Engineering

CERTIFICATE

This is to certify that the Project Entitled "**DESIGN AND FABRICATION OF AUTOMATIC TIRE PRESSURE INFLATION SYSTEM**" has been carried out by

Deepak Raj M	1GV14ME013
Keerthana N	1GV15ME017
Nandini S Y	1GV16ME416

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 2018-2019. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the Report deposited in the department library.

15/6/19 — **Guide**

15/6/19 — **HOD**

15/6/19 — **Principal**

PRINCIPAL
Dr. T. Thimmaiah Institute of Technology
Oorgaum, K. G. F- 563120

Names of the External Viva Examiners	Signature with Date
1. Manjunatha Babu N S	1. 15/6/19
2. M S Satish	2. 15/6/19

ABSTRACT

A Tire Pressure Monitoring System [TPMS] is a driver assist system that warns the driver when the tire pressure is below or above the prescribed limits. tires are designed and built with great care to provide thousands of miles of excellent service but for maximum benefit they must be maintained properly. As the drop in tire pressure by just a few psi, can result in reduction of fuel, mileage, tire life, safety, vehicle performance etc. This system maintains the ideal pressure of tire and when the pressure of the tire goes below, the ideal valve pressure gauge monitors it and the tire is inflated again. Project is aimed at reduction of unwanted strain, to avoid accident, and to save time and life. One of the implicated causes for increasing accidents is tire puncture which makes the driver lose control and results in accident.

We are going to develop an automatic self inflating tire system that maintains the required tire pressure of vehicle which increases fuel efficiency, reduces tire wear, replacement cost and also alerts the driver about the tire condition and pressure.

Our design proposes and successfully implements the use of a portable compressor that supply air to all four tires via hoses and a rotary joint fixed between the wheel spindle and wheel hub. At each wheel the rotary joint effectively allows air to be channeled to the tire without the tangling of hose. This system can be placed in every automobile under any operating conditions. It is named automatic because it checks the tire pressure continuously using built control device and accordingly gives alert signals to the driver about the tire condition.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

Jnana sangama Belgaum-590014

"FABRICATION OF FLEXIBLE DRILLING MACHINE"

A PROJECT PHASE II REPORT
(15ME85)

Submitted by

Dheen Kumar R	**1GV16ME406**
Paul Ajeeth ML	**1GV16ME420**
Sam Joshua J	**1GV16ME425**
Sajan Kumar S K	**1GV16ME428**

In Partial fulfilment for the award of the degree of

BACHELOR OF ENGINEERING
In
Mechanical Engineering

Under the guidance of
Dr. Manish Kumar Mishra
Assistant Professor

Dr. Thimmiah Institute of Technology
Oorgaum, Kolar Gold Fields-563120

December 2018-2019

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

Jnana sangama Belgaum-590014

"FABRICATION OF FLEXIBLE DRILLING MACHINE"

A PROJECT PHASE II REPORT
(15ME85)

Submitted by

Dheen Kumar R	**1GV16ME406**
Paul Ajeeth ML	**1GV16ME420**
Sam Joshua J	**1GV16ME425**
Sajan Kumar S K	**1GV16ME428**

In Partial fulfilment for the award of the degree of

BACHELOR OF ENGINEERING
In
Mechanical Engineering

Under the guidance of
Dr. Manish Kumar Mishra
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Oorgaum, Kolar Gold Fields-563120

December 2018-2019

DR T THIMMAIAH INSTITUTE OF TECHNOLOGY

Oorgaum, Kolar Gold Fields - 563210

Department of Mechanical Engineering

CERTIFICATE

This is to certify that the Project Entitled **"FABRICATION OF FLEXIBLE DRILLING MACHINE"** has been carried out by

Dheen Kumar R	1GV16ME406
Paul Ajeeth M L	1GV16ME420
Sam Joshua J	1GV16ME425
Sajan Kumar S K	1GV16ME428

The students of **Dr T Thimmiah Institute of Technology** in Partial fulfillment for the award of Bachelaor of Engineering in **Mechanical Engineering** of the **Visvesvaraya Technological University**, Belgaum during the year 2018-2019. It is certified that all corrections/ suggestions indicated for the internal Assessment have been incorporated in the Report deposited in the department libarary.

GUIDE	HOD	PRINCIPAL
Dr. Manish Kumar Mishra	Dr. P. D. Sudersanan	Dr. Syed Ariff

Head of the Department
Dept. of Mechanical Engineering
Dr. T. Thimmaiah Institute of Technology
Oorgaum, K.G.F.-563 120.

Dr. T. Thimmaiah Institute of Technology
Oorgaum, K.G.F. 563120

Name of the External Viva Examinars	Signature with Date
1. _____	1. _____
2. _____	2. _____

Abstract

Drill machines have been the heart of every industry. Drilling holes in parts, sheets and structures is a regular industrial work. Perfect and well aligned drilling needs fixed and strong drills. Some parts cannot be drilled using fixed drills due to low space between drill bit and drill bed. We need to use hand drills in such cases but hand drills have alignment problems while drilling. So here we propose a 360 degree flexible drill that can be mounted on a table or wall and can be used to drill holes horizontally, vertically or even upside down. So this makes it possible for easy drilling in even complicated parts and surfaces. Thus we use rotating hinges and connectors with motor mount and supporting structure and saddle and bearing and lead screw to design and fabricate a mini flexible drill machine for easy drilling operations.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

Jnana Sangama, Belgaum – 590014

"STUDY ON APPLICATIONS OF MULTITASKING PIEZO ELECTRIC SENSOR"

A PROJECT PHASE 2 REPORT
(15MEP78)
Submitted by

J KEERTHY SHARANYA	**1GV13ME094**
ERIC FRANCIS E V	**1GV15ME010**
SHALINI S	**1GV16ME035**
SUPRIYA C	**1GV15ME039**

In Partial fulfillment for the award of the degree of

BACHELOR OF ENGINEERING

in

Mechanical Engineering

Under the Guidance of

Mr. SURESH KUMAR S

Assistant Professor

Dr. T Thimmaiah Institute of Technology

Oorgaum, Kolar Gold Fields – 563120

June 2018-2019

Dr. T THIMMAIAH INSTITUTE OF TECHNOLOGY

Oorgaum, Kolar Gold Fields – 563120

Department of Mechanical Engineering

CERTIFICATE

This is to certify that the Project Entitled "**STUDY ON APPLICATIONS OF MULTITASKING PIEZOELECTRIC SENSOR**"has been carried out by

J KEERTHY SHARANYA	**1GV13ME094**
ERIC FRANCIS E V	**1GV15ME011**
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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 2018-2019. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the Report deposited in the department library.

17/06/19	17/6/19	17/6/19
Signature of Guide	**Signature of HOD**	**Signature of Principal**
Mr.Suresh Kumar S	**P.D. Sudersanan**	**Dr. Syed Ariff**

PRINCIPAL
Dr. T. Thimmaiah Institute of Technology
Oorgaum, K.G.F.-563120

Name of the External Viva Examiners	**Signature with Date**
1. Manjunatha Babu N.S	1. 17/6/19
2. Mohan Kumar KA	2.

17/06.

ABSTRACT

It is very important to extract the unwanted mechanical energy that is generated in our daily work. In such a populated country like India requirement of power is essential. So reforming this unwanted mechanical energy back to usable form is the major solution. Any work that a person does is a form of mechanical energy, he loses energy to the surrounding. This energy can be tapped and converted into usable form like electrical energy.

So in this system we are generating electrical power in non -conventional method by simply applying mechanical stress on it .When force is applied on piezoelectric sensor the force is converted to electrical energy which is used to drive the dc loads and stored in the battery. This electric energy is transmitted to the solenoid that acts as electromagnet and the rod connected to it moves in linear motion. In this movement the rod hits the buzzer and there is an alarm which helps to identify the presence of a person in a highly confidential area. When the buzzer is turned off the electric power is stored in battery which can be further used for various applications.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

Jnana Sangama, Belgaum 590014

"A STUDY ON SUPER DUPLEX STAINLESS STEEL AND THEIR PROPERTIES"

A PROJECT PHASE II REPORT

(15MEP85)

Submitted by

Gokul E H	**(1GV14ME019)**
Japesh Martin S	**(1GV16ME411)**
Jeevan Sagar Y C	**(1GV16ME412)**
Sarath S	**(1GV16ME429)**

In Partial fulfilment for the award of the degree of

BACHELOR OF ENGINEERING

In

Mechanical Engineering

Under the Guidance of

Mr. Balasubramaniam N S
Assistant Professor

Dr. T. Thimmaiah Institute of Technology

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2018-2019

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

Jnana Sangama, Belgaum 590014

"A STUDY ON SUPER DUPLEX STAINLESS STEEL AND THEIR PROPERTIES"

A PROJECT PHASE II REPORT

(15MEP85)

Submitted by

Gokul E H	**(1GV14ME019)**
Japesh Martin S	**(1GV16ME411)**
Jeevan Sagar Y C	**(1GV16ME412)**
Sarath S	**(1GV16ME429)**

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BACHELOR OF ENGINEERING

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Mechanical Engineering

Under the Guidance of

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2018-2019

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Oorgaum, Kolar Gold Fields – 563120

Department of Mechanical Engineering

CERTIFICATE

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GOKUL E H	1GV14ME019
JAPESH MARTIN S	1GV16ME411
JEEVAN SAGAR Y C	1GV16ME412
SARATH S	1GV16ME429

The students of **Dr. T. Thimmaiah Institute of Technology** in Partial fulfilment for the award of Bachelor of Engineering in Mechanical Engineering of the Visvesvaraya Technological University, Belgaum during the year 2018-2019. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the Report deposited in the department library.

13/06/2019 14/6/19 14/6/19

Guide **HOD** **Principal**

Head of the Department
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Dr. T. Thimmaiah Institute of Technology
Oorgaum, K.G.F.-563 120.

Dr. T. Thimmaiah Institute of Technology
Oorgaum P.O., Kolar Gold Fields

Name of the External Viva Examiners	Signature with Date
1. Manjunatha Babu N S	1.
2. M S Satish	2. 15/6/19

ABSTRACT

Many materials, when in service, are subjected to various kinds of loads and forces: for instant consider duplex stainless steel which is being used at the hull of marines. In such situations it is necessary to know the characteristics of the material and to design the member from which it is made such that any resulting deformation will not be excessive and fracture will not occur. The mechanical behaviour of the material reflects relationship between its response and deformation to its applied load or force. Important mechanical properties are strength hardness and ductility. Hence this study presents an investigation and comparison on properties of 2205 duplex stainless, 2507 super duplex stainless steel and copper as they all have good corrosive resistant characteristics, ductile property and good thermal expansion and electrical conductivity.

Duplex stainless steel consists of approximately 50 percent ferrite and 50 percent austenite allowing a combination of excellent mechanical properties and high corrosion resistance. These alloys have a corrosion resistance similar to the ferritic stainless steels, although its toughness is inferior to that of austenitic steels but superior to ferritic stainless steels, while their mechanical strength is greater than that of austenitic stainless steels. These properties mean than duplex stainless steels are excellent materials for industrial applications and their use has increased in the oil, chemical, petroleum and electric power industries. As an example, these alloys find its application in the pumps for fuel gas and desulfurization plants, which have high corrosion and corrosion-erosion resistance requirements

VISVESVARYA TECHNOLOGICALUNIVERSITY

"Jnana Sangama",Belagavi-590018.

A

PROJECT REPORT

[15ME85]

ON

"CONTACT ANGLE MEASUREMENT ON MODIFIED SILICON SURFACE"

Submitted in partial fulfilment if the requirements for the award of the Degree of Bachelor of Engineering

In

MECHANICAL ENGINEERING

For the academic year 2018-2019

Submitted by

Govind T.S	1GV15ME013
Gautham P	1GV15ME012
Lohith Kumar S	1GV15ME018
Mohan Reddy K.R	1GV15ME021

Under the Guidance Of

MOHAN KUMARK, M.E.
Associate Professor
Department of Mechanical Engineering, Dr.TTIT

DEPARTMENT OF MECHANICAL ENGINEERING
Dr.T.THIMMAIAH INSTITUTE OF TECHNOLOGY
Oorgam, KOLAR GOLD FIELDS-563120

Dr.T.THIMMAIAH INSTITUTE OF TECHNOLOGY

OORGAUM, KOLAR GOLD FIELDS-563120

DEPARTMENT OF MECHANICAL ENGINEERING

CERTIFICATE

This is to verify that the project entitled project entitled **"CONTACT ANGLE MEASUREMENT ON MODIFIED SILICON SURFACE"** has been carried out by

Govind T.S	1GV15ME013
Gautham P	1GV15ME012
Lohith Kumar S	1GV15ME018
Mohan Reddy K.R	1GV15ME021

The students of **Dr. T.THIMMAIAH INSTITUTE OF TECHNOLOGY** in partial fulfilment for the award of **Bachelor of Engineering** in **Mechanical Engineering** of the Visvesvaraya Technological University, Belgaum during the year **2018-2019.** It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the Report deposited in the department library.

Head of the Department
Dept. of Mechanical Engineering
Dr. T. Thimmaiah Institute of Technology
Oorgaum K.G.F.-563 120.

PRINCIPAL
Dr. Thimmaiah Institute of Technology
Oorgaum K.G., Kolar Gold Fields

Guide	Head of The Department	Principal
Mohan Kumar k	Dr. P.D. Sudersanan	Dr. Syed Ariff

me of the External Viva Examiners

1. Mohan Kumar k
2. Sukumar.

Signature with date

1. 15/06/19
2. 15/06/19

ABSTRACT

The silicon material is widely in most of the electronic devices. Basically silicon have very high friction and wear removal rate. So we have modified the silicon surface by different circular patters with varying pitches.

We have made cirular pillars on the silicon surface i.e solid circular pillars, hollow circular chain type pillars and hollow circular zig zag type pillars. Now, as the contact surface area decreases the firction and wear rate is removed.

Further these modified material is tested and checked for its contact angle leading to find whether the material is hydrophobic or not by using the device called Goniometer. This is the device used to measure the contact angle between the modified surface and the water droplet.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

Jnana Sangama, Belgaum – 590014

2018 - 2019

A

Project Report

on

"Evaluation of Mechanical property of Al 7075 alloy with Re-ageing condition"

Submitted in the partial fulfillment of the requirement for the VIII Semester Project Work Phase II - 15ME85 for the award of degree of

Bachelor of Engineering

in

Mechanical Engineering

Submitted by

Jai Ashwin Kumar B	**1GV15ME016**
Rajendra T	**1GV15ME025**
Shreeranga B	**1GV15ME037**

In Partial fulfillment for the award of the degree of

Under the Guidance of

Mr. Anand Gadekar

Assistant Professor

Dr. T. Thimmaiah Institute of Technology

Department of Mechanical Engineering

Oorgaum, Kolar Gold Fields – 563120

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

Jnana Sangama, Belgaum – 590014

2018 - 2019

A

Project Report

on

"Evaluation of Mechanical property of Al 7075 alloy with Re-ageing condition"

Submitted in the partial fulfillment of the requirement for the VIII Semester Project Work Phase II - 15ME85 for the award of degree of

Bachelor of Engineering

in

Mechanical Engineering

Submitted by

Jai Ashwin Kumar B	1GV15ME016
Rajendra T	1GV15ME025
Shreeranga B	1GV15ME037

In Partial fulfillment for the award of the degree of

Under the Guidance of

Mr. Anand Gadekar

Assistant Professor

Dr. T. Thimmaiah Institute of Technology

Department of Mechanical Engineering

Oorgaum, 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 Phase II work entitled **"EVALUATION OF MECHANICAL PROPERTY OF Al 7075 ALLOY WITH RE-AGEING CONDITION"** is a bonafied work carried out by **JAI ASHWIN KUMAR B – 1GV15ME016, RAJENDRA T – 1GV15ME025, SHREERANGA B – 1GV15ME037,** in the partial fulfillment for the award of degree of Bachelor of Engineering in **Mechanical Engineering** of the **Visvesvaraya Technological University**, Belgaum during the year 2018 - 19. It is certified that all corrections / suggestions indicated for the assessment have been incorporated in the report deposited in the departmental library. The report has been approved as it satisfies the academic requirement in respect of **Project Phase II - 15ME85** prescribed for the Bachelor of Engineering Degree.

20/05/19	20/05/19	21/5/19
Signature of Guide	**Signature of HOD**	**Signature of Principal**
Mr. Anand Gadekar	**Dr. P.D. Sudersanan**	**Dr. Syed Ariff**
	Head of the Department Dept. of Mechanical Engineering Dr. T. Thimmaiah Institute of Technology Oorgaum, K.G.F.-563 120.	PRINCIPAL Dr. T. Thimmaiah Institute of Technology Oorgaum, K.G.F. - 563 120.

Name of Examiners	Signature with Date
1. Srinath. BS	1. 10/6/19
2. Anitha Devi S.H.	2. 11/6/19.
3.	3.

ABSTRACT

Al 7075 alloy is one of the most important engineering alloy because of its very good mechanical property, strength to weight ratio and low density. Due to this it is widely used in aerospace and automotive industry. The purpose of this project is to study the model and its behavior by re-ageing and to build an experimental data base. The main objective of our work is to improve the mechanical property Hardness by re-ageing the prepared sample. Aluminium 7075 alloy is chosen as matrix alloy, it is prepared by using die casting method it is then Heat Treated, Quenched, Aged and Re-aged. Hardness Test was conducted on the created sample. Obtained results are then tabulated, compared and are verified using Taguchi's Optimization Technique.

Keywords: Re-ageing, Hardness Test, Taguchi's Optimization Technique.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

Belagavi-590018

2018–2019

A

Project Report

on

"FABRICATION OF HYBRID POWERED GRASS CUTTER"

Submitted in the partial fulfillment of the requirement for the VIII Semester Project work -15MEP85 for the award of degree of

Bachelor of Engineering

in

Mechanical Engineering

by

RAHUL KUMAR	**1GV14ME033**
RAJESH S	**1GV15ME026**
SARATH KUMAR M	**1GV15ME034**
VADIVELU M	**1GV15ME041**

Carried at

Dr. T. THIMMAIAH INSTITUTE OF TECHNOLOGY

Under the Guidance of

Mr. Srinivas A,

Assistant Professor

Dept of Mechanical Engineering

Dr.TTIT, KGF

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 *"Fabrication of Hybrid powered Grass Cutter"* is a bonafide work carried out by **RAHULKUMAR-1GV14ME033, RAJESH S-1GV15ME026, SARATH KUMAR M-1GV15ME034 and VADIVELU M 1GV15ME041** in the partial fulfillment for the award of degree of Bachelor of Engineering in **Mechanical Engineering** of the **Visvesvaraya Technological University**, Belagavi in the year 2018-19. 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-15MEP85** prescribed for the Bachelor of Engineering Degree.

Signature of guide	Signature of HOD	Signature of Principal
Mr. Srinivas.A	Dr.P.D Sudersanan	Dr. Syed [illegible]

PRINCIPAL
Dr. T. Thimmaiah Institute of Technology
Oorgaum P.O., Kolar Gold Fields - 563 120

Name of Examiners	Signature with Date
1. Manjunatha Babu N S	1.
2. M S satish	2. 15/6/19

ABSTRACT

Now days we are facing the problems of environmental pollution and power cut and many other problems. To overcome these problems we are using renewable energy source like solar energy, which is implemented in our project idea i.e. "Hybrid Grass Cutter". Due to continuous increase in the cost of fuel and the effect of emission of gases from the burnt fuel into the atmosphere, this necessitated use of abundant solar energy from the sun as a source of power to drive grass cutter.

The present technology commonly used for trimming the grass is by using the manually handled device. So, the aim of our project is to develop a portable solar operated grass cutting device and electric operated grass cutting device alternatively during the shortage of power.

Keywords: - Solar energy, Electric energy , etc.

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A PROJECT PHASE II REPORT

(15MEP85)

Submitted by

Sadashiv Goudar	(1GV15ME030)
Somure Akash	(1GV15ME038)
Pavan Joshi	(1GV16ME421)
Manoj N	(1GV15ME020)

In Partial fulfilment for the award of the degree of

BACHELOR OF ENGINEERING

in

Mechanical Engineering

Under the Guidance of

Mr. B N Manjunath
Associate Professor

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Department of Mechanical Engineering

CERTIFICATE

This is to certify that the Project Entitled **EMPIRICAL EVALUATION OF TENSILE PROPERTY FOR A FRP LAMINATES** has been carried out by

Sadashiv Goudar	1GV15ME030
Somure Akash	1GV15ME038
Pavan joshi	1GV16ME421
Manoj N	1GV15ME020

The students of **Dr. T.Thimmaiah Institute of Technology** in Partial fulfilment for the award of Bachelor of Engineering in Mechanical Engineering of the **Visvesvaraya Technological University, Belgaum** during the year 2018-2019. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the Report deposited in the department library.

25/5/19

Guide

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25/5/19

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Principal

Name of the External Viva Examiners	Signature with Date
1. Manjunatha Babu N S	1. 15/6/19
2. M S satish	2. 15/6/19

ABSTRACT

In any mechanical and structural systems, the materials used and its properties plays a major role in their behaviour to the mechanical and dynamic loadings. The advanced structural materials are designed and manufactured in the purview of enhanced properties like Tensile strength, high strength to low ratio, vibration and its damping characteristics etc.

In many Application the components Undergoes cyclical loading and sudden impacts hence it is necessary to study tensile property by using Universal Testing Machine. By this study, when the load acts on the components so undesirable failure due to loading can be avoided during usage of components and the design becomes safe and economical for the given life of components.