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Dept: MECH **Academic Year: 2019-2020**

Experimental analysis of composite materials for leaf spring application using ANSYS

A PROJECT REPORT

Submitted by

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In partial fulfillment for the award of the degree

of

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IN MECHANICAL ENGINEERING

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ABSTRACT

More than 60% of the weight of automobiles is iron and steel. With rising energy and environmental concerns, as well as increases in electronics and other on-board vehicle systems, vehicle light-weighting continues to be a prominent issue to address for vehicle manufacturers. New structural materials like metals, ceramics, polymers, or hybrid materials derived from combination of these, called composites – open a promising avenue in automobile industries. In this project, we design and analyse a leaf spring made of composite materials; comparing different materials as reinforcements for the matrix,to determine the most suitable material. The objective is to analyze the load carrying capacity and reduction of weight of composite leaf spring compared to that of a steel leaf spring.

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Chapter 3

Conclusion

This project demonstrates that composites can be used for leaf springs for light weight vehicles and meet the requirements, together with substantial weight savings. The future potential for composites in these types of applications is discussed in terms of the fabrication developments which will appear likely in the next decade or so. It is necessary to study the usage of composites in improving the performance and efficiency of these automobile components. The 3-D modelling of composite leaf spring is done and analyzed using ANSYS. A comparative study has been made between two composite leaf springs with respect to weight and strength.

- The Epoxy/Carbon has a smaller deflection than the Epoxy/S-Glass, indicating that it is slightly stiffer.
- Although the Von-Mises stress in the Epoxy/Carbon is higher than the Epoxy/S-Glass, it is only a small difference and the Epoxy/Carbon will still be suitable for our purpose.
- Most importantly, the weight of the Epoxy/Carbon is is lower than Epoxy/S-Glass. It saves 81% of the weight when used instead of Structural Steel.

From the results, it is observed that the Epoxy/Carbon composite leaf spring is lighter than the Epoxy/S-Glass steel spring with similar design specifications. Hence, we can conclude that a **Mono-Leaf Epoxy/Carbon Spring** is the most optimum and efficient leaf spring for vehicular and other industrial use.

I

Finite Element Modelling Of Friction Stir Welding Of AA6061 Aluminium Alloy

A PROJECT REPORT

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Finite Element Modelling Of Friction Stir Welding Of AA6061 Aluminium Alloy

Abstract

Friction stir welding (FSW) is a relatively new welding process that may have significant advantages compared to the fusion processes as follow: joining of conventionally non-fusion weldable alloys, reduce distortion and improved mechanical properties of weldable alloys joints due to the pure solid-state joining of metals. This paper presents a study of the influence of tool rotational speed, welding speed, and pin diameter on mechanical properties i.e. tensile strength, impact strength and hardness of weld metal in friction stir welding of Al-Si alloy. Mathematical models were developed from the data generated using the 3 level full factorial technique. Significance of the coefficients and adequacy of the developed models has been checked using MEAN AND S/N ratio respectively. Developed models have been found to be adequate up to 95% of level of significance. Furthermore, the influences of welding parameters have been presented in graphical form for better understanding In this paper, a three-dimensional model based on finite element analysis is used to study the thermal history and thermomechanical process in the butt-welding of aluminum alloy. The modelincorporates the mechanicalreactionof the tool and thermomechanical process of the welded material. The heat source incorporated in the model involves the friction between the material and the probe and the shoulder. In order to provide a quantitative framework for understanding the dynamics of the FSW thermomechanical process, the thermal history and the evolution of longitudinal, lateral, and through-thickness stress in the friction stirred weld are simulated numericallyIt is anticipated that the model can be extended to optimize the FSW process in order to minimize the residual stress of the weld.

Conclusions

A three-dimensional thermo mechanical model including the mechanical action of the shoulder and the thermo mechanical effect of the welded material is developed for the FSW of an Al-alloy, in order to build qualitative framework to understand the thermo mechanical process in FSW. Modeling and measurement of 6061- T6 Al alloy is conducted, and the experimental values validate the efficiency of the proposed model.

The prediction and measurement show that the maximum temperature gradients in longitudinal and lateral directions are located just beyond the shoulder edge, and also show that the longitudinal residual stress is greater than the lateral residual stress at the top surface of the weld. The prediction shows that the high stress is located in the region extending down from the crown to the mid-thickness of the weld. A held traverse speed induces a large stress zone in the weld, which complies with the previously reported measurement with the synchrotron and neutron techniques. Moreover, the prediction reveals that the fixturing release of the weld. Further development of the FSW requires assessment of the mechanical action of the probe and the fixturing condition to the stress distribution of the welded plates.

STATISTCAL ANALYSIS AND MODELING OF AN Nd-YAG LASER MICRODRILLING PROCESS

A PROJECT REPORT

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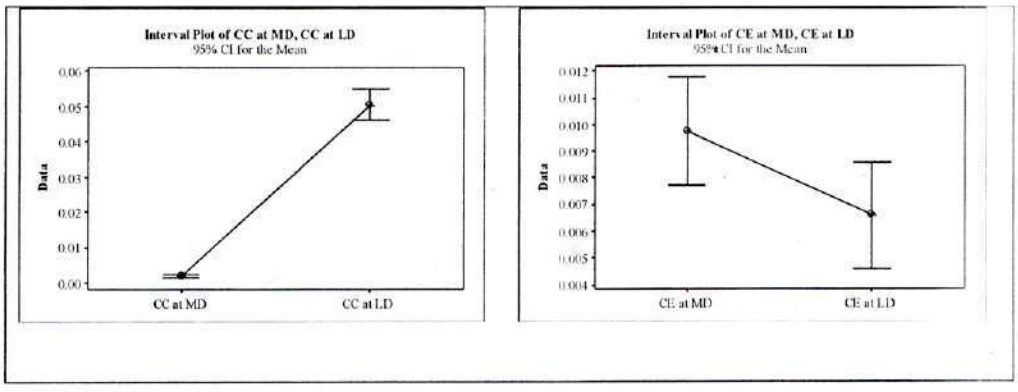

Figure 3.13 Interval plot for PM and WM

CHAPTER 4
CONCLUSIONS

The process capability of PM and WM were successfully evaluated while micro-drilling SMSS. In order to perfer the best hole making process normality test, control chart, evaluation of process capability and interval plot were used. By following the guidelines given below PM has been found to be statistically capable.

1. The normality test was conducted for both PM and WM. If the AD value is less than 1 and p-value is greater than 0.05, then the process is said to be a well fit data. While considering the conicity, the AD value and p-value for PM process are 0.442 and 0.251 respectively. While considering the circularity error, AD value and p-value for PM process are 0.282 and 0.590 respectively. While considering the conicity, AD value and p-value for WM process are 0.196 and 0.868 respectively. While considering the circularity error, AD value and p-value for WM process are 0.185

and 0.891 respectively. From the AD value and p-value of conicity and those of circularity error for both PM and WM processes, it is found that all the data are well fit and within the allowable limit.

2. It was ensured that the type of data for process capability analysis while considering the conicity and circularity error were continuous data.
3. Selecting the control chart depends on the data type and examining whether the process is in control or out of control (e.g. I-MR chart, X bar-R chart, X bar- S chart, P chart, U chart): Since, the type of data is continuous and subgroup size is one, the I-MR (Individual-Moving Range) chart was chosen for the statistical analysis. The UCL and LCL as the control limits for the I-MR charts in Statistical Process Control (SPC) for the mass production run were calculated.
4. The process capability for PM of conicity and circularity error and process capability for WM of conicity and circularity error were calculated using equation 3.3 to 3.15. All the experimental process capability indices value of conicity and circularity error in PM are greater than one. Therefore, the PM process is capable. In the case of WM process, the process capability indices value of conicity and circularity error in WM are less than one. Therefore, the WM process in incapable. And modeling PM was preferred for further detailed analysis on SMSS using the different micro-drill diameter.

PERFORMANCE ANALYSIS OF CI ENGINE USING CuO NANOFLUID AS A COOLANT IN RADIATOR

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ABSTRACT

Looking into the present day need of automobile heat disposal methods, many researchers are exploring the best means to absorb and dissipate the heat from an engine in an efficient manner. Many automobile giants have invested enormous time and money in this field to analyze over all heat transfer coefficient with variety of fluids. The recent developments were use of nano particles in the base fluids as heat transfer medium.

Water and ethylene glycol as conventional coolants have been widely used in an automotive car radiator for many years. These heat transfer fluids offer low thermal conductivity. With the advancement of nanotechnology, the new generation of heat transfer fluids called, "nano fluids" have been developed and researchers found that these fluids offer higher thermal conductivity compared to that of conventional coolants. Nano fluid is a new type of heat transfer fluid with superior thermal performance characteristics, engineered by dispersing metallic or non-metallic nano particles with a typical size of less than 75 nm in the conventional heat transfer fluids.

Their use remarkably augments the heat transfer potential of the base liquids. In this project, It is found that Nano fluid is very effective in cooling than the conventional cooling fluid and using these coolant in the CI engine radiator, good results of CI engine performance can be obtained.

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CHAPTER VI

CONCLUSION

The experimental investigation concludes that nanofluids are having better heat transfer rate as compared to base coolant. At the volume concentration of 0.3%, the heat transfer enhancement of 35% compared with base fluid.

Increase the flow rate of working fluid enhance the heat transfer rate for both base fluid(water) and nanofluid consider while the variation of coolant inlet temperature to the radiator slightly influences the heat transfer performance.

This heat transfer enhancement may be leads to smaller and lighter radiators which in turn lead to the lower capital and running cost.

EVALUATION OF HOLE QUALITY INSUPERMARTENSITE STAINLESS STEEL USING MECHANICAL MICRO DRILLINGPROCESS.

A PROJECT REPORT

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Table 4.10 Confirmation test

Setting level	Raw data	Optimal Process parameters	
		Prediction	Experiment
	P1v1	P3v4	P3v4
DD	0.009		0.009
HAZ	0.153		0.139
SR	1.248		1.227
GRG	0.623	0.836	0.904
Improvement in GRG 0.281			

CHAPTER 5

CONCLUSIONS

The micron level square cross section blind hole have been successfully performed on PM and WM by using Nd:YAG laser. The following conclusions have been made.

1. Based on the experimental result of DD, HAZ and SR, the PM has superior performance than WM.
2. The application of image processing in micro feature measurement has effectively involved.
3. Spindle speed has most influence factor among the other factor.
4. These results valid only for selected of process parameter and selected materials.
5. In future, different aluminium grade and its composites can be processing.

EXPERIMENTAL INVESTIGATION OF EPOXY MOLDING COMPOUND (EMC) WITH USING ALUMINIUM AL6061 AND SILICON CARBIDE

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ABSTRACT

In this work the experimentation investigation of physical and mechanical properties for epoxy resin improvement by addition the particle of Aluminum (Al) and Silicon Carbide (SIC). Aluminum (Al) and Silicon Carbide (SIC) powders strengthened epoxy resin was worked to research the action of powders respect to the mechanical properties such as (hardness and impact strength), water absorption and physical properties such as (thermal conductivity) for epoxy resin. Al and SIC powders were inserted to the matrix material as filler with increasing in weight (0, 5, 10, 15, and 20 wt. %).

These properties were estimated and compared. The Experimental results show that the hardness enhancement increased gradually with increase weight fraction for the particles Silicon Carbide until 4%and then begin descend, in other words, should not exceed the proportion of Silicon Carbide added to the epoxy resin 5% in order to get an improvement in the hardness of epoxy, While increasing the proportion of aluminum particles added to the epoxy resin more than 4% lead to increased hardness of the resin.

The impact resistance increases for epoxy resin to add Silicon Carbide particles and aluminum but be better resistance at the rate of 10% Al. where up to (32.5 J/m^2) while you are adding 10% aluminum and up to less ($14J/m^2$). The thermal conductivities increased with increasing of weight ratio for Al and SIC fillers content be for Silicon Carbide (24.65 $w/mock^{-1}$) and the Aluminum (25 $w/m.c^{-1}$).

Keywords: Epoxy resin, Al and SIC powders, Mechanical properties, and Physical properties.

CHAPTER 7

CONCLUSICON

In this study, processing and experimental investigations are conducted to evaluate the Mechanical properties(hardness, impact resistance, tensile) and water absorption of epoxy composites filled with different proportion of aluminium powder (Al 6061) & Sic .

The following main conclusions are drawn from the study:

1- Fabrication of epoxy composites filled with different proportion (wt %) of aluminium powder is possible in Simple hand lay-up technique followed by light compression molding process. Than Silicon Carbide

2- The hardness increment of (Sic) reinforced epoxy resin composites with increasing filler content until 15% weight ratio. While the hardness after that decrement for Sic filled epoxy resin composites, but showed better results than Al filled composites. At 5% weight ratio for fillers, hardness tends to increase as compared to pure epoxy resin.

3- Impact strength increase with increasing weight percentage of Al and Sic powder, but sic show better results than Al filled composites.

4- The tensile strength of the epoxy composites decreases effectively with increasing aluminium proportion. But Sic is Stronger than Al. The value of tensile strength of Sic increases up to 10 wt. %

6- Others fillers can be used to reinforcement epoxy resin such as (Al & Ti) instead of (Sic & Al).

7- Carried out other mechanical tests for the same specimen in this research

EXPERIMENTAL AND NUMERICAL ANALYSIS OFTHERMAL CONDUCTIVITY OF ALUMINUM ZIRCONIUMCOMPOSITE.

A PROJECT REPORT

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ABSTRACT

Al6061 is a widely used metal for various application in the industries because of it outstanding properties like low density.High tensile strength and thermal conductivity.In our project are using Al6061 as the matrix element reinforced with fused zirconia alumina (FZA40).FZA is a highly crystalline ceramic with high mechanical properties. The composite will be prepared used stir casting process in various proportion.The prepared composite will be compared with the base metal for it heat transfer and thermal conductivity.Numerical analysis Will be performed on the materials using comsol software.

toughness. By comparing the results we can confirm that the fracture toughness of the test piece which is reinforced with graphite has enhanced fracture toughness than the best combination of aluminium silicon carbide mix. It showed that by adding graphite, fracture toughness be improved. It is found that test piece with graphite addition has positive effect on improving the fracture toughness in aluminium silicon carbide composite and it showed that by adding graphite there is 16 % of increase in fracture toughness than the combination of aluminium silicon carbide composite.

CONCLUSION

In this study, the subject was to find the effect of graphite addition in aluminium silicon carbide composite. Literature survey about the specified topic made clear that although there is many advantage for metal matrix composites in advancing the properties than the pure metal which is being used in metal matrix composite, fracture toughness property is decreasing with increase in the reinforcement. As the fracture mechanics is starting with a solid saying that there are no perfect materials without cracks, makes the topic more relevant. As composite materials could be used in more crucial parts, the need for fracture toughness is very essential. Aluminium silicon carbide with graphite and without graphite matrix was casted and shaped into standard test pieces. Test pieces were shaped according to the ASTM e399, which is a standard used for fracture toughness testing. Standard piece will look like a square plate and a _V-groove which is a pre crack. All the test pieces were tested and by using the 100 KN load in universal testing machine and the stress intensity factor was found out. Higher value of stress intensity factor indicates higher fracture toughness. It is found that test piece with graphite addition has positive effect on improving the fracture toughness in aluminium silicon carbide composite and it showed that by adding graphite 25% SiC and 75% Al there is 16 % increase in fracture toughness than the best combination of (7% SiC 3% C & 90% Al).

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[1] LiheQian, Toshiro Kobayashi, Hiroyuki Toda, Takashi Goda, Zhong-guangwang — Fracture Toughness of a 6061 Al Matric Composite Reinforced with fine SiC particles‖ material transactions, vol 43, no 11 (2002) pp. 2838 to 2842, Japan Institute of Metals

INVESTIGATION OF MATERIAL CHARACTERISTICS ON FIBROUS METAL MATRIX COMPOSITE OF (AL+GLASS FIBRE+EPOXY RESIN) AND (AL+GLASS FIBRE+Zr+EPOXY RESIN) FOR AIRCRAFT APPLICATIONS

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ABSTRACT

In recent years, there has been an increasing demand from automotive, space and aeronautical industries for material processing high specific strength, better wear resistance and stability at high temperatures. The process of improving the properties of conventional materials has led to the technique of reinforcing polymers, ceramics and metals with particles, fibres and whiskers, thus leading to the production of composites Because of the higher ductility and ease of fabrication than ceramic matrix composites (CMCs) and better environmental stability and stiffness than polymer matrix composites (PMCs), metal matrix composites (MMCs) have become popular and widely used. This paper outlines the various production techniques and mechanical properties of FMCs. Further, it shows that Al and Zr based composites exhibit tremendous improvement in all mechanical properties as compared to the unreinforced base alloy. So we have planned to use both fibre and metal materials for this project for aircraft applications. The mechanical properties will be analysed in detail.

5.2. CONCLUSTION

In the present investigation, glass fiber reinforced Al & Zr composites, their mechanical properties are evaluated. Based on the experimental investigation and analysis, the following conclusions are drawn:

1 The tensile strength, flexural strength and the impact strength are observed for 2 different specimen. The tensile strength increases up to certain limit, and then falls due to the variation of metal-fiber-zr .

2 The flexural strength also shows the same trend due to two different materials such as Zirconium and aluminium.

3 Fabrication of woven glass fiber reinforced epoxy composites filled with different proportion (wt%) of aluminium.powder is possible in simple hand lay-up technique.

4 The density and void fractions of glass epoxy composites increase with increase in aluminium concentration.

5 Micro hardness, flexural strength, inter laminar shear strength (ILSS) of 10 wt% aluminium 5 wt% of zirconium plate 2 content composites are improved than plate 1 glass epoxy composite and these properties decrease with further addition of aluminium powder. With respect to these mechanical properties, plate 2 content yields the maximum property values whereas plate 1 yields the minimum value.

6 The tensile strength of the glass fiber reinforced epoxy composites decreases effectively with increasing aluminium proportion.

EXPERIMENTAL ANALYSIS OF WIRE CUT ELECTRICAL DISCHARGE MACHINING PROCESS PARAMETERS OF ALUMINIUM ALLOY 8011 USING GREY RELATIONAL ANALYSIS

A PROJECT REPORT

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Of

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In

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Abstract

The growing demand for miniaturization of systems necessitates the production of smaller components cutting with high dimensional accuracy. In this experimental investigation, micro level slot cutting experiments were carried out in aluminium plate of 2 mm thickness by WEDM with response surface design. Grey relational analysis technique is used to find optimal machine settings of process parameters, namely, pulse on time and wire feed rate. The performance characteristics of the micro cutting slots were evaluated through kerf width and heat affected zone. Polynomial models were developed for responses. In this analysis, the wire feed rate is most influential factor affecting the kerf width and heat affected zone.

CHAPTER 1

INTRODUCTION

1.1 GENERAL

Manufacturing industry is becoming ever more time and quality conscious with regard to the global competence, and the need to use complicated and precise components having some special shape requirements. The demand for materials made from exotic, high strength and temperature resistive materials, tool and die steels and advanced materials are growing day by day. These trends have placed a premium on the use of new and advanced technologies for quickly turning raw materials into usable goods; with less time or possibly no time being required for tooling. The conventional machining processes, in spite of recent technical advancement, are inadequate to machine complex shapes in hard, high strength temperature resistant alloys and die steels. Keeping these requirements into mind, a number of Non-traditional machining (NTM) processes have been developed. These can be classified depending upon the type of energies used. (a) Mechanical Processes: In mechanical processes metal removal takes place either by the mechanism of simple shear (conventional machining) or by erosion mechanism where high velocity particles are used as transfer media and pneumatic/hydraulic pressure acts as source of energy. It 2 includes Abrasive Jet Machining, Ultrasonic Machining, Water Jet Machining etc. (b) Chemical Processes: Chemical processes involve the application of resistant material (acidic or alkaline in nature) to certain portion

CHAPTER 6

6. CONCLUSIONS

1. The wire feed rate is most important factor affecting the machining performances like KW and HAZ based on the single objective optimization.
2. The polynomial model for KW and HAZ gives good fit experimental values.
3. The wire feed rate is also important factor affects cutting of AA 8011 based on the KW and HAZ based on the multi objective optimization.
4. GRG was used to enhance the process performance
5. The irregular cutting edges presented in the confirmation test.

EXPERIMENTAL ANALYSIS OF FRICTIONAL STIR WELDING USING FZA AL6061 COMPOSITE MATERIAL

A PROJECT REPORT

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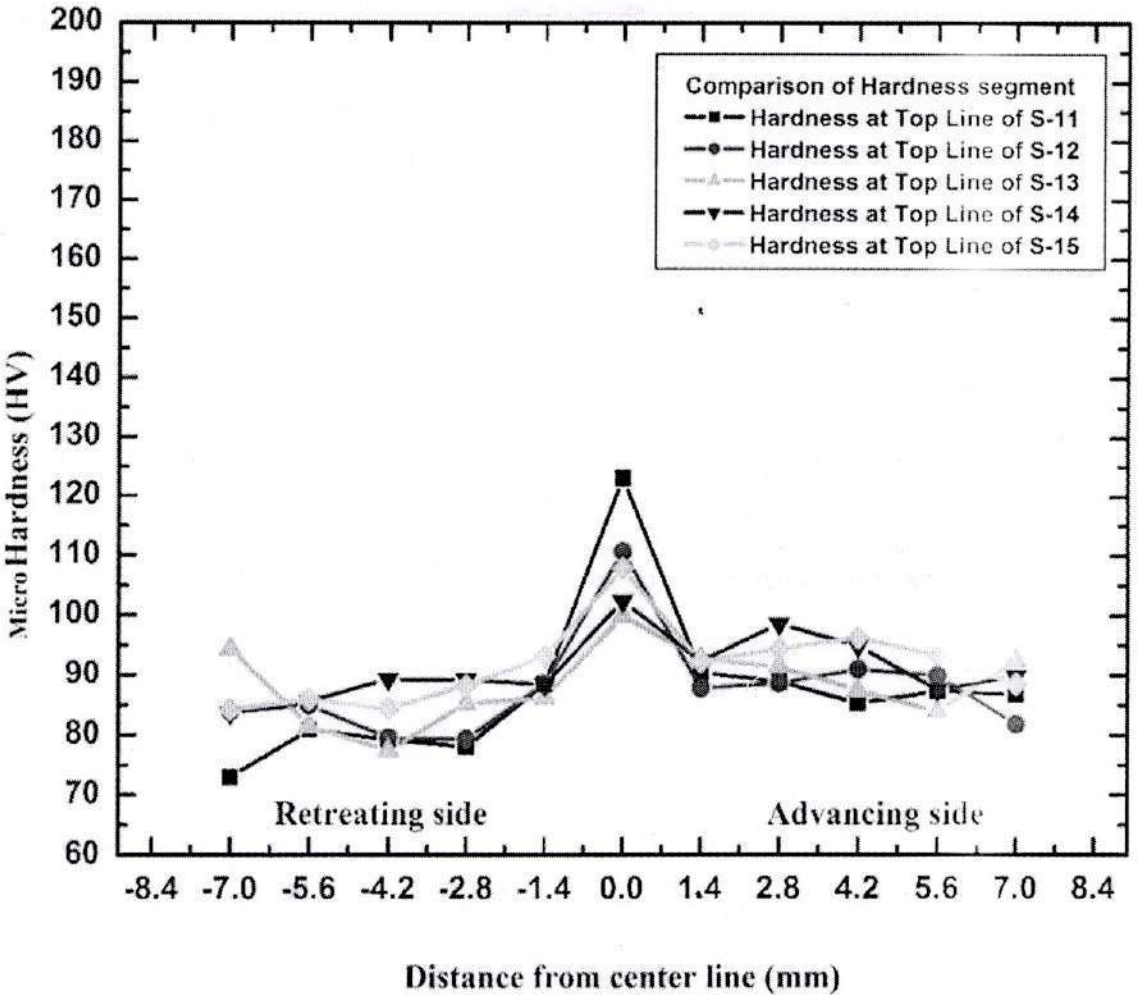

CONCLUSIONS

The present investigation aims to study the friction stir weldingof Al6061 FZA ALUMNIUM composite joint configuration. The effect of weldingsped on themechanical and microstructural properties of thewelded joint has beenexplored. The following conclusions havebeen drawn.

a) UTS of the welded joint increases with welding speed andthen further decreases beyond 160 mm/min.

EXPERIMENTAL ANALYSIS AND OPTIMIZATION OF PARAMETERS IN WEDM ON D3

A PROJECT REPORT

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Abstract

Wire Electric Discharge Machining (WEDM) is a non-traditional process of material from conductive material to produce parts with intricate shape and profiles. Machine tool industry has made exponential growth in its manufacturing capabilities in last decade but still machine tools are not utilized at their full potential. In the present work, an attempt has been made to optimize the machining conditions for surface roughness based on (L_9 Orthogonal Array) Taguchi methodology. Experiments were carried out under varying pulse-on-time, pulse-off-time, peak current, and wire feed. An orthogonal array, the signal-to-noise (S/N) ratio, and the analysis of variance (ANOVA) were employed to the study the surface roughness in the WEDM of AISI D3 Steel. It was observed that the discharge current was the most influential factors on the surface roughness. To validate the study, confirmation experiment has been carried out at optimum set of parameters and predicted results have been found to be in good agreement with experimental findings.

Several researchers have attempted to improve the performance characteristics namely the surface roughness, cutting speed, dimensional accuracy and material removal rate etc. but the full potential utilization of this process is not completely solved because of its complex and stochastic nature and more number of variables involved in this operation.

In order to predict the surface finish and material removal rate while machining D2 tool steel, Scott et al. [2] developed the empirical models. It was observed that there was no single combination of levels of the different factors that could be optimal under all situations. To locate the optimal machining parameters, the non-dominated point approach was applied, using explicit enumeration of all possible combinations and the dynamic programming method. Miller et al. [3] made an investigation to study the effects of spark cycle and pulse on-time on wire EDM of metal foams, metal bond grinding wheels, sintered Nd-Fe-B magnet, and carbon–carbon bipolar plate. Although results presented are machine-dependent, this research provides the guidelines and procedures for the development of wire EDM process for machining new engineering materials to achieve different manufacturing objectives, either the high MRR, miniature features, or a compromise between the two. This study also demonstrated the capability of wire EDM process to machine different advanced materials.

SMART TRAFFIC BARRICADE SYSTEM

PROJECT REPORT 2019-2020

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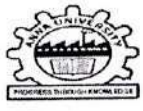

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SYNOPSIS

India is the second largest road network in the world. The everyday struggle and effort of dodging traffic is the biggest cause of chronic stress and many physiological problems. Traffic jams occur due to drivers violating traffic rules. One of the major reasons of accidents is violation traffic signals. Till date traffic controlling system was based on traffic police and electronic signals. Hence it necessary to implement the smart traffic barricade system for the purpose of reducing accidents and smooth moving of traffic. Implementation of the smart traffic barricade system will ensure that driver will have to compulsorily follow traffic signals and violation of traffic signals will not be possible. Smart traffic barricade system is a simple mechanism consisting of rack and pinons, rods, DC battery supply, motor, L298 Motor driver and

CHAPTER-X

CONCLUSION

The traffic barricade system is very effective in controlling traffic.

The whole setup of Smart Traffic barricade system can be implemented in cities with increasing traffic problems.

This will help in betterment of smooth moving traffic.

The whole setup can be implemented at signals.

The Smart barricade system will ensure that drivers will not face traffic jams and enjoy the drive.

By implementing this system, the issues of accident can be reduced drastically.

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EFFECT OF MICRON AND MACRON NOSE RADIUS TOOL ON AA8011 WHILE TURNING

A PROJECT REPORT

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Abstract

This project presents a method for material removal in micron level with high accuracy and surface finish using a CNC machine. In this work, commercially available pure aluminum rods are micro-machined with micron level nose radius, cermets inserts as cutting tool. Prior/after to machining the aluminium rod diameters are measured by co-ordinate measuring machine. Thus micro-turning process is performed or not using CNC turning machine. The experiments were conducted with various combinations of cutting speed, feed, and depth of cut. Performance responses such as shaft size and Surface Roughness (SR) for different conditions were measured and reported. Optimum machining conditions were identified. The machined surface was viewed using Scanning Electron Microscope (SEM) and SEM image were correlated with surface defects for different cutting condition.

CHAPTER 5

5 CONCLUSIONS

This paper proved that micromachining is possible with CNC machine and optimal machining condition analyzed. From the study of micromachining using Taguchi's techniques and ANOVA, the following can be concluded,

1. Micro-turning can be performed on the Fanuc CNC machine.
2. From the results of ANOVA, the Depth of cut and Feed rate are the significant cutting parameters for affecting the MR and Surface Roughness respectively.
3. Minimum Surface Roughness are obtained at a cutting speed of 1500 rpm, feed rate of 0.3 mm/min and depth of cut 0.150 mm.
4. Minimum metal removal are obtained at a cutting speed of 1500 rpm, feed rate of 0.3 mm/min and depth of cut 0.150 mm.
5. Micro scratches, worn surfaces, and dirty layer are observed from the on SEM images of machined surface.
6. Compared to macron nose radius, micron level nose radius has produce better surface.

INVESTIGATION OF CRYOGENIC TREATED COBALT DRILL BIT

A PROJECT REPORT

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LIST OF FIGURES

ABSTRACT

We look into brief introduction of cryogenic treatment. Our focus throughout the report is more on cryogenic treatment of cobalt steel tool steel and high speed steel. In metal forming industry tools are exposed to very complex and rough surface conditions, which are the result of different effects (mechanical, thermal and chemical) and thus require well defined mechanical properties. Different approaches are followed to increase the surface properties of tool steels. The surface hardening treatments of steel has shown significant improvement of various properties including wear and fatigue resistance. Cryogenic treatment is yet another approach acknowledged by some to extend the tool life of many cutting tools. We will describe the complete procedure and investigate the effects on the metallurgical changes in the tool steel. However real mechanisms behind the better performance of tools are still in doubt. Studies in the given references on

CHAPTER-8

CONCLUSION

Comparative study on the hardness and toughness of cryogenically treated Cobalt steel drill bit with that of untreated drill bit. In the sliding wear test, the weight loss of cryogenically treated drill bits is more as compared to that of untreated drill bits.

By this technique specially hardness, wear resistance, corrosion resistance, toughness increases. Cryogenics materials will be part of the dynamic future. We must not only continue to make incremental improvements in present materials but develop whole new technologies of manufacturing and processing for to achieve the highest performance in cryogenics materials field.

Cryogenics-based technologies have applications in wide variety of areas as metallurgy, chemistry, power industry, medicine, rocket propulsion and space simulation, food processing.

REMOTE OPERATED TRASH SKIMMER FOR LAKE

A PROJECT REPORT

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ABSTRACT

This project is emphasis on the environment protection and avoiding water contamination by the fabrication and usage of trash skimmer to clean the lake or water ways surface. Water has a great importance in human being life. The main natural sources of water are rivers, lakes and wells. Nowadays almost it is contaminated by means of man-made wastages like polythene bags, plastic materials, etc., and organic wastes like logs, dry leaves, algae growth, etc. This project can be used in an efficient and economic way of skimming the trashes wastes by skimming on the water surface and collecting it through conveyors by remote operating mechanism for movements and disposal.

5.2Conclusion

This project is fabricated in accordance so it can provide flexibility in operation. This project "Remote Operated Trash Skimmer for Lake also known as Lake Cleaning Machine" is designed with the hope that is very mucheconomical and helpful.

On the basis of its design estimating cost and availability it is very cheap and very useful for the society by protecting the environment from pollutions. This project is made with pre-planning, that it provides flexibility in operation. This innovation has made the more desirable and economical. This project helped us to know the periodic steps in completing a project work. Thus we have completed the project successfully.

INVESTIGATION ON THE MECHANICAL PROPERTIES OF HYBRID FIBRE REINFORCED POLYMER COMPOSITE

A PROJECT REPORT

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ABSTRACT

The variation of mechanical properties such as, impact, water absorbtion and tensile properties of randomly oriented unsaturated polyester based palm fibre rein-forced hybrid composites with tamarind seed and coconut shell powder have been studied. Composite is two or more chemically distinct materials which when combined have improved properties over the individual materials. Composites that forms heterogeneous structures which meet the requirements of specific design and function, imbued with desired properties which limit the scope for classification. Composites are prepared by compression moulding technique and tests are carried out by using ASTM methods. Tamarind seed and coconut shell powder is taken in the range of 10% and the particles size are 80 μm have been taken for this study. Tamarind seed and coconut shell powder is produced from plant material. Palm fibre has been taken in equal weight percentage (20/20) with fixed fibre length of 100mm palm fibre.

CHAPTER 6

CONCLUSION & FUTUREWORK

CONCLUSION

The experimental and analytical investigation on coconut shell and tamarind seed powder filled palm fibre hybrid rein-forcement polyester composites lead to the following conclusions:

Palm hybrid rein-forced polyester composites filled with coconut shell and tamarind seed powder was made successfully by simple Compression moulding method. The present study showed the usefulness of palm hybrid as a good rein-forcing agent for composite fabrication. Incorporation of filler material such as coconut shell and tamarind seed powder modifies the mechanical properties. It is observed that the hardness and impact properties are comparatively higher in coconut shell and tamarind seed powder of particle size 80 μm, from the impact testing, we observed that the presence of palm fibre content increases the impact strength, compare with glass content. There is no greatest change of hardness strength of coconut shell and tamarind seed powder filled palm combination. The properties of pure glass polyester show the lower readings than the palm with coconut shell and tamarind seed powder content. Influence of coconut shell and tamarind seed powder content increases the mechanical properties of impact, compress, and hardness strengths respectively, than the pure glass polyester. Influence of coconut shell and tamarind seed powder to composites plays environmental friendly role, and it is suitable for any type of fibres and matrices. This work introduce a new set of hybrid composites with filler materials is suitable for various mechanical applications.

The mechanical behaviours of Coconut shell, Tamarind Seed and Palm Fibre particulate were studied in this investigation. The particulate composites were fabricated as per the different combinations of the fabrication parameters.

The maximum tensile strength value 9.00 MPa was observed in 15 wt. % of coconut shell powder, 15 wt. % of tamarind seed powder and 20 wt. % of palm Fibre and 50 wt. % of epoxy.

The maximum impact strength value 2.0 J/sq.m was observed in 15 wt. % of coconut shell powder, 15 wt. % of tamarind seed powder and 20 wt. % of palm Fibre and 50 wt. % of epoxy.

The maximum water absorbtion value 0.62% was observed in 15 wt. % of coconut shell powder, 15 wt. % of tamarind seed powder and 20 wt. % of palm Fibre and 50 wt. % of epoxy

FUTUREWORK

There is a very wide scope for future scholars to explore this area of research. The future works should be carried out on this research to improve the strength further more by varying the different ratios of raw materials and study of surface morphology by Scanning Electron Microscopy can also be used to improve the mechanical strength of the material.

Natural fibers are replacing synthetic fibers as reinforcement in various matrices. The composites so prepared can effectively be used as substitute for wood and also in various other technical fields, e.g. building parts, infrastructure, marine, transportation, and inpithrial consumer.

DESIGN, FABRICATION AND ANALYSIS OF COMPOSITE ROOFING SHEET

A PROJECT REPORT

Submitted by

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in partial fulfillment for the award of the degree

of

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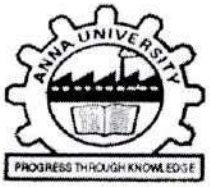
IN

MECHANICAL ENGINEERING



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ABSTRACT

The objective our project is to evaluate the physical and mechanical properties of commercial composite sheet produce with sugarcane waste (bagasse) and coconut fiber (coir) to investigate the possibility of us for the production of sheet .which used for roof and other purpose.

The use of this material can reduce the usage of timber. sugarcane bagasse may be able to satisfy growing demand in wood industry for raw material and abandoned source of coconut fiber(coir) and bagasse . it has been used as the raw material of this project.

This product will be the substitute of asbestos and metal sheet .because it is cheaper than the other types of sheets. The asbestos sheets will produce high health problem .the asbestos particals will leads severe health problems to humans And animals. The metal sheets are costlier and it may corroded and causes problem the human and animal. Which those problems has been rectified by this project .

CHAPTER 8

CONCLUSION & FUTUREWORK

CONCLUSION

Comparing with other roofing material the composite roofing sheet is the cheapest, Safeties and non hazardous product. while we comparing it to the asbestos sheet This asbestos sheets are very hazardous to the people .the tiny particles of the asbestos it will tear the lung tissues and cause various disease to the human. when this animals get contact to this particals it will harm the animals also. It has the chances to contaminate soil and water. When it contaminated with water bodies it can causes various disease to the surrounding environments. Hence the asbestos where banned in several countries but developing countries like India were still using this material. The usage of asbestos will reduce only by the people change to the composite sheet.

While in other hand the metal sheets are higher in price. which the raw materials of the metallic sheets are aluminum, stainless steels etc. the cost of materials are higher in cost. Hence rate of this sheets will be more higher. It cannot be stable in price . it has the problems of erosion it bring more danger.

In the composite sheet such problems has over came compare to the other forms of sheet this composite sheets where cheaper it is less hazardous than the other sheets according to the test conducted which gives the physical property of the sheet and it shows the advantage which has been given by the composite roofing sheets.

PRODUCTION OF BIO-DIESEL FROM WASTE COOKING OIL USING HETEROGENEOUS CATALYST

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ABSTRACT

The major obstacle to biodiesel commercialization is the high cost of biodiesel. Biodiesel made from waste cooking oil is an economical source that can effectively reduce raw material cost. Although using a microwave heating system to improve the yields of waste-cooking-oil biodiesel has received little attention in the literature, experimental results indicate that it outperforms conventional heating, with the best performances found with 0.75 wt% sodium methoxide (CH3ONa) catalysts, respectively. The biodiesel yields produced with CH3ONa catalyst are higher than those produced with NaOH catalyst. An increase in the reaction time from 1 to 3 min significantly increases the yield, which decreases with a further increase to 6 min. A methanol-to-oil molar ratio of 6 is suitable for the synthesis of biodiesel. The biodiesel yields increase with increasing reaction power. However, the output must not be too high as it may damage the organic molecules. The optimal reaction conditions are 0.75 wt% CH3ONa catalyst, a methanol-to-oil molar ratio of 6, a reaction time of 3 min.

CHAPTER 9

CONCLUSION

Cost of biodiesel can be reduced by using waste cooking oil as feedstock high fatty acid content in waste cooking oil could be reduced by pretreating the waste cooking oil with HCL catalyst. Water produced during esterification process can inhibit HCl Catalyst, and this can be eliminated by stepwise reaction mechanism. Methanol is the most suitable alcohol and easy separation from biofuels. Methanol to oil ratio for Sodium methoxide reaction, 6:1 is optimum ratio for transesterification. The biodiesel production parameter was optimised using Design of Expert software package towards transesterification process.

95% biodiesel was obtained at the 0.5Cat wt% of sodium methoxide, Stirrer speed helps to enhance the transesterification reaction at 550 rpm, 2 hrs was optimum durations, Temperature was maintained between the 58 - 60°C. The properties of biodiesel was compared to ASTM D6751 Standards.

The Viscosity of B20,B40 are similar with ASTM standards. The direct injection CI engine were tested and thermal efficiency, BSFC, performance and emission characteristics were investigated. The waste cooking oil biodiesel were succesfully tested in the CI engine and Studied at NIT, Trichy.

DESIGN AND ANALYSIS OF VIBRATING TABLE USING ACCELEROMETER SENSOR

A PROJECT REPORT

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VIBRATING TABLE

ABSTRACT

Composites are produced with different structures depending upon their components and production techniques. During the manufacturing of composite materials using the mold casting method, air bubbles formed in the inner structure need to be removed by vibration. Ultimately, the structure must be homogeneous and void-free. Within the scope of this study, composites produced using materials such as resins and aggregates were designed and analyzed, as well as a vibrating table that can be put to various uses. The vibrating table was manufactured following the successful design and analysis of results, and tested according to actual working conditions. It has been determined that the vibrating table can be easily used for its intended purpose when loaded under real working conditions.

Vibrating Table are designed to settle and compact dry bulk materials in various types of containers. Their application provides either a sizeable increase in the net weight of the container or reducing in the container size with Vibrating Table are available in two types Electromagnetic & Electromechanical. The choice of the proper type and model depends upon the application, characteristics of the material or objects being handled, its reaction to vibration, the maximum weight to be handled and the type of container.

CHAPTER 7:

Conclusion:

Table was designed in the Solidworks program and analyzed by the simulation module; as the results were observed to be sufficient in terms of strength and function, the table was manufactured. Displacement was measured by a vibration meter from measurement points specified on the manufactured vibration table. Data obtained from the vibration meter were compared with the data obtained from Solidworks analysis, and it was found that the difference between the results was five percent or less. It can be concluded that the vibration table is suitable for the target job and therefore meets its design purpose. In the analysis performed according to the force applied to the tray in the vibration table, the resulting stresses indicated that the table was extremely safe. The reason for the large weight of the tray was to ensure that the tray could perform its function despite the applied load, as a rigid structure without any displacement when it was placed on the springs in a horizontal plane.

When the springs used in the vibration table are examined, it can be seen that the used springs can vibrate safely under current working conditions in case of a certain collapse under the load conditions, when not fully closed, due to the eccentric load.We can see this from the displacement results. The reason for the high modulus elasticity of the compression springs used in the vibration table is to ensure that they can withstand the large loads that will be applied on them.

The profiles dimensioned in the design process were larger than the analysis results; this was due to the possibility of the vibration table being exposed to a larger load aside from the mold system used in the current study.

DESIGN AND ANALYSIS OF VALVE LESS PULSE JET ENGINE

A PROJECT REPORT

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ABSTRACT

1. Simple design and efficiency make pulsejet engines attractive for aeronautical short-term operation applications.
2. An active control system extends the operating range and reduces the fuel consumption considerably so that this
3. old technology might gain a new interest. During the operations of these pulsejet engines the surfaces of engine
4. will get more heated. In order to cool the engine surface and to get more thrust we have attached an additional
5. component called secondary inlet in that valve less pulsejet engine. The pulsejet is the only jet engine combustor
6. that shows a net pressure gain between the intake and the exhaust. The pulsejet is the only jet engine combustor
7. that shows a net pressure gain between the intake and the exhaust. We choose the LOCKWOOD's design of
8. pulsejet engine. By using the CFD analysis we have analysed the modified design of valveless pulsejet engine.
9. This project provides an overview of this unique process and the results of these design modifications are
10. reported.

CHAPTER-7

7. Conclusions and Future Study

As we knew that valveless pulsejet engines are easy to build and operate but they produce a lot of noise during its operation, we identified the need to reduce the noise levels.

In order to further improveon the pulse jet research ,several thingscanbedoneduringthetestingphasethat would enhancetheresults. A pressuretransducerthatmeasuresa pressure differential of30 psi whichwould be compared withtheoreticalresultstoseehowclosetooptimum the pulsejet is performing.

Additionally further researchintheeffectsofoptimum fueltoairratiosandmaximizingflowintotheinletscouldpotentiallyshow improvementsinthrust andefficiency withintheengine. Potentiallysomethingsuchasgasolineor JetA fuelcouldbeanalternatefuelsourcetothe pulsejetandwithacceptablefuelinjection,these fuelscouldallowforgreaterthrust from theengineandoverall lightersetupthat could be used on a unmannedairvehicle or RCplane.

Future Study

In Future they might be used in any of the ground applications efficiently so they are non-pollutant and eco-friendly engines. The fuels which are used for the operation of these engines are also cheap and can be helpful in all the needs.

The design of the plenum chambers can also be changed into elliptical shape design in where we can expect to yield good results in reducing the sound

DESIGN AND ANALYSIS OF QUARTER CAR SUSPENSIONTEST RIG USING TORSIONAL SPRING

PROJECT REPORT

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ABSTRACT

Quarter car suspension is easy to understand due to which it is usually used to study the car dynamics the objective of this paper is to analyse the behaviour of the quarter car model for sine wave input with variable frequencies and identify the suspension system. The suspension system I s formulated using mathematical equations which are derived using spring mass damper diagram with two degree of freedom. The evaluated terms are in sprung unsprung mass displacement and acceleration the study gives the identified suspension system for sine input. Also with increase in the frequency there is decrease in overshoot and setting time of system. In a conventional passive suspension system, the designer is faced with the problem of choosing the suspension stiffness and damping parameters .which inevitably involves a difficult compromise in view of the wide range of conditions over which a vehicle operates. The passive suspension is an open loop control system. It only designs to achieve conditions only. The characteristic of passive suspension ae fixing and cannot be adjusted by any mechanical part. Therefore, the performance of the passive suspension depends on the road profile. In other way, active suspension can gave better performance of suspension by having force actuator, which is a close loop control system. The force actuator is a mechanical part that added inside the system that control by the controller. Controller will calculate either add or dissipate energy from the system, from the help of sensors as an input. Will give the data of road profile to the controller.

8. CONCLUSIONS

8.1 CONCLUSIONS

The quarter car suspension test rig in design and manufactured as per the load calculation and requirement based on the kinematic arrangement of suspension system the links are connected with test rig frames. The links, beams, shaft, CAM,motors, bearings are designed and manufactured and successfully assembled with test rig. The designed and calculation are performed by manual calculation. The simulation work is carried out shaft and beams to verify the stresses and deflection in the members by ANSYS software.

SOLAR POWERED WATER PURIFIER

A PROJECT REPORT

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ABSTRACT

In this project , we are making a water purifier which works on solar energy. The basic principle behind this project is reverse osmosis and solar desalination process to remove salt and bacteria from water. In solar desalination process the water is feed to the tank and water is heated by using solar energy once the water is heated to remove bacteria the water is feed to RO system. The RO system works on the solar radiations are collected by solar panel. This energy is then stored in a battery. The battery is connected to the purification unit through an electromagnetic relay. The purification unit consists of high pressure motor , reverse osmosis system and the water tank. The high pressure creates the necessary pressure required to carry out reverse osmosis. The microcontroller 8051 keeps a watch to the level of water in the water tank and prevents it from over flow. Through this process we obtain the purified water in the water tank.

1. Introduction

Worldwide approximately 780 million of people do not have access to safe and clean water for drinking and cooking purpose. About 1.5 million people die each year since that don't have proper water facility

Since they do have clean and fresh water in that particular environment because the water bodies 'get containment by human and factories in that area and another reason that the ground water get salty and it can't be used for drinking purpose

People drinking the contaminated water and salt water that may leads vomiting or diarrhea, skin rashes, cancer, and reproductive problems and more even it causes death

So we decide to make a solar powered water purifier by considering the current issues that faced by Indian people and people around the world

Without using any power source. It work fully on solar energy itself and it does not need any maintenance

CONCLUSION

This work of operating is simple assembly which is a good prototype to have a portable source of RO purified water this has less weight. And smaller size. And testing calculation showed that this is quite a good product to have in situations of floods and remote areas where the water purification is needed to be done. Future purifiers may be less costly and convenient to use. This paper conclude fully utilization of renewable energy by using small RO unit which reduce energy cost and totally independent from grid network

SYNTHESIS OF FUEL FROM PLASTIC

A PROJECT REPORT

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ABSTRACT

The increased demand and high price for energy sources are driving efforts to convert organic compounds into useful hydrocarbon fuels. Although much of this work has focused on biomass, there are strong benefits to deriving fuels from waste plastic material. Waste plastic is abundant and its disposal creates large problems for the environment. Plastic does not break down in landfills, it is not easily recycled and degrades in quality during the recycling process, and it can produce waste ash, heavy metals, and potentially harmful gas emissions if incinerated at high temperatures. However, thermal processes can be used to convert plastics into hydrocarbon fuels such as gasoline, diesel, aviation / jet fuel, which have unlimited applications in airline industries, helicopter, heavy transportation, and electricity generation. The method and principal of the production / process will be discussed.

CHAPTER 5

CONCLUSION & FUTURE SCOPE

5.1 CONCLUSION

Pyrolysis of hydrocarbon polymers is a very complex process, which consists of hundreds of reactions and products. Several factors have significant effects on the reactions and the products.

Based on previous research, this chapter investigated the fundamental plastic processes and reactions. With temperature increasing, plastic will go through glassy state, rubbery state, liquid state, and decomposition. Decomposition of plastic in an inert environment into liquid is called pyrolysis. There are four stages of reactions during the plastic pyrolysis process: initiation, propagation, hydrogen transfer, and termination reactions.

It was found that heavy molecular weight hydrocarbons produced from primary cracking can be further cracked into light molecular weight products through a secondary cracking process. This secondary cracking process has significantly influence on the distribution of the product. This process converts heavy hydrocarbons into gas or light liquid product.

5.2 FUTURE SCOPE

The project shows some light on the possibility of manufacturing liquid fuels which could be used as feed stock refinery for further modification or commercial use. By using this technology we could solve the waste plastic problem and also significantly reduce the landfills-which are the cause of infertility of Agriculture land. Waste plastics can also become a very good source of energy and an alternative to fossil fuel which have caused an environment imbalance.

CFD ANALYSIS OF SHELL AND TUBE HEAT EXCHANGER IN CALORIMETER

A PROJECT REPORT

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ABSTRACT

A heat exchanger is a device that is used to transfer thermal energy (enthalpy) between two or more fluids, between a solid surface and a fluid, or between solid particulates and a fluid, at different temperatures and in thermal contact. In the conventional heat exchangers, pipes are larger in size which makes heat exchanger bulky. But in some typical applications such as closed loop gas turbine heat exchangers, cryogenic applications, heat exchangers used in PWR power plants, nuclear submarines, etc., size and weight are critical design constraints on the heat exchanger. Also for high pressure applications tubes are subjected to high bending stresses. To overcome these difficulties, compact heat exchangers can be employed. Mini channels heat exchanger is a type of compact heat exchanger in which minichannels are machined on metal plates and then such plates are bonded together. Such an arrangement provides high strength so that it can be used for high pressure applications. In present work, a mini channel heat exchanger is designed with assuming inlet and outlet of hot temperature, inlet of cold water temperature and also the mass flow rates of cold and hot water. This compact heat exchanger can be used for cooling purpose of electronics device like silicon chip which would be used for microprocessor. In order to cool down silicon chip, it is kept in place of hot fluid plate. Cooling of silicon chip is required to prevent from damage and subsequently failure

THE MECHANICAL PROPERTIES OF BANANA FIBERS AND REINFORCED COMPOSITE MATERIALS AND MANUFACTURING TECHNIQUES

A PROJECT REPORT

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Certified that this project report " **INVESTIGATION OF MECHANICAL PROPERTIES OF BANANA FIBER AND GLASS FIBER WITH EPOXY RESIN COMPOSITE MATERIALS** " is the bonafide work of **S MOHAMED SALMAN, M MOHAMMED RASHIK, H MOHAMMED SULTHAN, V MUGESH KANNA** who carried out the project work under my supervision.

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INTERNAL EXAMINER **EXTERNAL EXAMINER**

II

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ABSTRACT

Reducing weight while increasing or maintaining strength of products is getting to be highly important research issue in this modern world. Composite materials are one of the material families which are attracting researchers and being solutions of such issue. In this paper we describe design and analysis of composite material. The objective is to compare the stresses and weight saving of composite cantilever beam with that of steel cantilever beam. The design constraint is stiffness. The Automobile Industry has great interest for replacement of steel cantilever beam with that of composite cantilever beam, since the composite materials has high strength to weight ratio, good corrosion resistance. The material selected was glass fiber reinforced polymer (epoxy), carbon epoxy and graphite epoxy is used against conventional steel. The design parameters were selected and analyzed with the objective of minimizing weight of the composite cantilever beam as compared to the steel cantilever beam. The cantilever beam was modeled and the analysis was done using Autodesk Inventor 2016.

Key words: Composite Cantilever beam, Epoxy resin, Banana Fiber.

CHAPTER – 5

CONCLUSION

This report details with design and analysis of fan blades using composite materials like SILVER WOOD, Epoxy Banana fiber is attached with the Part drawings. The project carried out by us made an impressing task in the Manufacturing works. It is very useful for the fitters to analysis job of preferred size to perform the required operations to be carried out. This project has been designed to perform the entire requirement task, which has also been provided.

1. The composite fan blades has Lightweight, extremely strong

2.The composite fan blades poses the weight ¼ th for same strength

3. The Corrosion & chemical Resistance is higher than steel

4. The composite fan blades has Excellent elastic properties

5. The composite fan blades Regains shape after bending till certain limit,

useful for any application. From above discussion we can conclude that the glass fiber and banana fiber is the optimum material for the fan blade as it can withstand to both dynamic load as well as thermal load coming on fan also it lighter in weight Traditional material as many problems such as scarring, cracking , wrapping or excessive rusting the composite (fiber & epoxy resin) materials are used in lot of application. And it is mainly used in automobile body Because of it is light weight and high strength and the cost is compare to steel it is less price . This composite material made it possible to reduce the weight of machine element without any reduction of the load carrying capacity because of composite materials have high elastic strain energy storage capacity and high strength to weight ratio compared with those steels

DESIGN AND ANALYSIS OF COMPOSITE BRAKE PAD

A PROJECT REPORT

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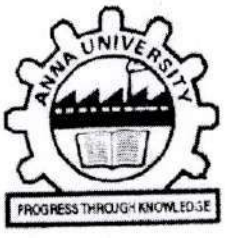

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ABSTRACT

The purpose of friction brakes is to decelerate a vehicle by transforming the kinetic energy of the vehicle to heat, via friction, and dissipating that heat to the surroundings. Automotive braking systems are normally made of steel or grey cast iron and are then paired with polymer-composite pads. These types of materials are suitable for use in braking systems with moderate loads with a limited temperature capability, where they exhibit a relatively high and stable friction co-efficient, a low-wear rate and are quiet during operation. Composite brake discs are lighter, economical, and have excellent high energy friction characteristics. These have twice thermal capability compared to steel, remain unaffected by thermal shocks and mechanical fatigue. These are highly useful in emergency breaking situations. In this paper, carbon ceramic matrix disc brake material and steel material are used for calculating normal force, shear force and braking torque; and also to calculate the braking distance of the disc brake. The standard disc brake model is made using CATIA and the Static Structural analysis to calculate the deformation of the brake model is done using ANSYS. This aids to understand the action of force and friction force on the disc brake's new composite material, and helps to provide evidence so as to why the composite material is better than conventional materials.

Keywords:Composite matrix material, CATIA, ANSYS, Carbon ceramic disc brake

$$(C_T + b_1 K H_T)T_{t+\Delta t} = (C_T - b_2 K H_T)T_t + b_2 R_t + b_1 R_{t+\Delta t}$$

Where CT is the capacity matrix, KHT is the conductiyity matrix. T and R and are the nodal temperature and heat source vector, respectively.

Where the variable b1 and b2 are given by

$$b_1 = \beta\Delta t,\ b_2 = (1-\beta)\Delta t$$

For diff erent values of β, the well-known numerical integration scheme can be obtained [23]. In this study, $0.5 \leq \beta \leq 1.0$ was used, which is an unconditionally stable scheme.

8. Conclusion

From the results obtained from ANSYS, we can come to the conclusion that:

- Practical use of C-SiC composite material produces much effective braking compared to steel disc brakes.
- Deformation in steel is much higher than composite, which implies the deformation resistance of the composite structure than the steel material.
- Stress accumulated on the composite is much less, which proves the wear resistance, rigid & stable braking during high speeds.

In this article, we have presented the analysis of thermomechanical behavior of the dry contact between the disc and pads during the braking process; the modeling is based on the ANSYS 11.0. We have shown that the ventilation system plays an important role in cooling the discs and provides a good high-temperature resistance. The analysis results showed that temperature field and stress field in the process of braking phase were fully coupled.

The temperature, the Von Mises stress and the total deformations of the disc and contact pressures of the pads increases as the thermal stresses are apart from the mechanical stress which causes the crack propagation and fracture of the bowl and wear of the disc and pads. Regarding the calculation results, we can say that they are satisfactorily in agreement with those commonly found in the literature investigations.

It would be interesting to solve the problem in thermomechanical disc brakes with an experimental study to validate the numerical results, for example, on test benches, in order to demonstrate a good agreement between the model and reality. Regarding the outlook, there are three recommendations for the expansion of future work related to disc brake that can be done to better understand the eff ects of thermomechanical contact between the disc and pads. tThe recommendations are as follows:

ROBOTIC ARM WITH 6 DEGREE OF FREEDOM USING SERVO MOTOR

A PROJECT REPORT

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ABSTRACT

Today, technology is developing in the same direction in line with rapidly increasing human needs. The work done to meet these needs makes life easier every day, and these studies are concentrated in robotic arm studies. Robot arms work with an outside user or by performing predetermined commands. Nowadays, the most developed field of robot arms in every field is the industry and medicine sector. Designed and realized in the project, the robot arm has the ability to move in 4 axis directions with 5 servo motors. Thanks to the holder, you can take the desired material from one place and carry it to another place, and also mix it with the material it receives. While doing this, robot control is provided by connecting to the android application via Bluetooth module connected to Arduino Nano microcontroller.

CHAPTER 7

7 CONCLUSION

Robotic arms, many areas are developable. Thanks to the robotic arms, many tasks are made easier and the resulting error level has been reduced to a minimum. For example; some pharmacy-based drug-giving robots and a projected robot arm have been developed. In addition to this, the ability to move the robot arm is further increased, and when the camera is placed in the finger area and the sensitivity is increased, it can be used in a wide range of applications from the medical sector to the automation systems. With the robotic arms developed in this way, the risk of infecting the patient in the medical sector is minimized, while the human errors are minimized during the surgical intervention. Despite the fact that the robotic arm made by this project is of prototype quality, it has a quality that can be improved for more robotic systems. Besides these, robotic arm sector, which is open to development, will keep its importance in the future.

The purpose of the project is to provide control of 4 axes moving robot arm design and this robot arm with a suitable microcontroller and Bluetooth module with android application. The necessary theoretical and practical information for this purpose has been obtained and the necessary infrastructure has been established for the project. During the process of making and developing the project, a lot of theoretical knowledge has been transferred to the practice and it has been ensured that it is suitable for the purpose of the project.

FINITE ELEMENT STUDY ON FRONTAL CRASH OF A THREE-WHEELER VEHICLE

A PROJECT REPORT

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FINITE ELEMENT STUDY ON FRONTAL CRASH OF A THREE-WHEELER VEHICLE

Abstract:

The crash simulation of a vehicle by using computer software has become an indispensable tool for improving safety by means of simulated in real time environment at lower costs. It also has a huge impact on improving the safety of an automobile.

This work is carried out for the scope of improving crashworthiness of three wheeled vehicles in LS-DYNA simulated environment. The model developed in CATIA is made to crash front on with a rigid wall at different initial velocities. Since the TWVs are having almost negligible crumple zone, it is important to study the energy characteristics of the vehicle. The kinetic energy, Internal energy and total energy were recorded and compared at 40 Km/Hr and 50 Km/Hr.

KEYWORDS- Crash test; FEA; LS-DYNA; Three- wheeler safety; Energy study.

5.2.3 TOTAL ENERGY PLOT

The Total energy plot for the simulation where the auto was given an initial velocity of 50 Km/s is shown in Figure 5.8

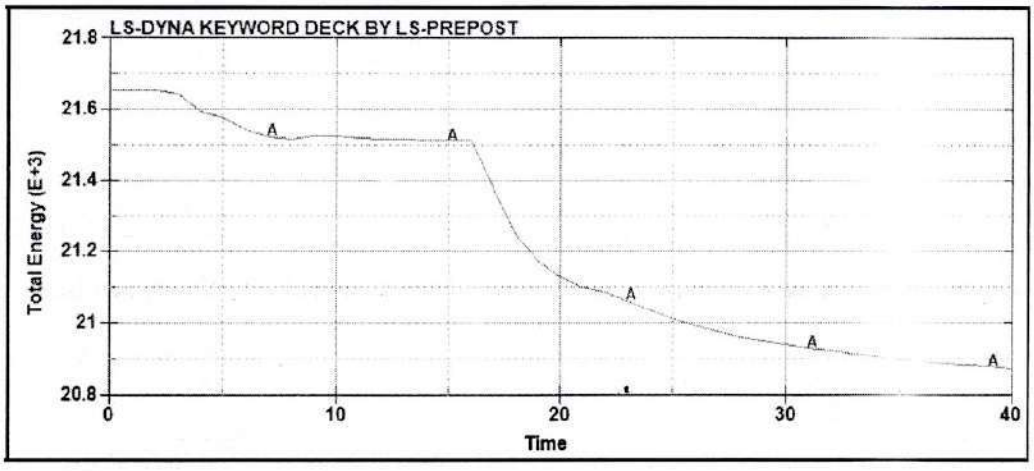

Figure 5.8

5.3 CONCLUSION

In the present work, the energy characteristics of a TWV is studied by simulating frontal crash of FE model with a rigid wall in LS-Dyna simulated environment. The initial velocity of the TWV is taken as the only variable.

Kinetic energy, Internal energy and total energy are observed during crash. From the energy characteristics, it is observed that the kinetic energy gets converted into internal energy, and in the process the total energy also decreases with time. The difference between the initial total energy and the final total energy is the energy absorbed by the

vehicle upon crash. By using better materials, better energy absorption characteristics can be obtained, and in turn the crash severity can be reduced.

REDUCING THE EMISSION NORM'S BY USING THE WATER RADIATOR AND TURBO VALVE

A PROJECT REPORT

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ABSTRACT

Design and installation of turbo charger in SI engine are available in this paper. Turbo charger in two wheelers is used to increase the efficiency of engine. Supercharger works on engine power while turbo charger works on exhaust gases. Turbochargers are used throughout the automotive industry as they can enhance the output of an internal combustion (IC) engine without the need to increase its cylinder capacity.

The emphasis today is to provide a feasible engineering solution to manufacturing economics and —greener‖ road vehicles. It is because of these reasons that turbochargers are now becoming more and more popular in automobile applications. Small modification is done on vehicle to improve efficiency and also control the exhaust gas emission level. The aim of this project is to increase to volumetric efficiency and also control the emission level of —TWO WHEELERS‖.

CHAPTER-XIII
13. CONCLUSION

—REDUCING THE EMISSION NORM'S BY USING THE WATER RADIATOR AND TURBO VALVE‖ According to industry research, global turbo penetration is expected to reach more than 70% during the next 10 years. By contrast, electric vehicles are likely to remain below 10% for the same period. The global turbo industry is expected to grow at an annual rate of 10% a year in the next five years, from 22 million turbocharged vehicles today to 35 million in 2015. Europe will continue to be the leading region in terms of turbocharger adoption across light and commercial vehicles, exceeding 70% penetration by 2015.

In North America, a key automotive market with one of the lowest penetrations of turbochargers, turbo use will double to 20%. up from a projected 11% today. China will also see its turbo market grow from 11% in 2010 to 25% in 2015. To accompany this trend, Honeywell will debut more than 100 new turbo engine applications this year alone on passenger and commercial vehicles across the globe and has 500 in total in its development pipeline. Honeywell Turbo Technologies is the world's leading automotive turbocharger developer, supplying technology solutions to nearly every major vehicle manufacturer worldwide. The Turbo Technologies business is part of Honeywell Transportation Systems, which enhances vehicle performance, efficiency and appearance through state-of-the-art technologies. world-class brands, and global solutions tailored to the needs of its automotive customers around the world

DESIGN AND ANALYSIS OF SOLAR WATER HEATER

A PROJECT REPORT

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Abstract

This paper deals with the design and fabrication of a semicircular solar water heater to use renewable energy to obtain hot water. The solar water heater is made by using locally available materials like dripping pipe, coir, plastic drum, G.I. sheet, hose pipes etc. Work has been done on three types of set-ups and investigated for the period of two months. In the performance evaluation, inlet and outlet temperatures of hot water and cold water are measured. Semicircular setup without any insulation and heat absorber plate will not give enough amount of hot water. The same setup with insulation and G.I sheet absorber plate coated with black colour but without transparent cover will also not give sufficient temperature rise to the hot water. But setup with insulation, blackened G.I sheet cover and transparent plastic cover which covers the pipes gives good amount of hot water. The maximum temperature attained in this set-up is 72°C. This hot water is stored in insulated drum of 150 litre capacity and that preserves water as hot for the period of 12-15 hours. The water flow takes place due to thermo siphon effect. Total cost of this project is INR 7500. Since this work is a ongoing project, the final set-up- which is more efficient, should be studied further for other two seasons(rainy and winter) with some modification and optimisation regarding insulation and water handling.

4. Conclusions

By studying above three set-ups, it has been concluded that, the semicircular or dome type structured solar water heater having area of 0.792 m2 with insulation, black absorber plate and transparent cover over the pipes gives maximum temperature of hot water up-to 72°C in the mid-noon, and for this 50-55°C of hot water is attained for next day morning. In the setup with just winding dripping pipe on the structure, without transparent cover over it, a temperature of 56°C is attained in the dripping pipe. This is because of the absence of absorber material and the transparent cover. The setup with insulation over the structure and blackened plate winded with dripping pipe but without transparent cover gives the temperature of 61°C in the mid-noon. This is because the hot absorber metal surface receives maximum amount of heat, part of that is given to the dripping pipe and more amount of heat is wasted.

Since this work is a ongoing project, the third set-up should be studied further for more time in summer and other two seasons(rainy and winter) with some modifications and optimisation regarding insulation and water handling, some more time is required to give the final conclusion.

STRUCTURAL ANALYSIS OF MODIFIED REAR BUMPER OF CAR BY COMPARING WITH TWO TYPE OF COMPOSITE MATERIALS IN ANSYS

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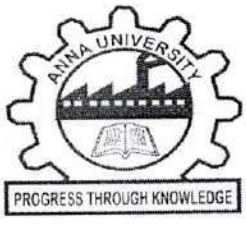

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ABSTRACT

Bumpers play an important role in preventing the impact energy from being transferred to the automobile and passengers. Saving the impact energy in the bumper to be released in the environment reduces the damages of the automobile and passengers. This bumper either absorbs the impact energy with its deformation or transfers it perpendicular to the impact direction. To reach this aim, a mechanism is designed to convert about 80% of the kinetic impact energy to the spring potential energy and release it to the environment in the low impact velocity according to American standard. In addition, since the residual kinetic energy will be damped with the infinitesimal elastic deformation of the bumper elements, the passengers will not sense any impact. It should be noted that in this paper, modeling, and result's analysis are done in CATIA V5R20 and ANSYS software respectively. For structural analysis of the bumper materials like aluminum 6061 and aluminum B390 materials are used.

CHAPTER 11

CONCLUSION

Comparing the above results we can conclude that our designed rear bumper with Aluminium alloy 6061shows better result than B390 Aluminium alloy. . In addition, since the residual kinetic energy will be damped with the infinitesimal elastic deformation of the bumper elements, the passengers will not sense any impact. It should be noted that in this paper, modeling, and result's analysis are done in CATIA V5R20 and ANSYS software respectively.

EVALUATION OF MACHINING BEHAVIOURS OF ALUMINIUM METAL MATRIX COMPOSITE (Al+ SiC + MG)

A PROJECT REPORT

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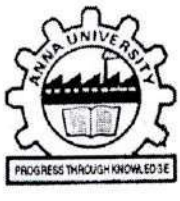

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ABSTRACT

The aim of this project is about a brief overview of the historical development of aerospace aluminium alloys. Aluminium matrix composites (AMCs) are potential materials for various applications due to their good physical and mechanical properties. This study is proposed as an introduction to a comprehensive investigation of mechanical properties of aluminium alloy. They have the potential to replace the conventional materials because of obtaining superior properties such as high specific strength, high stiffness, high hardness, high wear resistance and low density. In the past three decades composite materials were playing a vital role in various sectors especially in aeronautical, avionics and automotive sectors. The present works dealt with the mechanical behavior of aluminum metal matrix reinforced with Silicon Carbide and magnesium particles in different weight fractions were prepared by sand casting method. The present works dealt with the mechanical behavior of aluminum metal matrix reinforced with Silicon carbide and magnesium particles in different weight fractions 15 % and 5 % were prepared by sand casting method.

CHAPTER 11

CONLCUSION

Composite materials especially aluminum and zinc composites having good mechanical properties compared with the conventional materials. It is used in various industrial applications these materials having light weight along with high hardness. It with stand high load compare with the existing materials are most applicable in the engineering products instead of existing materials. Finally I conclude that the percentage of zinc increases automatically the toughness. machining timing decreases.

DESIGN AND ANALYSIS OF ENGINE FINS WITH THREE DIFFERENT MATERIALS TO INCREASE THE RATE OF HEAT TRANSFER

A PROJECT REPORT

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ABSTRACT

An SI engine is one of the pivotal parts of every automobile. SI engines operate on the principle of combustion of the fuel. The heat energy produced due to this phenomenon is partly utilized in producing the useful work. A part of the thermal energy is dissipated to the atmosphere in the form of conduction and convection. Due to the internal combustion, engine material experiences sharp temperature changes. In order to improve the efficiency and sustainability of the engine, heat dissipation has to be carried out quickly and in a very efficient way. Surface Area of the engine exposed to the atmosphere is critical for the heat dissipation. Extended surfaces called fins help in increasing the surface area thereby help in taking away the heat produced in the combustion chamber to the atmosphere. Due to the advent of new alloys, heat transfer characteristics of the fins have improved vastly without compromising on the other structural parameters. Material, Geometry, pitch and the height of the fins are the parameters which can be altered in order to optimize the transfer of heat from the engine.

Here in the project, analysis of the thermal properties of the engine cylinder by varying material of fins, the geometry of fins and number of fins is done. Standard materials used for commercial engine fins are **Aluminium alloy A204** of thermal conductivity of 120 W/m-k. Here analysis of the heat transfer characteristics of engine fins is done by using these following materials namely **Aluminium 6061, Magnesium Alloy and Aluminium 204**. The parametric model of the engine with different fins is designed using **CATIA V5** Software, and thermal properties and thermal analysis are done using **ANSYS Fluent Version 15.0**.

Keywords: CFD, Fins, Heat transfer rate, Thermal Conductivity

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5.CONCLUSIONS

Steady state thermal analysis of the two wheeler engine cylinder block with fins is carried out in this project. Analysis of existing model, Modified-1 model and Modified-2 model is carried out. Varying the geometry of the cylinder block fins and changing thickness of the fins and increasing no. of fins this analysis carried out. By providing slots on fins we can trap the air flow over it and due to the swirl of the air into slots it will cause more heat transfer and cools engine more effectively. As we increase the area under the convection the cooling of engine improves and due to which engine cools effectively.

The benefits of modified fin geometries:

- Engine parts cools moderately and avoid damage of engine component
- Due to slots the weight of the engine reduces
- Engine work efficiently.
- Improving the fins in cylinder block can be used for increasing the heat transfer from the fins.

6.FUTURE SCOPE

In present work we studied the thermal effect of fins modification so there is scope to work on the structural effect analysis on working of cylinder block after modification of fins, and also we can use CFD tools to study the fin performance.

DESIGN AND ANALYSIS OF CYLINDER LINER FAILURE OF BG LOCOMOTIVE

A PROJECT REPORT

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Abstract

A Cylinder Liner or also known as Sleeve is a cylindrical component that is placed in an engine block. It is one of the most important functional parts to make up the interior of an engine and it gives a wear protective surface for piston and piston rings.The barrel or bore in which an engine piston moves back and forth may be an integral part of the cylinder block, or it may be a separate liner. It is commonly used in gasoline engines, has the disadvantage of not being replaceable. When excessive wear occurs in a block of this type, the cylinder must be re-bored or honed. Reconditioning of this type cannot be repeated indefinitely and, in time, the entire block must be replaced. Another disadvantage is the inconvenience, especially in large engines, of having to remove the entire cylinder block from a ship in order to recondition the cylinders.

Key Words: Cylinder Liner,Piston rings, wear resistance.

1. INTRODUCTION

A cylinder liner or also known as sleeve (Figure 1) is a cylindrical component that is placed in an engine block to form a cylinder. It is one of the most important functional parts to make up the interior of an engine and it gives a wear protective surface for piston and piston rings.

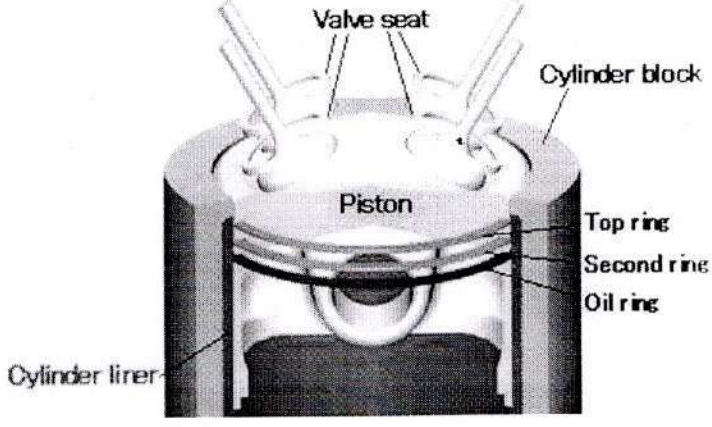

Figure 1. Cross-section of a cylinder in an internal combustion

6. CONCLUSION AND FUTURE SCOPE:

To put in a nutshell, Impurities and the dust particles of the environment would be affecting more on the liners surface. On the other hand, impurities in the lube oil would also damage the engine parts. By adding cyclonic separator in air intake system and centrifugal separator in lube oil system reduce the failures and damages of liners. In the future with this modification of air intake and lube oil systems will directly impact on the Indian railways growth and also help to its development. Moreover, Reduction in failures and damage parts quantity will improve the finance budget of railways. Maintenance and replacement of parts would be less .

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FABRICATION AND TESTING OF THE PERFORMANCE OF THE SOLAR BASIN STILL WITH STEPPED TYPE

A PROJECT REPORT

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ABSTRACT

The purpose of this project is to design a water distillation system that can purify water from nearly any source, a system that is relatively cheap, portable, and depends only on renewable solar energy.

The motivation for this project is the limited availability of clean water resources and the abundance of impure water available for potential conversion into potable water, in addition, there are many coastal locations where seawater is abundant but potable water is not available. Our project goal to efficiency produce clean drinkable water from solar energy conversion.

Distillation is one of many processes that can be used for water purification. This requires an energy input as heat, electricity and solar radiation can be the source of energy. When solar energy is used for this purpose, it is known as solar water distillation. Solar distillation is an attractive process to produce portable water using free of cost solar energy. This energy is used directly for evaporating water inside a device usually termed a "solar still". Solar stills are used in cases where rain, piped or well water is impractical, such as in remote homes or during power outages. Different versions of a still are used to desalinate seawater, in desert survival kits and for home water purification. For people concerned about the quality of their municipally-supplied drinking water and unhappy with other methods of additional purification available to them, solar distillation of tap water or brackish groundwater can be a pleasant, energy-efficient option. Solar distillation is an attractive alternative because of its simple technology, non-requirement of highly skilled labour for maintenance work and low energy consumption.

The use of solar thermal energy in seawater desalination applications has so far been restricted to small-scale systems in rural areas. The reason for this has mainly been explained by the relatively low productivity rate compared to the high capital cost. However, the coming shortage in fossil fuel supply and the growing need for fresh water in order to support increasing water and irrigation needs, have motivated further development of water desalination and purification by renewable energies.

CONCLUSION

Distillation is a method where water is removed from the contaminations rather than to remove contaminants from the water. Solar energy is a promising source to achieve this. This is due to various advantages involved in solar distillation. The solar distillation involves zero maintenance cost and no energy as it involves only solar energy which is free of cost.

It was found from the experimental analysis that increasing the ambient temperature from 32°C *to* 47°C will increase the productivity by approx 12 to 23% which shows that the system performed more distillation at higher ambient temperatures. When inverted type absorber plate was used thermal efficiency of single slope solar still was increased by 7%.

It was observed that when the water depth increases from 0.01m to 0.03m the productivity decreased by 5%. These results show that the water mass (water depth) has an intense effect on the distillate output of the solar still system.

Solar still productivity can also increase by use of reflector by 3%. The use of the mirror reflector will increase the temperature of the solar still basin; such an increase in the temperature is because of the improvement in solar radiation concentration.

The solar radiation increase from 0 MJ/m^2/h to 6 MJ/m^2/h has increased the productivity of the still by 15 to 32%. However the increase of the solar radiation parameter will increase the solar energy absorbed by the basin liner.

The main disadvantage of this solar still is the low productivity or high capital cost per unit output of distillate. This could be improved by a number of actions, e.g, injecting black dye in the seawater, using internal and external mirror, using wick , reducing heat conduction through basin walts and top cover or reusing the latent heat emitted from the condensing vapour on the glass cover. Capital cost be reduced by using different designs and new materials for construction of solar stills.

DESIGN AND EVALUATION OF MECHANICAL BEHAVIOUR OF ALUMINIUM FUNCTIONALIZED BY COPPER

A PROJECT REPORT

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ABSTRACT

The aim of the present investigate to develop aluminum and copper metal matrix composites by reinforcing with chopped of copper added different Percentages such as 35% , 70% and 95% and so on.

The casting can be produced by cylinder and square type casting process, These casting process the one cylinder rod take pure aluminum and other cylinder rod added copper some amount.

These casting were studied for its mechanical properties such as corrosion test .

It is observed that material properties in reinforcement improve the properties of the composites material

COPPER - ALUMINUM

CHAPTER 7: CONCLUSION

From the experiments it is proved that **casting** temperature and the thickness **of cast** parts are the important parameters influencing fluidity. It is observed that on increasing the temperature the fluidity **of** aluminium and copper increases i.e. the castability **of** this alloy is better at higher pouring temperature. And various testing experiments are conducted using various machines to the test specimen and the **mechanical** properties of a **material** can be obtained. In this project we are increasing the strength of an aluminium by combined with copper.

DESIGN AND ANALYSIS OFDIESEL ENGINE CRANKSHAFT

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to express my special thanks to the officials, faculty and non-teaching staff members of our departments who rendered.

ABSTRACT:

Crankshaft is large volume production component with a complex geometry in the DIESEL Engine. This converts the reciprocating displacement of the piston in to a rotary motion of the crank. We are study selection of best material by comparing the Static analysis on a crankshaft from a multi cylinder (4-cylinder) 4-stroke DIESEL Engine. The modeling of the crankshaft is created using CATIA-V5 Software. This model will be converted to Initial Graphic Exchange Specification (IGS). Finite element analysis (FEA) is performed to obtain the variation of stress at critical locations of the crank shaft using the ANSYS software and applying the boundary conditions. Then the results are drawn Von-misses stress induced in the crankshaft is 15.83Mpa and shear stress is induced in the crankshaft is 8.271Mpa. The Theoretical results are obtained von-misses stress is 19.6Mpa, shear stress is 9.28Mpa. The validation of model is compared with the Theoretical and FEA results of Von-misses stress and shear stress are within the limits.

The overall objective of this project was to evaluateand compare the fatigue performance of two competingmanufacturing technologies for aerospace crankshafts, namelyforged steel and ductile cast iron. In this project a dynamicsimulation was conducted on two crankshafts, forged steel and ductile cast iron, from similar four cylinder four stroke engines.Finite element analysis was performed to obtain the variation ofstress magnitude at critical locations. The pressure-volumediagram was used to calculate the load boundary condition in

dynamic simulation model, and other simulation inputs were taken from the engine specification chart. The dynamic analysis was done analytically and was verified by simulations in ANSYS. Results achieved from aforementioned analysis were used in optimization of the forged steel crankshaft. Geometry, material, and manufacturing processes were optimized considering different constraints, manufacturing feasibility, and cost. The optimization Process included geometry changes compatible with the current engine, fillet rolling, and the use of micro alloyed steel, resulting in increased fatigue strength and reduced cost of the crankshaft, without changing connecting rod and or engine block.

CHAPTER 7: CONCLUTION

CONCLUTION:

Analysis results from testing the crank shaft under static load containing the stresses and deflection are listed in the Table. Since the forged iron crankshaft is able to withstand the static load, it is concluded that there is no objection from strength point of view also, in the process of replacing the cast iron crankshaft by forged crankshaft.

We also reduce forged crankshaft the cost by the mass production. The project carried out by us will make an impressing mark in the field of automobile industries. Doing this project we are study about the 3D modelling software (CATIA) and the Analyzing software (ANSYS) to develop our basic knowledge to know about the industrial design.

OPTIMIZATION OF MACHINING PARAMETERS FOR CNC TURNING OPERATION BASED ON TAGUCHI METHOD

A PROJECT REPORT

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ABSTRACT

Machining is one of the material removal processes, which is used to make a component to closer tolerance for assembly. Turning is one of the traditional machining process used for making a component of required dimensions by removing metal from a rotational job with a help of a cutting tools.

The general machining parameters considered in turning operation are feed rate, depth of cut, spindle speed and machining time. This parameter relationship should be identified to improve quality of the product and to increase productivity.

To solve these difficulties lots of mathematical and statistical modeling techniques were used in past decades, in the sense nowadays newer method are being introduction like Artificial Neural Network is widely used for modeling the machining parameters. It consists of inter connected group of Artificial Neurons.

Machining parameter optimization is important in the modern manufacturing industries nowadays. Hence to select the best machining parameters various optimization techniques and tools are used. The most traditional method used optimization techniques in research fields are Taguchi. The role of taguchi in machining parameters optimization is maximum utilization of working material and also minimizes the wastage.

CHAPTER 12

RESULT AND CONCLUTION

This paper presented the following conclusions of an experimental investigation of the effect of process parameters on surface roughness in finish turning of 202 stainless steel using carbide insert.

1. The effect of machining parameters on the surface roughness has been evaluated with the help of Taguchi orthogonal array. The optimal machining conditions to minimize the surface roughness have been determined.

2. From the experimental results, it is evident that the surface roughness increases as feed rate increases. The experimental results showed that the average surface roughness variation at low & high cutting speed was very marginal. Depth of cut did not impact the surface roughness in the studied range, significantly.

3. From S/N ratio and response table, it is observed that the feed is the most influencing parameter for surface roughness. By increasing the feed, the surfaces roughness increases. The higher feed rate led cutting tool to traverse the work piece so rapidly that deteriorates the surface quality. Cutting speed is the next influencing parameter on surface roughness while the effect of depth of cut is very minimal.

4. For achieving good surface finish on the D2 work piece using tool, higher cutting speed, and lower feed and higher depth of cut were preferred. The optimal parametric combination for cutting insert was reported as v3-f1-d3.

5. The second-order response surface model for surface roughness has been developed from the observed data. The value of 'p' for model is less than 0.05 and the F calculated value is greater than the F table value. From the normal probability plot, it was revealed that the residuals generally fall on a straight line implying that errors are distributed normally. Hence, the RSM model developed is significant & adequate.

6. Surface roughness model: feed was the most significant parameter with 'p' value being less than
0.05 whereas cutting speed and depth of cut is found be insignificant.

7. The predicted and measured values were fairly close, which indicated that the developed RSM model could be effectively used to predict the surface roughness on the machining of tool steel with 95% confidence intervals and was greatly improved. By using this model, one can go for direct evaluation of Ra under various machining combinations during turning.

This research highlighted the use of Taguchi parameter design and response surface methodology for optimizing machining parameter and development of prediction model with minimum cost and time. Further study may be considered for more factors such as insert radius, rake angle, other coated tool materials, w/p materials and cutting fluids etc. In this study, a second-order polynomial model has been employed. Artificial neural network model may also be developed for effectiveness.

DESIGN AND FINITE ELEMENT ANALYSIS OF FOUR STROKE ENGINE FINS WITH MODIFIED DESIGN

A PROJECT REPORT

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ABSTRACT

The Engine cylinder is the heart of the automobile components, which is subjected to high temperature variations and thermal stresses. In order to cool the cylinder, fins are provided on the surface of the cylinder to increase the rate of Heat transfer. By executing the thermal analysis of the engine fins, it is helpful to know the heat dissipation rate and temperature distribution inside the cylinder.The main aim of the present project is to analyze the thermal properties like Directional Heat Flux, Total Heat Flux and Temperature Distribution of a modified conical design along with the existing model with three different materials (Cast iron, Aluminium alloy and Magnesium alloy). The design for the fins model will be prepared in CATIA V5R20and analyzed using ANSYS WORKBENCHwith an Average Internal Temperature and Stagnant Air-Simplified case as Cooling medium on Outer surface with reasonable Film Transfer Coefficient as Boundary Conditions.

8. CONCLUSION

We have implemented that the minimum temperature of the engine reduces on by changing the design of the fins which is done by reducing the surface area of the fin surface. We also implemented the reduction in minimum temperature of the engine byimplementing the material from AL 6063 to Aluminium alloy (Al + Silicon carbide) which is showing better and moreefficient results than cast iron and magnesium alloy. It has been seen that the implementation results in increased temperature distribution, Total heat flux and Directional heat flux of the engine up to 20% in Aluminium silicon carbide. It is clearfrom thermal analysis that, to achieve better cooling results Aluminium silicon carbideis a better option for engine fins.

OPTIMATION OF DIFFERENT PROCESS PARAMETER OF ALUMINIUM ALLOY 6082 IN CNC MILLING USING TAGUCHI METHOD

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A.ADBUL RAHIM	Reg.No.812416114302
M.MANOJ KUMAR	Reg.No.812416114319

in partial fulfillment for the award of the degree

of

BACHELOR OF ENGINEERING

IN

MECHANICAL ENGINEERING

MIET ENGINEERING COLLEGE

TIRUCHIRAPALLI - 620007

ANNA UNIVERSITY: CHENNAI 600 025

APRIL 2020

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

BONAFIDE CERTIFICATE

Certificate that this project report **"OPTIMIZATION OF DIFFERENT PROCESS PARAMETER OF ALUMINIUM ALLOY 6082 IN CNC MILLING USING TAGUCHI METHOD"** is the bonafide work of **B.A.Vaasim ahmed, BP.yokesh,A.Abdul rahim ,M.Manoj kumar** who carried out the project work under my supervision.

SIGNATURE

Prof.D. SARAVANAN
HEAD OF THE DEPARTMENT
Department of Mechanical Engineering.
MIET engineering College,
Tiruchirappalli-620007.

SIGNATURE

Dr.K.RAMESH
ASSOCIATE PROFESSER
Department of Mechanical Engineering.
MIET engineering College,
Tiruchirappalli-620007.

Submitted to the project viva held on

INTERNAL EXAMINER

EXTERNAL EXAMINER

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

ABSTRACT

The present paper outlines an experimental study to optimize the effects of cutting parameters on Surface Roughness of Aluminium Alloy 6082 by employing Taguchi techniques. This paper deals with optimization of the selected milling parameters, i.e. Cutting Speed, Feed rate, Depth of cut. the essential milling processes and it is used for planning the topsurface of the component to achieve high accuracy with low roughness. The work enlights the parameters influence on Material Removal Rate (MRR) and Surface Roughness (SR) in aluminium alloy 6082 as a work piece material. Conseuently the selection of milling parameters such as spindle speed, feed rate and depth of cut are importnat for improving the productivity and part quality. This work formulates the relationship between input and response variables for improving the face milling operation. To validate the proposed methods, a set of experiments are conducted to prove the feasibility of our spindle power prediction model as well as the advantage of the controlled based method in improving the machining efficiency and balancing the tool load.

DESIGN AND OPTIMIZATION OF CRANK SHAFT OPTIMIZATION FOR THE BLUE CORE TECHNOLOGY WHICH IS USED IN RAILWAY ENGINE

A PROJECT REPORT

Submitted by

R.PARTHIBAN	**Reg.No.812416114101**
S.SAMKALWIN	**Reg.No.812416114117**
R.SUKUMARAN	**Reg.No.812416114130**
S.SUNDHAR	**Reg.No.812416114131**

In partial fulfillment for the award of the degree

Of

BACHELOR OF ENGINEERING

IN

MECHANICAL ENGINEERING

MIET ENGINEERING COLLEGE

TIRUCHIRAPALLI - 620007

ANNA UNIVERSITY:: CHENNAI 600 025

APRIL 2020

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007

BONAFIDE CERTIFICATE

Certificate that this project report **"DESIGN AND OPTIMIZATION OF CRANK SHAFT OPTIMIZATION FOR THE BLUE CORE TECHNOLOGY WHICH IS USED IN RAILWAY ENGINE"** is thebonafide work of **R.PARTHIBAN , S.SAMKALWIN , R. SUKUMARAN , S.SUNDHAR** who carried out the project work under my supervision.

SIGNATURE

Dr. A. KUMARAVADIVEL
HEAD OF THE DEPARTMENT

Department ofMechanical Engineering,
MIET engineering College,
Tiruchirappalli-620007.

SIGNATURE

Mr. S.KUMARADEVAN
ASSISTANT PROFESSER

Department of Mechanical Engineering,
MIET engineering College,
Tiruchirappalli-620007.

Submitted to the project viva held on 22/09/2020

INTERNAL EXAMINER

EXTERNAL EXAMINER

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

CHAPTER VI

CONCLUSIONS

The conventional crank shaft used in the engines was replaced with a Optimized inertia crank shaft . The conventional crank shaft and the Optimized crank shaft were analyzed by finite element methods. From the results, it is clear that the stress induced in the Optimized crank shaft is found to be lower than that of the conventional crank shaft.

Optimized crank shaft material is replaced for good fatigue strength, minimizing weight and without violating the limiting constraint formed by induced stress. A reduction of 31.5% weight is achieved when a conventional crank shaft is replaced with Optimized crank shaft under identical conditions of design parameters.

MODELING AND ANALYSYS OF CAM SHAFT IN REVERSE ENGINEERING USING GEOMAGIC DESIGN X

A PROJECT REPORT

Submitted by

S.N.SYED PEER JAVED	Reg.no 812416114134
P.S.DEEPAN CHAKKARAVARTHY	Reg.no 812416114307
S. MOHAMED AATHIL	Reg.no 812416114320
S. MOHAMED SAJID	Reg.no 812416114328

In partial fulfilment for the award of the degree

of

BACHELOR OF ENGINEERING

IN MECHANICAL ENGINEERING

MIET ENGINEERING COLLEGE

TIRUCHIRAPALLI – 620007

ANNA UNIVERSITY, CHENNAI 600 025

APRIL 2020

ANNA UNIVERSITY, CHENNAI 600 025

BONAFIDE CERTIFICATE

Certified that this project report "**Modelling and Analysis of cam shaft in reverse engineering using geomagic design x** " is the bonafide work of **S.N.Syed Peer Javed, P.S.Deepan Chakkaravarthy, S.Mohamed Aathil, S.Mohamed Sajid** who carried out the project work under my supervision.

SIGNATURE
Prof.A.KUMARAVADIVEL

HEAD OF THE DEPARTMENT
Professor

Department of Mechanical Engineering

MIET Engineering College

Tiruchirappalli - 620007

SIGNATURE
Prof.S.KUMARADEVAN

SUPERVISIOR
Assistant Professor

Department of Mechanical Engineering

MIET Engineering College

Tiruchirappalli - 620007

Submitted to the Project viva voce held on 22.9.2020

INTERNAL EXAMINER
(MR.K.PANNERSELVAM)

EXTERNAL EXAMINER
(MR.M.KIRUBAKARAN)

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

ABSTRACT

The project is about application of reverse engineering. Reverse engineering helps in obtaining the geometry of part or product which is not available otherwise. Its application makes it possible to reconstruct the original component with its drawing and manufacturing process. It is used in various fields but here the main application is related to a cam shaft of a two wheeler named hero splendor plus. Here camshaft is taken to explain the process of reverse engineering. The procedure includes various stages which will help understand the different phases of reverse engineering. The process starts with understanding the reverse engineering procedure. The part geometry is first obtained with the help of scanning technology. The cam shaft is scanned with 360⁰ solution x scanner and the data is in stl format. Then with the use of GEOMAGIC DESIGN X software the three dimensional image as a CAD model the cam shaft is obtained. Then finally the cam shaft is machined accordingly to the cad data.

CONCLUSION :

In this project we have selected a camshaft for reverse engineering, in first step we have measured the camshaft using there methods of measurement such as manual method, coordinate measuring machine (CMM)method and 3D scanning(REVERSE ENGINEERING)method. And we have compared all the three methods to get accurate dimensions.

PRODUCTION OF CELLULOSE NANOCRYSTAL BIOPLASTICS

A PROJECT REPORT

Submitted by

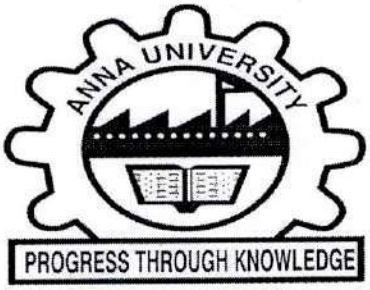
KV.NAVANEETHAN	(Reg. No. 812416114097)
K.PRASANTH	(Reg. No. 812416114106)
A.MOHANASUNDARAM	(Reg. No. 812416114333)
K.MOHANRAJ	(Reg. No. 812416114334)

In partial fulfillment for the award of the degree of

BACHELOR OF ENGINEERING

IN

MECHANICAL ENGINEERING



MIET ENGINEERING COLLEGE

TIRUCHIRAPALLI –620 007

ANNA UNIVERSITY:: CHENNAI 600 025

APRIL 2020

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

ANNA UNIVERSITY:: CHENNAI 600 025

BONAFIDE CERTIFICATE

Certified that **"Production Of Cellulose Nanocrystal Bioplastic"** is the bonafide work of **Navaneethan.KV, Prasanth.K, Mohanasundaram.A, Mohanraj.K** who carried out the project work under my supervision.

SIGNATURE

Prof. Dr. A. Kumaravadivel, M.E Ph.D

Head of the Department

Associate Professor,

Mechanical Engineering,

MIET Engineering College,

Tiruchirappalli – 620 007.

SIGNATURE

Prof. S. Kumaradevan, M.E.,

Project Supervisor

Assistant Professor,

Mechanical Engineering,

MIET Engineering College,

Tiruchirappalli – 620 007.

Submitted for the Project Viva Voce held on 22.09.2020

INTERNAL EXAMINER

EXTERNAL EXAMINER

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

ABSTRACT

Pure cellulose have been isolated from Corn Straw, Pearl Millet, Elephant Grass, Rice Straw at 36% yield and hydrolyzed (64% H2 SO4 , 8.75 mL/g, 45 ◦ C) for 30 and 45 min to cellulose nanocrystals (CNCs) respectively. Freeze drying of diluted CNC suspensions showed both assembled into long fibrous structures: ultra-fine fibers (~400 nm wide) from and 1–2 m wide broad ribbons interspersed with CNC clusters. The self-assembled fibers were more highly crystalline (86.0% and 91.2%, respectively) and contained larger crystallites (7.36 nm and 8.33 nm, respectively) than Corn Straw, Pearl Millet, Elephant Grass, Rice Straw cellulose (61.8%, 4.42 nm). These self-assembled fibers had essentially nonporous or macroporous structures with the CNCs well aligned along the fiber axis. Furthermore, the self-assembled ultra-fine fibers showed extraordinary structural stability, withstanding vigorous shaking and prolong stirring in water.

Synthetic plastic is chemical materials which cause severe environmental problems. Incinerating plastic waste leads to release of hazardous gases, which is not good for humans. Bioplastic can help reduce the dependence on fossil fuels and petroleum, that bioplastic can solve the problem of synthetic plastic use. This research aims to define the properties of the corn starch-based bioplastic reinforced by Corn Straw, Pearl Millet, Elephant Grass, Rice Straw. Methods were experimental with bioplastic component of corn starch, glycerol as plasticizer and Corn Straw, Pearl Millet, Elephant Grass, Rice Straw as reinforcement. The bioplastic was analyzed using XRD, tensile test, moisture absorption, biodegradability, and compared with another bioplastic. The results show that the addition of raw materials into bioplastic results increasing the tensile strength of bioplastic also increases from 5.2 MPa to 6.3 MPa. This research revealed that complete degradation of cassava reinforced bioplastic could be achieved on the 6th day.

CHAPTER - 9

CONCLUSION

Pure cellulose was isolated from rice straw by an effective three-step process: de-wax by 2:1 v/v toluene/ethanol extraction, delignification by prolonged 1.4% acidified NaClO2dissolution (70 ◦ C for 5 h), and removal of hemicellulose and silica by 5% KOH swelling (24 h) and reaction (90 ◦ C for 2 h), to a yield exceeding 36%. The white cellulose fibers (CFs), with a mean diameter of 4.5 (±1.3) m, appeared highly anisotropic under polarized microscope. Acid hydrolysis (64% H2SO4, 8.75 mL/g, 45 ◦ C) of the pure rice straw cellulose fibers for 30 and 45 min yielded 6.43% and 4.83% cellulose nanocrystals (CNCs), respectively. CNC30 were wider (30.7 nm wide, 5.95 nm thick) and longer (270 nm long) than CNC45 (11.2 nm wide, 5.06 thick and 117 nm long). Most intriguing self-assembly behavior was observed with both CNCs from freeze drying of their dilute suspensions (0.06 wt%): CNC45 assembled into essentially cylindrically shaped fibers with an 386 nm mean diameter whereas CNC30 formed mostly 1–2 m wide broad ribbons with some interspersed clusters and strings of nanocrystals. These self-assembled fibers were intriguingly long with estimated lengths in tenths and hundreds of micrometers for CNC30 and CNC45, respectively.

Furthermore, AFM observations showed the self-assembled CNC45 ultra-fine fibers contain highly orientated CNCs along the fiber axes. The tightly bound CNCs produced a nonporous or macroporous structure with BET surface area of 8.922 m2/g and 27.625 m2/g for CNC30 and CNC45, respectively. The significantly higher crystallinity index (CrI) of the self-assembled CNC30 (86.0%) and CNC45 (91.2%) than the original cellulose fibers (61.6%) suggest uniquely enhanced structural order, possibly crystallization, induced by the freeze–drying process. The outstanding self-assembling behavior of CNC45 was believed to be associated with the low aspect ratio, low and nearly cylindrical lateral dimension and low surface charge. These long, fibrillar structures assembled from rice straw CNCs are highly crystalline, robust and stable under vigorous shaking or stirring in aqueous media, showing unique properties with great promise for advanced materials and functional applications.

Without question, the challenges surrounding plastics waste treatment are multifaceted and complex and, as numerous studies have indicated, are further being compounded as time progresses. It will be up to future generations of society to produce the necessary resources to address this growing environmental concern with viable, long-term solutions. Truly innovative global research and development has resulted in today's emerging field of bioplastics. By combining the disciplines of Engineering, Agriculture, Food packaging, and Chemistry, new biodegradable packaging solutions from renewable plant resources will help to address this environmental concern of rampant worldwide growth in plastic wastes. It is important to recognize that although past and recent efforts have thus far yielded significant strides in the field of bioplastics, continued research in this field is clearly needed if economically-viable development and sustainable production processes are to be widely implemented throughout the world. As with any emerging technology, continued innovation and global support is essential in order for bioplastics to fully demonstrate its socioeconomic benefits and further challenge the statuesque of traditional petroleum-based plastics. The use of biodegradable plastics is however, a sure solution to the problems of plastic waste accumulation as it is economically viable and not harmful to our environment as the waste can readily decompose in the soil and the decomposed waste can be used as manure for growing crops, starchy crops inclusive which are raw materials for bioplastic production. The future of biodegradable plastics shows great potential.

How widespread biodegradable plastics will be used all depends on how strongly society embraces and believes in environmental preservation. Many countries around the world have already begun to integrate these materials into their markets. There are certainly abundant amount of materials and resources to create and fund more uses for biodegradable plastics. The increasing interest will allow the technology needed to produce biodegradable plastics become more affordable and the falling production costs will eventually lead to an increase in production. The present research has demonstrated that biodegradable plastic packaging films can be produced from cassava starch, and it could serve as a good substitute for the conventional plastic packaging films.

AUTOMATIC SPEED BRAKE MODEL (USING PROXIMITY SENSOR AND LDR)

A PROJECT REPORT

Submitted by

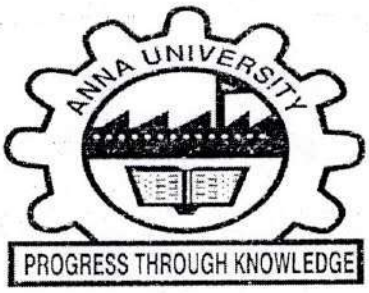
S.NASURUDEEN	RegNo: 812416114096
H.UVAISUR RAHMAN	RegNo: 812416114137
M.S.SRIRAM	RegNo: 812416114347
K.MOHANRAJ	RegNo: 812416114334

In partial fulfillment for the award of the degree of

BACHELOR OF ENGINEERING

IN

MECHANICAL ENGINEERING



MIET ENGINEERING COLLEGE

TIRUCHIRAPALLI –620 007

ANNA UNIVERSITY:: CHENNAI 600 025

APRIL 2020

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007

BONAFIDE CERTIFICATE

Certified that **"Automatic Speed Brake Model (Using Proximity sensor and LDR)"** is the bonafide work of **S. Nasurudeen, H.Uvaisur rahman, M.S.Sriram, K.Mohanraj** who carried out the project work under my supervision.

SIGNATURE

Dr.A.Kumaravadivel, M.E., (Ph.D).,

Head of the Department

Professor,

Mechanical Engineering,

MIET Engineering College,

Tiruchirappalli – 620 007.

SIGNATURE

Prof. S. KUMARADEVAN, M.E.,

Project Supervisor

Assistant Professor,

Mechanical Engineering,

MIET Engineering College,

Tiruchirappalli – 620 007.

Submitted for the Project Viva Voce held on 22.09.2020

INTERNAL EXAMINER

EXTERNAL EXAMINER

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

LIST OF FIGURES

SYNOPSIS

In our project we are dealing with the automatic speed breaker using with the help of scissor jack with is operated by using with the help of electric drive. Nowadays lot of technologies has been developed to increase the vehicle speed. Due to this type of vehicle the human start to run the vehicle in high speed. This is the main reason for cause of accidents. So to avoid these types of the accidents the speed breakers are present at every place to avoid speed of the vehicle. So this is the main reason we have developed this concept. This equipment consists of Motor, Speed breaker setup, Scissor jack, Worm gear arrangements, proximity Sensor , LDR and Control unit.

=

4. TOTAL COST:

Total cost = Material Cost +Labour Cost +Overhead Charges

=

=

Total cost for this project =

CHAPTER – 10

CONCLUSION

The project carried out by us made an impressing task in the field of road ways.

This project will reduce the cost involved in the concern. Project has been designed to perform the entire requirement task at the shortest time available.

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007

13.09.2019

From

Azaraf Ali. A (E1182016)

Class representative/ II year-A Sec

Department of Mechanical Engineering

MIET Engineering college

Trichy-07.

To

The chairman

MIET Educational Institutions

Trichy-07

Through the principal,

Respected madam,

Sub: Requesting permission for Industrial visit – reg.

As a part of our curriculum, we are II year -A Sec students of Mechanical Engineering would like to go for an Industrial visit to ICC FORGE, Shed No-96, SIDCO Industrial Estate, Malumichampatti, Coimbatore on 25/9/2019 . So kindly request you to permit us for the same.

Thanking you,

Yours obediently,

(Azaraf Ali. A)

Industrial visit co-ordinator/Mech

HOD

PRINCIPAL

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

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TRICHY-PUDUKKOTTAI ROAD, TIRUCHIRAPPALLI - 620 007.
Email : principalengg@miet.edu, contact@miet.edu
Website :- www.miet.edu
Ph : 0431 - 2660 303

Dr. X. SUSAN CHRISTINA, M.E., Ph.D.,
Principal

Date :

Date: 20.09.2019

To

ICC FORGE,
Shed No-96,
SIDCO Industrial Estate,
Malumichampatti,
Coimbatore-641050.

TO WHOM SOEVER IT MAY CONCERN

This is to certify that the following list of names is Bonafide Students of this institution studying in II Year of Mechanical Engineering Department of our college with the strength of 38 students along with 2 staff members to undergo industrial visit in your organization on 25th September 2019.

PRINCIPAL

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

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M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

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MIET ENGINEERING COLLEGE DEPARTMENTOF Mechanical Engineering 2ND YEAR MECHANICAL SECTION -B Willing -Student List for Industrial Visit - 24.09.2019		
S.No	**ROLL NO**	**Name**
1	E1182038	Mohamed Absar. M
2	E1182039	Mohamed Anas Aliyar Abdulla. A
3	E1182041	Mohamed Azharudeen. S
4	E1182043	Mohamed Ismail. J
5	E1182046	Mohamed Risvan. N
6	E1182049	Mohammed Thoufik. HM
7	E1182050	Mufeeth Ahamed. M
8	E1182051	Naina Mohamed. J
9	E1182052	Nanthakumar. K
10	E1182055	Pravinraj. R
11	E1182057	Riyas Mohamed. S
12	E1182058	Santhosh. E
13	E1182059	Sathish. M
14	E1182060	Sathish Kumar. J
15	E1182063	Shanawas. S
16	E1182065	Sivaganesh. M
17	E1182067	Thanzeel Ali. H
18	E1182068	Umar Batcha. S
19	E1182069	Umar Faruk Hussain. J
20	E1182070	Vasanthan. K
21	E1182071	Vimalraj. R
22	E1182072	Vincent Pudhumai Raj. C
23	E1182073	Vishnu. R
24	E2192074	Abinesh. S
25	E2192077	Balamurugan. N
26	E2192082	Harish. K
27	E2192083	Jayakumar. S
28	E2192084	Kalil. U
29	E2192088	Mohamed Yaazar. A
30	E2192089	Mohanraj. TG
31	E2192090	Nevinraj. A
32	E2192091	Noyel. A
33	E2192092	Praveen. R
34	E2192093	Ranjith. U
35	E2192094	Rexpatrick. B
36	E2192101	Syed Faizal. S
37	E2192102	Vijay Kaviyarasan. V
38	E3182103	Balaji. M

HOD/MECH

PRINCIPAL

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

MIET
Mahatma Institute of Education & Technology
INSTITUTIONS

M.I.E.T. Engineering College

Tiruchirappalli-620007

REPORT ON ONE DAY INDUSTRIAL VISIT

Name of the Industry	: ICC FORGE,
Place of Visit	: SIDCO Industrial Estate,Coimbatore
Date of Visit	: 25.09.19

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PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

An Industrial Visit to ICC – Forging division, Malumichampatti, Coimbatore, was organized by the Industrial Visit Coordinator of the Mechanical Engineering Department, **Mr. MANIKANDAN E (Assistant Professor, Dept. of ME).**

On receiving the letter of invitation from **Mr. K P Kanagarajan (Admin Manager),** ICC – Forging division, Malumichampatti, Coimbatore, the students of 3rd Semester from Mechanical Engineering, enrolled into this program, and undertook the Industrial Visit to ICC – Forging division, Malumichampatti, Coimbatore, Tamilnadu, on Sep 25, 2019. 41 students of Mechanical engineering II – "A" students, accompanied by **Mr. S SenthilKumar,** Assistant Professor, Dept. of Mechanical Engineering, and **Mr. V Nagarajan,** Assistant Professor, Dept. of Mechanical Engineering, assembled in the college at 11:30 PM on 24.09.2019 and proceeded to the destination by Private Travels.

We reached **ICC – Forging division** at 10:00 am on 25.09.2019, and were received by a staff member who guided us to the conference hall, where the students and the faculty members were welcomed by **Mr. K P Kanagarajan (Admin Manager), ICC – Forging division.** He gave us a briefing regarding the program & the schedule for the day. After refreshment, he started the session by talking to the students about the industry expectations from fresh graduates. He guided the students to be prepared for the road ahead, by detailing some self learning methods. He discussed the topics on Forging, Testing, and Assembly & explained in details about its advantages and its extensive use in today's world. He also gave us some inputs on the industrial safety. He encouraged the students to work towards their goals, and stressed on the importance of young minds for the development of the country.

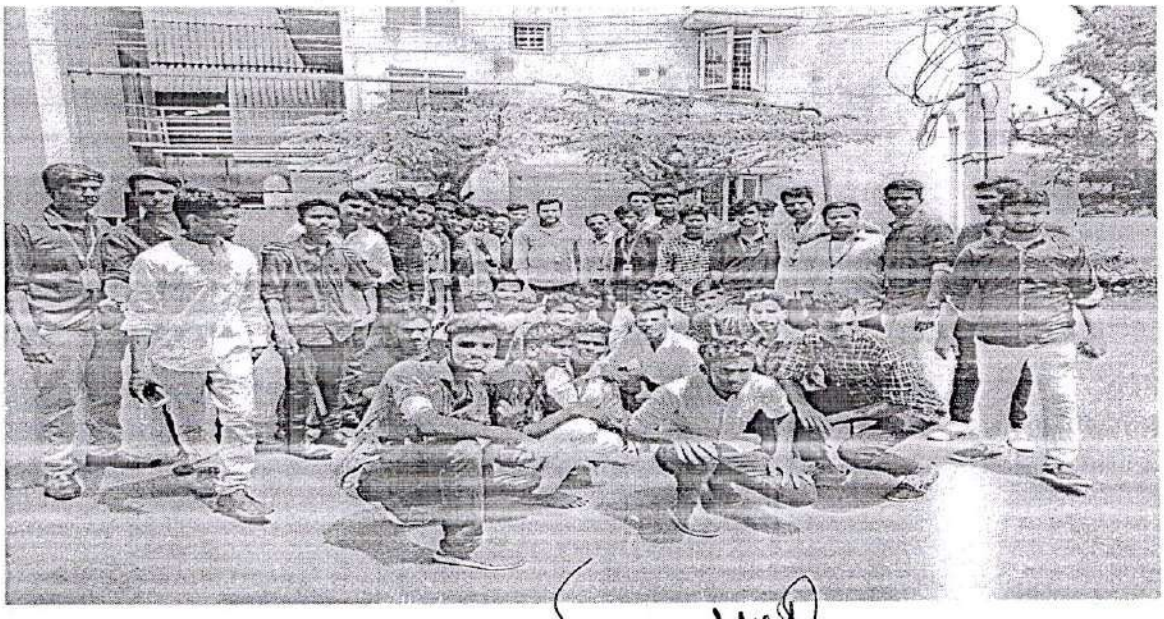
After this session, we were taken to workshop, ICC-Forging division. Explanation on its various components and their maintenance system was given to the students, by the Staff members, ICC-Forging division. It was a nice experience. The ICC-Forging division, Tamilnadu is a well maintained one, & we loved it. At 1:30 pm, the session came to a close, & we met **Mr. K P Kanagarajan (Admin Manager),** ICC – Forging division, Malumichampatti, Coimbatore, in his office room, he welcomed us and we shared our thoughts about learning session. Once again, we express our heartfelt gratitude to the met **Mr. K P Kanagarajan.** We are also thankful to your staff members, ICC-Forging division, who guided us. It was a great learning experience.

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

100

Outcome of the Event:

The students understood the concept of Forging process and the importance of responsibility of young minds for country development. The students saw the various machining process used by ICC-Forging division, and gained knowledge about Forging, Industry expectation and industrial safety.



Signature of the Coordinator

HoD / Signature

HoD / T&P

Principal

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

14.09.2019

From

Syed Faizal C (E219102)

Class representative/ II year-B Sec

Department of Mechanical Engineering

MIET Engineering college

Trichy-07.

To

The chairman

MIET Educational Institutions

Trichy-07

Through the principal,

Respected madam,

Sub: Requesting permission for Industrial visit – reg.

As a part of our curriculum, we are II year -B Sec students of Mechanical Engineering would like to go for an Industrial visit to ICC FORGE, Shed No-96, SIDCO Industrial Estate, Malumichampatti, Coimbatore on 24/9/2019 . So kindly request you to permit us for the same.

Thanking you,

Yours obediently,

(Syed Faizal C)

Industrial visit co-ordinator/Mech

PRINCIPAL

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

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Email : principalengg@miet.edu, contact@miet.edu
Website :- www.miet.edu
Ph : 0431 - 2660 303

Dr. X. SUSAN CHRISTINA, M.E., Ph.D.,
Principal

Date :
Date: 20.09.2019

To

ICC FORGE,
Shed No-96,
SIDCO Industrial Estate,
Malumichampatti,
Coimbatore-641050.

TO WHOM SOEVER IT MAY CONCERN

This is to certify that the following list of names is Bonafide Students of this institution studying in II Year of Mechanical Engineering Department of our college with the strength of 41 students along with 2 staff members to undergo industrial visit in your organization on 24th September 2019.

PRINCIPAL

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

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MIET ENGINEERING COLLEGE
DEPARTMENTOF Mechanical Engineering
2ND YEAR MECHANICAL SECTION -A
Willing -Student List for Industrial Visit - 25.09.2019

S.No	ROLL NO	Name
1	E1182001	Abdul Rahman. S
2	E1182002	Adhilahamed. Y
3	E1182004	Ajay Kishore. B
4	E1182005	Ajay Prakash. B
5	E1182007	Akash. S
6	E1182008	Akash. T
7	E1182010	Ameerdeen. S
8	E1182012	Arun. N
9	E1182013	Arun Raj. S
10	E1182014	Ashfaq Ahamed. M
11	E1182015	Ashok. K
12	E1182016	Azaraf Ali. A
13	E1182017	Bava Bagurudeen. S
14	E1182019	Dawood Sherif. M
15	E1182020	Delsin Raj. A
16	E1182023	Fasith Ali. B
17	E1182024	Fazil Ahamed. S
18	E1182025	Guhan. J
19	E1182026	Guhan. M
20	E1182028	Halideen. B
21	E1182029	Hariharan. K
22	E1182030	Harinam. P
23	E1182031	Imrankhan. A
24	E1182033	Livin Kumar. B
25	E1182035	Manoj Kumar. M
26	E1182036	Mathavan. P
27	E1182037	Meera Mohamed. A
28	E2192075	Arshath Khan. J
29	E2192076	Balachandar. N
30	E2192078	Cyprien Paul Clament. S
31	E2192080	Elamvazhuthi. S
32	E2192081	Hariprakash. G
33	E2192085	Karthick. R
34	E2192086	Marvin. K
35	E2192087	Mohamed Muzammil. M
36	E2192095	Sajid Ahamed. AZ
37	E2192096	Sakthivel. P
38	E2192097	Sam. S
39	E2192098	Santhosh Kumar. B
40	E2192099	Sathish. K
41	E2192100	Sivaprakash. T

HOD/MECH

PRINCIPAL

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M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

MIET
INSTITUTIONS

M.I.E.T. Engineering College
Tiruchirappalli-620007

REPORT ON ONE DAY INDUSTRIAL VISIT

Name of the Industry	: ICC FORGE,
Place of Visit	:SIDCO Industrial Estate, Coimbatore
Date of Visit	: 24.09.19

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007

An Industrial Visit to ICC – Forging division, Malumichampatti, Coimbatore, was organized by the Industrial Visit Coordinator of the Mechanical Engineering Department, **Mr. MANIKANDAN E (Assistant Professor, Dept. of ME).**

On receiving the letter of invitation from **Mr. K P Kanagarajan (Admin Manager)**, ICC – Forging division, Malumichampatti, Coimbatore, the students of 3rd Semester from Mechanical Engineering, enrolled into this program, and undertook the Industrial Visit to ICC – Forging division, Malumichampatti, Coimbatore, Tamilnadu, on Sep 24, 2019. 38 students of Mechanical engineering II – "B" students, accompanied by **Mr. J Prince Jerome Christopher**, Assistant Professor, Dept. of Mechanical Engineering, and **Mr. K Lakshmana Babu,** Assistant Professor, Dept. of Mechanical Engineering, assembled in the college at 11:00 PM on 23.09.2019 and proceeded to the destination by Private Travels.

We reached **ICC – Forging division** at 10:00 am on 24.09.2019, and were received by a staff member who guided us to the conference hall, where the students and the faculty members were welcomed by **Mr. K P Kanagarajan (Admin Manager), ICC – Forging division.** He gave us a briefing regarding the program & the schedule for the day. After refreshment, he started the session by talking to the students about the industry expectations from fresh graduates. He guided the students to be prepared for the road ahead, by detailing some self learning methods. He discussed the topics on Forging, Testing, and Assembly & explained in details about its advantages and its extensive use in today's world. He also gave us some inputs on the industrial safety. He encouraged the students to work towards their goals, and stressed on the importance of young minds for the development of the country.

After this session, we were taken to workshop, ICC-Forging division. Explanation on its various components and their maintenance system was given to the students, by the Staff members, ICC-Forging division. It was a nice experience. The ICC-Forging division, Tamilnadu is a well maintained one, & we loved it. At 1:30 pm, the session came to a close, & we met **Mr. K P Kanagarajan (Admin Manager)**, ICC – Forging division, Malumichampatti, Coimbatore, in his office room, he welcomed us and we shared our thoughts about learning session. Once again, we express our heartfelt gratitude to the met **Mr. K P Kanagarajan.** We are also thankful to your staff members, ICC-Forging division, who guided us. It was a great learning experience.

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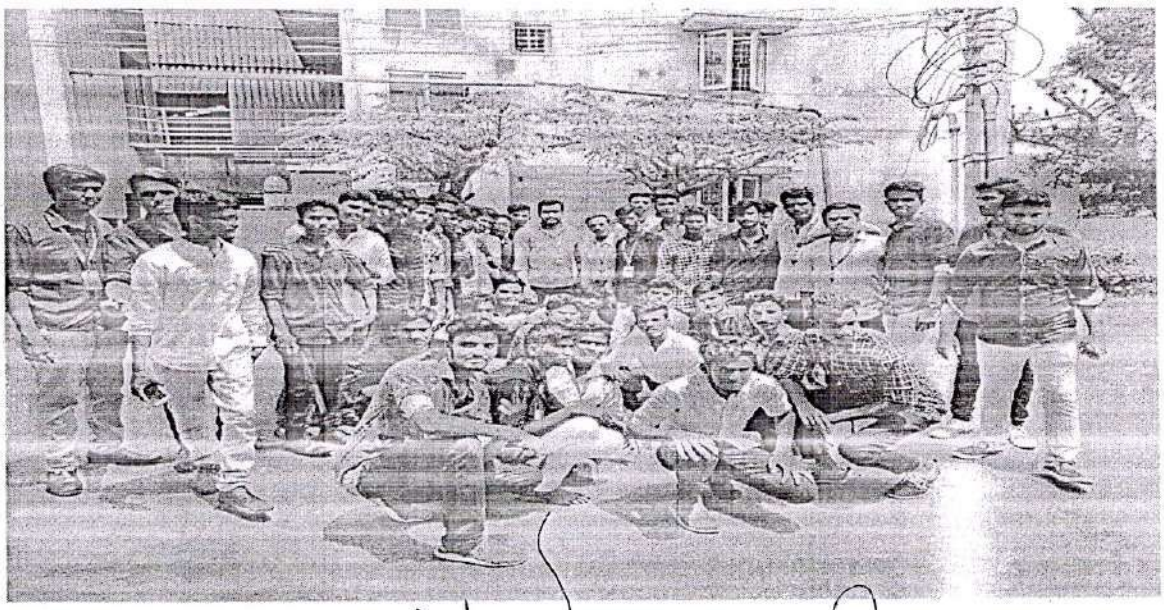
PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

Outcome of the Event:

The students understood the concept of Forging process and the importance of responsibility of young minds for country development. The students saw the various machining process used by ICC-Forging division, and gained knowledge about Forging, Industry expectation and industrial safety.



Signature of the Coordinator

HoD / Signature

HoD / T&P

Principal

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

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Mohamed Institute of Education & Technology
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Email : principalengg@miet.edu, contact@miet.edu
Website :- www.miet.edu
Ph : 0431 - 2660 303

Dr. X. SUSAN CHRISTINA, M.E., Ph.D.,
Principal

Date :

Date: 20.09.2019

To

IREL,
Manavalakurichi,
Kanyakumari – 629252.

TO WHOM SOEVER IT MAY CONCERN

This is to certify that the following list of names is Bonafide Students of this institution studying in III Year of Mechanical Engineering Department of our college with the strength of 46 students along with 2 staff members to undergo industrial visit in your organization on 1st October 2019

PRINCIPAL

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GUNDUR, TIRUCHIRAPPALLI-620 007.

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M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

MIET ENGINEERING COLLEGE DEPARTMENTOF Mechanical Engineering IIIRD YEAR MECHANICAL SECTION -A		
Willing -Student List for Industrial Visit - 01.10.2019		
S.No	ROLL NO	Name
1	E1172001	Abdul Ajees. S
2	E1172003	Abdulbagath. B
3	E1172007	Abdul Rahman. A
4	E1172008	Abubaker Siddik. P
5	E1172010	Ahamed Subair. K
6	E1172011	Akash. R
7	E1172013	Akbar Ali. A
8	E1172016	Antony Bright Sun. P
9	E1172017	Antonypraveen. J
10	E1172020	Arulkabiriyal. M
11	E1172021	Arun Kumar. V
12	E1172023	Arun Kumar. M
13	E1172024	Bala Murugan. J
14	E1172025	Basheer Ahamed. A
15	E1172026	Benedict. A
16	E1172027	Bharath. R
17	E1172028	Bharathi. N
18	E1172030	Chandran. C
19	E1172031	Christober. P
20	E1172032	Deepan. V
21	E1172034	Dhinesh. P.K
22	E1172037	Faizudeen. H
23	E1172038	Felix Prabhahar. M
24	E1172039	Haja Kamaludeen. G
25	E1172041	Harishkumar. R
26	E1172045	Jafar Sharif. R
27	E1172046	Jafer Sait. A
28	E1172047	Jakir Hussain. A
29	E1172048	Jamaludheen. S
30	E1172050	John Ezekiah. D
31	E1172051	Kabilan. R
32	E1172052	Kabilan. KB
33	E1172053	Kalaivanan. R
34	E1172055	Kamalesh. M
35	E1172056	Kamal Kishore. M
36	E1172057	Karan K (13.03.2000). K
37	E1172058	Karan K (10.05.2000). K
38	E3152192	Surender. M
39	E3172193	Nithish Kumar. M
40	E2182168	Abdul Rahuman. T
41	E2182174	Kirubakar. M
42	E2182181	Naveen. A
43	E2182183	Ragul. R
44	E2182185	Rajavel. K
45	E2182186	Rasith Ahamed. S
46	E3172192	Jaser Ahamed. N

HOD/MECH

PRINCIPAL

PRINCIPAL
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GUNDUR, TIRUCHIRAPPALLI-620 007.

MIET
INSTITUTIONS

M.I.E.T. Engineering College
Tiruchirappalli-620007

REPORT ON ONE DAY INDUSTRIAL VISIT

Name of the Industry	: IREL, Manavalakurichi,
Place of Visit	: Kanyakumari
Date of Visit	: 01.10.19

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

An Industrial Visit to Indian Rare Earths Limited (IREL), Manavalakurichi, TamilNadu was organized by the Industrial Visit Coordinator of the Mechanical Engineering Department, **Mr. MANIKANDAN E (Assistant Professor, Dept. of ME).**

On receiving the letter of invitation from **Mr. S. Sudarshan Kumar, DGM (HRM),** Manavalakurichi, IREL, the students of 5th Semester from Mechanical Engineering, enrolled into this program, and undertook the Industrial Visit to Indian Rare Earths Limited (IREL), Manavalakurichi, TamilNadu, on Oct 01, 2019. 40 students of Mechanical engineering III – "A" students, accompanied by Mr. **M Dhandayudhabani,** Associate Professor, Dept. of Mechanical Engineering and Mr. **E Manikandan,** Assistant Professor, Dept. of Mechanical Engineering, assembled in the college at 9:00 PMon 30.09.2019 and proceeded to the destination by Private Travels.

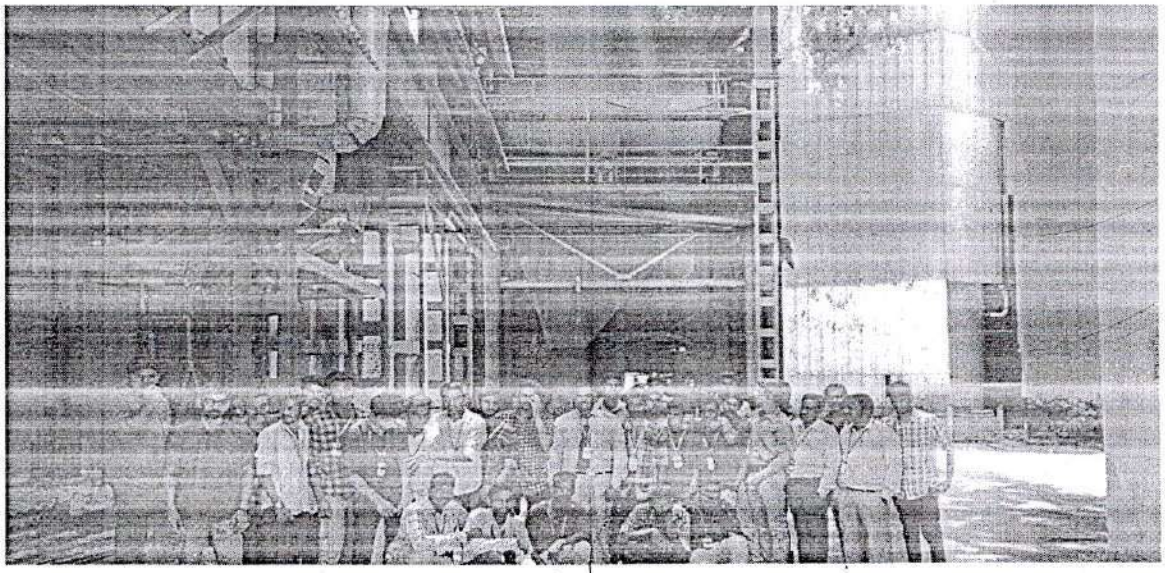
We reached IREL at 09:30 am on 01.10.2019, and were received by a staff member who guided us to the conference hall, where the students and the faculty members were welcomed by **Mr. Binu Balakrishnan, Deputy Manager (HRM), IREL.** He gave us a briefing regarding the program & the schedule for the day. After some refreshments, he started the session by talking to the students about the industry expectations from fresh graduates. He guided the students to be prepared for the road ahead, by detailing some self learning methods. He introduced Rare earth minerals & explained in details about its advantages and its extensive use in today's world. He also gave us some inputs on the industrial safety. He encouraged the students to work towards their goals, and stressed on the importance of young minds for the development of the country.

After this session, we were taken to workshop, IREL. Explanation on its various components and their maintenance system was given to the students, by the Staff members, IREL. It was a nice experience. The IREL, Tamilnadu is a green & well maintained one, & we loved it. At 2:00 pm, the session came to a close, & we met **Mr. S *Sudarshan Kumar*, Deputy General Manager (HRM), IREL,** in his office room, he welcomed us and we shared our thoughts about learning session. Once again, we express our heartfelt gratitude to the Mr. S Sudarshan Kumar. We are also thankful to your staff members, IREL, who guided us. It was a great learning experience.

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

Outcome of the Event:

The students understood the concept of how the Minerals collected and segregated from earth, can be turned into real-time application. The students saw the various machining process used by IREL, and gained knowledge about Minerals collection, Industry expectation and industrial safety.



Signature of the Coordinator

HoD / Signature

HoD / T&P

Principal

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR,.TIRUCHIRAPPALLI-620 007.

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16.09.2019

From

S. Karthikeyan (E1172059)

Class representative/ III year-B Sec

Department of Mechanical Engineering

MIET Engineering college

Trichy-07.

To

The chairman

MIET Educational Institutions

Trichy-07

Through the principal,

Respected madam,

Sub: Requesting permission for Industrial visit – reg.

As a part of our curriculum, we are III year -B Sec students of Mechanical Engineering would like to go for an Industrial visit to KGK Industries, coimbatore. on 24/09/2019 . So kindly request you to permit us for the same.

Thanking you,

Yours obediently,

(S. Karthikeyan)

Industrial visit co-ordinator/Mech

HOD

PRINCIPAL

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Email : principalengg@miet.edu, contact@miet.edu
Website :- www.miet.edu
Ph : 0431 - 2660 303

Dr. X. SUSAN CHRISTINA, M.E., Ph.D.,
Principal

Date :

Date: 20.09.2019

To

M/s United Enterprises,
KGK Industries,
No. 86, SIDCO Industrial Estate,
Kurichi, Coimbatore – 641023.

TO WHOM SOEVER IT MAY CONCERN

This is to certify that the following list of names is Bonafide Students of this institution studying in III Year of Mechanical Engineering Department of our college with the strength of 38 students along with 2 staff members to undergo industrial visit in your organization on 24th September 2019

PRINCIPAL

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M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

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MIET ENGINEERING COLLEGE DEPARTMENTOF Mechanical Engineering IIIRD YEAR MECHANICAL SECTION -B		
Willing -Student List for Industrial Visit - 24.09.2019		
S.No	**ROLL NO**	**Name**
1	E1172059	Karthikeyan. S
2	E1172061	Kishore. C
3	E1172063	Lenin. K
4	E1172064	Mahesh. P
5	E1172066	Manikandan. S
6	E1172068	Mayakkannan. T.K
7	E1172069	Mohamed Arif Aslam. S
8	E1172070	Mohamed Asarudeen. A
9	E1172071	Mohamed Asarudeen. J
10	E1172072	Mohamed Ashif. M
11	E1172073	Mohamed Azarudeen. M
12	E1172075	Mohamed Farook Abdullah. A
13	E1172076	Mohamed Hanifa. Z
14	E1172079	Mohamed Irfan. N
15	E1172080	Mohamed Ismail. P
16	E1172082	Mohamed Javith. M.K
17	E1172084	Mohamed Malik. M
18	E1172085	Mohamed Noorniswer. J
19	E1172086	Mohamed Riyas. K
20	E1172087	Mohamed Riyas. T
21	E1172088	Mohamed Riyasdeen. M
22	E1172089	Mohamed Shaheen Shahul Hameed
23	E1172090	Mohamed Wasim (21.08.2000). S
24	E1172091	Mohammed Abbas. M
25	E1172093	Mohammed Hassan. S
26	E1172095	Mohammed Rasik. A
27	E1172096	Mohamed Wassim(10.07.2000). S
28	E1172097	Mohan Raj. G
29	E1172101	Muzammil Hussain. AR
30	E1172104	Nihal Ahamed. F
31	E1172107	Noordeen. S
32	E1172112	Peer Mohamed. S
33	E2182170	Abu Faizel. S
34	E2182171	Faizal Khan. R
35	E2182172	Kannappan. P
36	E2182173	Karthikeyan. V
37	E2182178	Mohamed Haroon Razeeth. K
38	E2182182	Praveen Kumar. M

HOD/MECH

PRINCIPAL

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

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MIET
INSTITUTIONS

M.I.E.T. Engineering College

Tiruchirappalli-620007

REPORT ON ONE DAY INDUSTRIAL VISIT

Name of the Industry	**: KGK Industries**
Place of Visit	: Coimbatore
Date of Visit	: 24.09.19

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

Outcome of the Event:

The students understood the concept of Forging process, hot die technology, open & closed die forging technology and the importance of responsibility of young minds for country development. The students saw the various machining process used by KGK Industries, and gained knowledge about Forging, Industry expectation and industrial safety.

Signature of the Coordinator

HoD / Signature

HoD / T&P

Principal

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

16.09.2019

From

Raamkumar M (E1172115)

Class representative/ III year-C Sec

Department of Mechanical Engineering

MIET Engineering college

Trichy-07.

To

The chairman

MIET Educational Institutions

Trichy-07

Through the principal,

Respected madam,

Sub: Requesting permission for Industrial visit – reg.

As a part of our curriculum, we are III year -C Sec students of Mechanical Engineering would like to go for an Industrial visit to KGK Industries, coimbatore. on 25/09/2019 . So kindly request you to permit us for the same.

Thanking you,

Yours obediently,

Raamkumar M

(Raamkumar M)

Industrial visit co-ordinator/Mech

HOD

PRINCIPAL

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Email : principalengg@miet.edu, contact@miet.edu
Website :- www.miet.edu
Ph : 0431 - 2660 303

Dr. X. SUSAN CHRISTINA, M.E., Ph.D.,
Principal

Date :

Date: 20.09.2019

To

M/s United Enterprises,
KGK Industries,
No. 86, SIDCO Industrial Estate,
Kurichi, Coimbatore – 641023.

TO WHOM SOEVER IT MAY CONCERN

This is to certify that the following list of names is Bonafide Students of this institution studying in III Year of Mechanical Engineering Department of our college with the strength of 51 students along with 2 staff members to undergo industrial visit in your organization on 25th September 2019.

PRINCIPAL

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PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

MIET ENGINEERING COLLEGE
DEPARTMENTOF Mechanical Engineering
IIIRD YEAR MECHANICAL SECTION -C

Willing -Student List for Industrial Visit - 25.09.2019

S.No	ROLL NO	Name
1	E1172114	Prasanth. R
2	E1172115	Raamkumar. M
3	E1172119	Rahul. E
4	E1172120	Riyash Ahamed. M
5	E1172121	Sabi. S
6	E1172122	Sadham Abbas. R
7	E1172126	Sarathkumar. M
8	E1172127	Satham Usean. B
9	E1172128	Sellavel. R
10	E1172129	Selvaarasu. T
11	E1172130	Selva Ganapathi. M
12	E1172131	Shagul Hameed. I
13	E1172132	Shagul Hameed. M
14	E1172133	Shagul Hameed. SN
15	E1172134	Shahul Abdul Rahman. M
16	E1172135	Shaik Shafeeque Mohamed. S
17	E1172136	Shanmuganathan. T
18	E1172137	Sheik Azarudeen. A
19	E1172138	Siva. K
20	E1172139	Sivadoss. K
21	E1172140	Sivanesan. S
22	E1172141	Sivasundar. J
23	E1172142	Sowkath Ali. M
24	E1172143	Sridhar. S
25	E1172144	Sri Ram. K
26	E1172145	Stephen Yesudoss. S
27	E1172146	Subash. G
28	E1172147	Sudhakar. C
29	E1172148	Suganthan. S
30	E1172149	Suresh Krishna. D
31	E1172150	Suriya. J.S
32	E1172151	Susil Kumar. E
33	E1172152	Syed Nissar. Z
34	E1172154	Tamilarasan. M
35	E1172155	Tamilarasan. S
36	E1172156	Thamizhan. V
37	E1172157	Thamotharan. A
38	E1172158	Vadivazhagan. E
39	E1172159	Vasanth. L
40	E1172160	Vasanth. S
41	E1172161	Vasanth. T
42	E1172162	Vengatesh. J
43	E1172164	Vijayaprakash. V
44	E1172165	Vijayakrishnan. T
45	E2182175	Kirubanandam. R
46	E2182176	Marimuthu. M
47	E2182180	Muthu Karuppan. R
48	E2182187	Renganathan. P
49	E2182189	Tamilarasan. S
50	E2182190	Vignesh. T

HOD/MECH

PRINCIPAL

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007

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Tiruchirappalli-620007

REPORT ON ONE DAY INDUSTRIAL VISIT

Name of the Industry : KGK Industries

Place of Visit : Coimbatore

Date of Visit : 25.09.19

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M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

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An Industrial Visit to KGK Industries, M/s United Enterprises, SIDCO Industrial Estate, Kurichi, Coimbatore, was organized by the Industrial Visit Coordinator of the Mechanical Engineering Department, **Mr. MANIKANDAN E (Assistant Professor, Dept. of ME).**

On receiving the letter of invitation from Mr. T Lesly Premkumar, Manager (Admin & HR), KGK Industries, M/s United Enterprises, SIDCO Industrial Estate, Kurichi, Coimbatore, the students of 4th Semester from Mechanical Engineering, enrolled into this program, and undertook the Industrial Visit to KGK Industries, M/s United Enterprises, SIDCO Industrial Estate, Kurichi, Coimbatore, on Sep 24, 2019. 41 students of Mechanical engineering III – "B" students, accompanied by **Mr. E Manikandan,** Assistant Professor, Dept. of Mechanical Engineering, and **Mr. A Pandianathan,** Assistant Professor, Dept. of Mechanical Engineering, assembled in the college at 11:30 PM on 24.09.2019 and proceeded to the destination by Private Travels.

We reached **KGK Industries** at 10:30 am on 25.09.2019, and were received by a staff member who guided us to the conference hall, where the students and the faculty members were welcomed by **Mr. T Lesly Premkumar, Manager (Admin & HR), KGK Industries.** He gave us a briefing regarding the program & the schedule for the day. After refreshment, he started the session by talking to the students about the industry expectations from fresh graduates. He guided the students to be prepared for the road ahead by detailing some self learning methods. He explained the basics of forging technology, open & closed die forging methods, hot die technology, use of computers in forging, & explained in details about its advantages and its extensive use in today's world. He also gave us some inputs on the industrial safety. He encouraged the students to work towards their goals, and stressed on the importance of young minds for the development of the country.

After this session, we were taken to workshop, KGK Industries. Explanation on its various components and their maintenance system was given to the students, by the Staff members, KGK Industries. It was a nice experience. The KGK Industries, Tamilnadu is a well maintained one, & we loved it. At 1:30 pm, the session came to a close, & we met **Mr. T Lesly Premkumar, Manager (Admin & HR),** KGK Industries, M/s United Enterprises, SIDCO Industrial Estate, Kurichi, Coimbatore, in his office room, he welcomed us and we shared our thoughts about learning session. Once again, we express our heartfelt gratitude to the met **Mr. T Lesly Premkumar.** We are also thankful to your staff members, KGK Industries, who guided us. It was a great learning experience.

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

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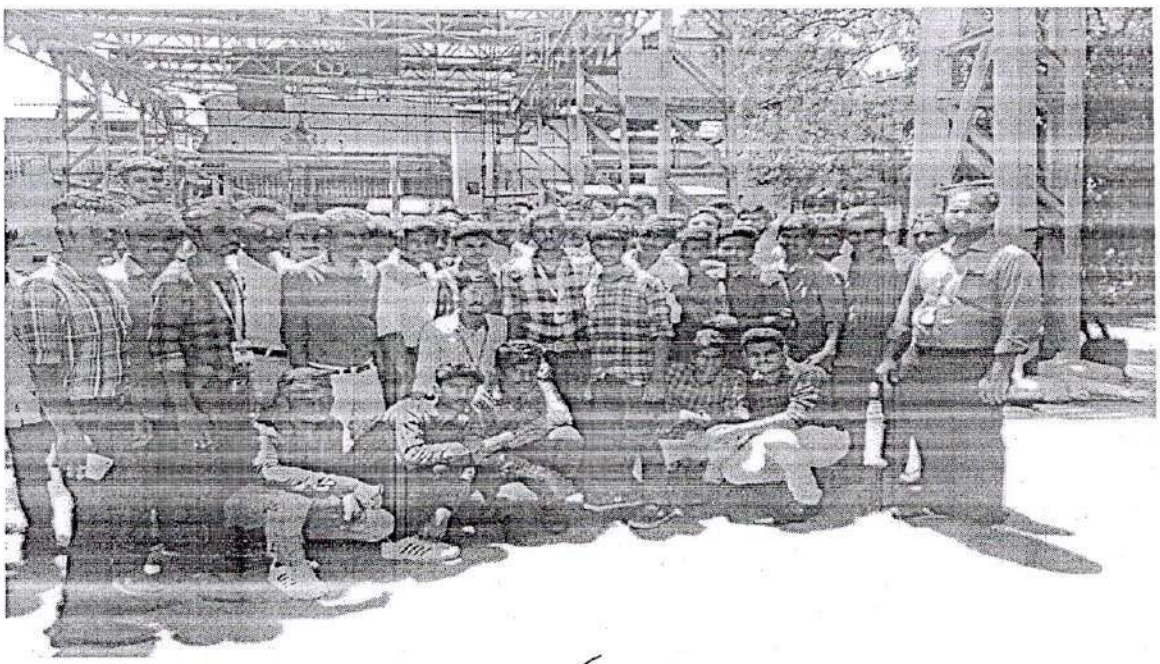
Outcome of the Event:

The students understood the concept of Forging process, hot die technology, open & closed die forging technology and the importance of responsibility of young minds for country development. The students saw the various machining process used by KGK Industries, and gained knowledge about Forging, Industry expectation and industrial safety.



Signature of the Coordinator

HoD / Signature

HoD / T&P

Principal

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

16.09.2019

From

Balaji G (E1162024)

Class representative/ IV year-A Sec

Department of Mechanical Engineering

MIET Engineering college

Trichy-07.

To

The chairman

MIET Educational Institutions

Trichy-07

Through the principal,

Respected madam,

Sub: Requesting permission for Industrial visit – reg.

As a part of our curriculum, we are IVyear - A Sec students of Mechanical Engineering would like to go for an Industrial visit to ANNA ALUMINIUM,Kerala. on 24/09/2019 . So kindly request you to permit us for the same.

Thanking you,

Yours obediently,

G Balaji

(Balaji G)

Industrial visit co-ordinator/Mech

HOD

HOD/TPO

PRINCIPAL

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

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Email : principalengg@miet.edu, contact@miet.edu
Website :- www.miet.edu
Ph : 0431 - 2660 303

Dr. X. SUSAN CHRISTINA, M.E., Ph.D.,
Principal

Date :

Date: 20.09.2019

To

ANNA ALUMINIUM,
Aluva,
Kerala - 683101

TO WHOM SOEVER IT MAY CONCERN

This is to certify that the following list of names is Bonafide Students of this institution studying in IV Year of Mechanical Engineering Department of our college with the strength of 47 students along with 2 staff members to undergo industrial visit in your organization on 24th September 2019.

PRINCIPAL

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M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

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M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

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MIET ENGINEERING COLLEGE
DEPARTMENTOF Mechanical Engineering
IVTH YEAR MECHANICAL SECTION -A

Willing -Student List for Industrial Visit - 24.09.2019

S.No	ROLL NO	Name
1	E1162001	Abdul Basith. S
2	E1162002	Abdul Rahuman Fahath. U
3	E1162003	Abdul Riyaz. J
4	E1162004	Abdullah Haja Mydeen
5	E1162007	Ajmal. S
6	E1162009	Akash. M
7	E1162010	Akashvarma. S
8	E1162012	Aravindhan. E
9	E1162013	Anwar Kaleem. S
10	E1162016	Arunkumar. M
11	E1162017	Ashik Salman. N
12	E1162018	Ashiq Basha. R
13	E1162019	Askar Hussian. A
14	E1162021	Athief. S
15	E1162022	Azarutheen. K
16	E1162023	Babu. P
17	E1162024	Balaji. G
18	E1162025	Balakumar. P
19	E1162027	Balamurugan. Y
20	E1162028	Baseer Ahamed. A
21	E1162029	Chandra Kumar. M
22	E1162030	Chandru. M
23	E1162031	Enayathulla. R
24	E1162032	Eswaran. S
25	E1162033	Fahadaameer. R
26	E1162036	Fizal. A
27	E1162039	Hari Haran. R
28	E1162040	Ilangeshswaran. R
29	E1162041	Jafar Sathik. M
30	E1162042	Jeevankumar. S
31	E1162045	Kamaludeen. I
32	E1162046	Kamaraj. K
33	E1162047	Karthikeyan. D
34	E1162049	Kaviyarasan. P
35	E2172160	Gowtham. M
36	E2172161	Hari Haran. S
37	E2172162	Jaferhussian. R
38	E2172163	Jaya Eswar. S.A
39	E2172168	Manikandan. M
40	E2172172	Mohamed Ajithkhan. R
41	E2172176	Mohamed Khalith. J
42	E2172177	Mohamed Mukthar. M
43	E2172190	Pavithra Kumar. S
44	E2172192	Sabarish Kumar. P
45	E2172193	Siva. S
46	E2172195	Siavanesan. M
47	E2172200	Vijay. R

HOD/MECH

PRINCIPAL

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

MIET
INSTITUTIONS

M.I.E.T. Engineering College

Tiruchirappalli-620007

REPORT ON ONE DAY INDUSTRIAL VISIT

Name of the Industry	:ANNA ALUMINIUM
Place of Visit	: Kerala
Date of Visit	: 24.09.19

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

An Industrial Visit to ANNA ALUMINIUM, ALUVA, KERALA, was organized by the Industrial Visit Coordinator of the Mechanical Engineering Department, **Mr. MANIKANDAN E (Assistant Professor, Dept. of ME).**

On receiving the letter of invitation from **Mr. Praveen Raj, Manager (HR & Admin)**, Kizhakkambalam, Aluva, Kerala, ANNA ALUMINIUM CO PVT LTD, the students of 7th Semester from Mechanical Engineering, enrolled into this program, and undertook the Industrial Visit to ANNA ALUMINIUM CO PVT LTD, Kizhakkambalam, Aluva, Kerala, on Sep 24, 2019. 47 students of Mechanical engineering IV – "A" students, accompanied by **Mr. T Prabaharan,** Assistant Professor, Dept. of Mechanical Engineering, **Mr. S Kumaradevan,** Assistant Professor, Dept. of Mechanical Engineering, and **Mr. M Kirubaharan,** Assistant Professor, Dept. of Mechanical Engineering, assembled in the college at 10:00 PM on 23.09.2019 and proceeded to the destination by Private Travels.

We reached **ANNA ALUMINIUM CO PVT LTD** at 10:00 am on 24.09.2019, and were received by a staff member who guided us to the conference hall, where the students and the faculty members were welcomed by **Mr. Praveen Raj, Manager (HR & Admin), ANNA ALUMINIUM CO PVT LTD.** He gave us a briefing regarding the program & the schedule for the day. He started the session by talking to the students about the industry expectations from fresh graduates. He guided the students to be prepared for the road ahead, by detailing some self learning methods. He discussed about how domestic products are manufactured? What are the process are used? He explained in details about its advantages and its extensive use in today's world. He talked about to balance economic performance with environmental and social responsibilities. He also gave us some inputs on the industrial safety. He encouraged the students to work towards their goals, and stressed on the importance of young minds for the development of the country.

After this session, we were taken to workshop, ANNA ALUMINIUM CO PVT LTD. Explanation on its various components and their maintenance system was given to the students, by the Staff members, ANNA ALUMINIUM CO PVT LTD. It was a nice experience. The ANNA ALUMINIUM CO PVT LTD, Tamilnadu is a green & well maintained one, & we loved it. At 1:30 pm, the session came to a close, & we met by **Mr. Praveen Raj, Manager (HR & Admin),** , Aluva, Kerala, ANNA ALUMINIUM CO PVT LTD, in his office room, he welcomed us and we shared our thoughts about learning session. Once again, we express our heartfelt gratitude to the **Mr. Praveen Raj, Manager**. We are also thankful to your staff members, ANNA ALUMINIUM CO PVT LTD, who guided us. It was a great learning experience.

PRINCIPAL
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Outcome of the Event:

The students understood the concept of manufacturing process and the importance of responsibility of young minds for country development. The students saw the various machining process used by ANNA ALUMINIUM CO PVT LTD, and gained knowledge about Manufacturing process, economics, Production rate, Industry expectation and industrial safety.

Signature of the Coordinator

HoD / Signature

HoD / T&P

Principal

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

02.08.2019

From

Mohamed Jifri A (E1162074)

Class representative/ IV year-B Sec

Department of Mechanical Engineering

MIET Engineering college

Trichy-07.

To

The chairman

MIET Educational Institutions

Trichy-07

Through the principal,

Respected madam,

Sub: Requesting permission for Industrial visit – reg.

As a part of our curriculum, we are IVyear - B Sec students of Mechanical Engineering would like to go for an Industrial visit to SPIC Ltd, Tuticorin.. on 04 /09/2019 . So kindly request you to permit us for the same.

Thanking you,

Yours obediently,

(Mohamed Jifri A)

Industrial visit co-ordinator/Mech

HOD

PRINCIPAL

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
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Email : principalengg@miet.edu, contact@miet.edu
Website :- www.miet.edu
Ph : 0431 - 2660 303

Dr. X. SUSAN CHRISTINA, M.E., Ph.D.,
Principal

Date :

Date: 20.08.2019

To

SPIC Ltd,
Muthiahpuram Post,
Tuticorin -628005.

TO WHOM SOEVER IT MAY CONCERN

This is to certify that the following list of names is Bonafide Students of this institution studying in IV Year of Mechanical Engineering Department of our college with the strength of 55 students along with 2 staff members to undergo industrial visit in your organization on 4th September 2019.

PRINCIPAL

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M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

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M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

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MIET ENGINEERING COLLEGE
DEPARTMENTOF Mechanical Engineering
IVTH YEAR MECHANICAL SECTION -B

Willing -Student List for Industrial Visit - 04.09.2019

S.No	ROLL NO	Name
1	E1162048	Karunamoorthy. P
2	E1162050	Mahadheer Mohamed. A
3	E1162052	Mangaiyarkarasi. R
4	E1162053	Manikandan. M
5	E1162054	Manoj. C
6	E1162055	Manojkumar. S
7	E1162056	Mariselvam. K
8	E1162057	Mohamad Marjuk. A
9	E1162059	Mohamed Anas. N
10	E1162061	Mohamed Aslam. J
11	E1162062	Mohamed Azarudeen. M
12	E1162065	Mohamed Bagath. M
13	E1162067	Mohamed Bilal. S
14	E1162068	Mohamed Farhan. K
15	E1162069	Mohamed Gousi. A
16	E1162070	Mohamed Ibrahim. K
17	E1162071	Mohamed Ibrahim. S
18	E1162072	Mohamed Irfan. J
19	E1162074	Mohamed Jifri. A
20	E1162075	Mohamed Kather Sherif. P
21	E1162076	Mohamed Muneer. P
22	E1162078	Mohamed Reskallah. US
23	E1162079	Mohamed Riaz. S
24	E1162080	Mohamed Rifath Ali. T.A
25	E1162081	Mohamed Safeek. S
26	E1162082	Mohamed Salman. S
27	E1162083	Mohamed Sheik Dawood. S
28	E1162084	Mohamed Sirajudeen. M.A
29	E1162086	Mohammed Annas. M.A
30	E1162087	Mohammed Rashik. M
31	E1162088	Mohammed Sulthan. H
32	E1162090	Mugilan. M
33	E1162091	Mukilan. U
34	E1162092	Muralikrishnan. B
35	E1162093	Naga Srinivasan. R
36	E3152260	Mohamed Wasim. M
37	E2172152	Abdul Basith. J
38	E2172154	Akthar Ali. Z
39	E2172155	Augustin Pon Joshua. A
40	E2172156	Bhuvaneshwaran. K
41	E2172158	Dinesh Raj. M
42	E2172159	Gokula Priyan. A
43	E2172166	Karthikraja. K
44	E2172171	Mohamed Abdul Irfan. I
45	E2172174	Mohamed Azeethu. N
46	E2172175	Mohamed Azwan. M
47	E2172180	Mohamed Thariq. M
48	E2172182	Mohammed Sukar. K
49	E2172185	Mohd Asif Rahamathullah Labbai
50	E2172188	Muthuramalingam. M
51	E2172189	Nagarajan. S
52	E2172191	Prakash. P
53	E2172202	Yusuf Sheriff. G
54	E3152146	Naveen. D
55	E3162149	Jayasurya. R

HOD/MECH

PRINCIPAL

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-7

MIET
INSTITUTIONS

M.I.E.T. Engineering College

Tiruchirappalli-620007

REPORT ON ONE DAY INDUSTRIAL VISIT

Name of the Industry : SPIC Ltd
Place of Visit : Tuticorin
Date of Visit : 4.09.19

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

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An Industrial Visit to Southern Petrochemical Industries Corporation Ltd (SPIC), Muthiahpuram Post, Tuticorin, TamilNadu was organized by the Industrial Visit Coordinator of the Mechanical Engineering Department, **Mr. MANIKANDAN E (Assistant Professor, Dept. of ME).**

On receiving the letter of invitation from **Mr. M Ganesh Murugan, AM (Training Center),** Muthiahpuram Post, Tuticorin, SPIC, the students of 7th Semester from Mechanical Engineering, enrolled into this program, and undertook the Industrial Visit to Southern Petrochemical Industries Corporation Ltd (SPIC), Muthiahpuram Post, Tuticorin, TamilNadu, on Sep 04, 2019. 55 students of Mechanical engineering IV – "B" students, accompanied by **Mr. E Manikandan,** Assistant Professor, Dept. of Mechanical Engineering, **Mr. A Pandianathan,** Assistant Professor, Dept. of Mechanical Engineering, and **Mr. E V Pandiaraj,** Assistant Professor, Dept. of Mechanical Engineering, assembled in the college at 9:00 PM on 03.09.2019 and proceeded to the destination by Private Travels.

We reached SPIC at 09:00 am on 04.09.2019, and were received by a staff member who guided us to the conference hall, where the students and the faculty members were welcomed by **Mr. T Saravanan, SM-Trg & Development, SPIC.** He gave us a briefing regarding the program & the schedule for the day. After some refreshments, he started the session by talking to the students about the industry expectations from fresh graduates. He guided the students to be prepared for the road ahead, by detailing some self learning methods. He discussed about Chemical fertilizers & explained in details about its advantages and its extensive use in today's world. He talked about to balance economic performance with environmental and social responsibilities. He also gave us some inputs on the industrial safety. He encouraged the students to work towards their goals, and stressed on the importance of young minds for the development of the country.

After this session, we were taken to workshop, SPIC. Explanation on its various components and their maintenance system was given to the students, by the Staff members, SPIC. It was a nice experience. The SPIC, Tamilnadu is a green & well maintained one, & we loved it. At 1:30 pm, the session came to a close, & we met **Mr. M Ganesh Murugan, AM (Training Center),** Muthiahpuram Post, Tuticorin, SPIC, in his office room, he welcomed us and we shared our thoughts about learning session. Once again, we express our heartfelt gratitude to the **Mr. M Ganesh Murugan.** We are also thankful to your staff members, SPIC, who guided us. It was a great learning experience.

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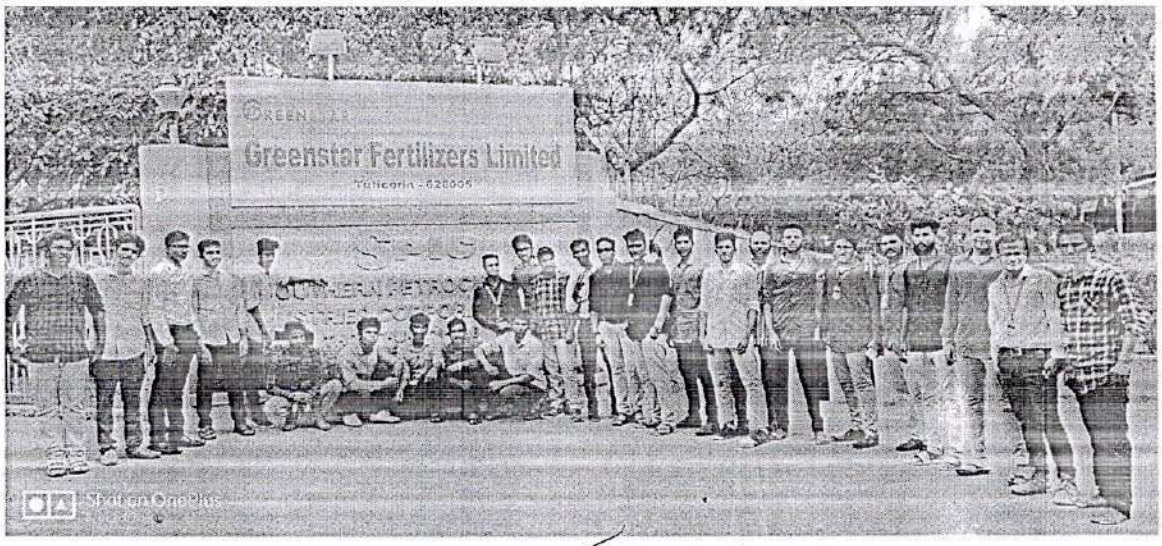
PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

Outcome of the Event:

The students understood the concept of fertilizer manufacturing process and the importance of responsibility of young minds for country development. The students saw the various machining process used by SPIC, and gained knowledge about Chemical Fertilizer, economics, Production rate, Industry expectation and industrial safety.



Signature of the Coordinator

HoD / Signature

HoD / T&P

Principal

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

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16.09.2019

From

Sriram. S (E1162128)

Class representative/ IV year-C Sec

Department of Mechanical Engineering

MIET Engineering college

Trichy-07.

To

The chairman

MIET Educational Institutions

Trichy-07

Through the principal,

Respected madam,

Sub: Requesting permission for Industrial visit – reg.

As a part of our curriculum, we are IVyear - C Sec students of Mechanical Engineering would like to go for an Industrial visit to SPIC Ltd, Tuticorin. on 24/09/2019 . So kindly request you to permit us for the same.

Thanking you,

Yours obediently,

Sriram. S

(Sriram. S)

Industrial visit co-ordinator/Mech

HOD

PRINCIPAL

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

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Email : principalengg@miet.edu, contact@miet.edu
Website :- www.miet.edu
Ph : 0431 - 2660 303

Dr. X. SUSAN CHRISTINA, M.E., Ph.D.,
Principal

Date :

Date: 20.09.2019

To

SPIC Ltd,
Muthiahpuram Post,
Tuticorin-628005.

TO WHOM SOEVER IT MAY CONCERN

This is to certify that the following list of names is Bonafide Students of this institution studying in IV Year of Mechanical Engineering Department of our college with the strength of 50 students along with 2 staff members to undergo industrial visit in your organization on 24th September 2019.

PRINCIPAL

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

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MIET ENGINEERING COLLEGE
DEPARTMENTOF Mechanical Engineering
IVTH YEAR MECHANICAL SECTION -C
Willing -Student List for Industrial Visit - 24.09.2019

S.No	ROLL NO	Name
1	E1162094	Nantha Kumar. S
2	E1162095	Narasiman. V.S
3	E1162097	Navaneethan. K.V
4	E1162098	Niyaz Ahamed. A
5	E1162099	Pagathsingh. P
6	E1162100	Pandi. M
7	E1162101	Parthiban. R
8	E1162102	Ponkumar. M
9	E1162103	Pramoth. S
10	E1162104	Prasanth. A
11	E1162105	Prasanth (13.12.1999). K
12	E1162106	Prasanth (26.05.1999). K
13	E1162111	Rajesh. M
14	E1162112	Rameez Ali Raja. M
15	E1162114	Rishvanth. S
16	E1162116	Saiad Aamir Souhail. N
17	E1162117	Sam Kalwin. S
18	E1162118	Samuel. S
19	E1162123	Sheik Abdul Muthalib. N
20	E1162124	Sheik Mohaideen. I
21	E1162125	Shri Hari Shandhanu. K
22	E1162126	Sivaraman. S
23	E1162128	Sriram. S
24	E1162130	Sukumaran. R
25	E1162131	Sundhar. S
26	E1162132	Syed Ali. R
27	E1162133	Syed Anwar Azeez. P
28	E1162134	Syed Peer Javed. S.N
29	E1162138	Vaasim Ahamed. B.A
30	E1162139	Varnaraj. P
31	E1162140	Vaseem Rahman. A
32	E1162141	Vignesh (26.04.1998). R
33	E1162142	Vignesh (08.04.1999). R
34	E1162143	Vijayaraj. D
35	E1162145	Yokesh. P
36	E3152204	Ragul Raj. C
37	E3152205	Ranjith. S
38	E2172153	Abdul Rahim. A
39	E2172157	Deepan Chakkaravarthy. P.S
40	E2172167	Manigandan. B
41	E2172169	Manojkumar. M
42	E2172170	Mohamed Aathil. S
43	E2172178	Mohamed Sajid. S
44	E2172179	Mohamed Sharif. I
45	E2172181	Mohamed Yahya. M
46	E2172183	Mohanasundaram. A
47	E2172184	Mohanraj. K
48	E2172187	Muruganantham. S
49	E3152147	Thowfeek Raja. N
50	E3162151	Peer Sulthan Rawther. N

HOD/MECH

PRINCIPAL

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

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M.I.E.T. Engineering College

Tiruchirappalli-620007

REPORT ON ONE DAY INDUSTRIAL VISIT

Name of the Industry : SPIC Ltd
Place of Visit : Tuticorin.
Date of Visit : 24.09.19

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

An Industrial Visit to Southern Petrochemical Industries Corporation Ltd (SPIC), Muthiahpuram Post, Tuticorin, TamilNadu was organized by the Industrial Visit Coordinator of the Mechanical Engineering Department, **Mr. MANIKANDAN E (Assistant Professor, Dept. of ME).**

On receiving the letter of invitation from **Mr. M Ganesh Murugan, AM (Training Center),** Muthiahpuram Post, Tuticorin, SPIC, the students of 7th Semester from Mechanical Engineering, enrolled into this program, and undertook the Industrial Visit to Southern Petrochemical Industries Corporation Ltd (SPIC), Muthiahpuram Post, Tuticorin, TamilNadu, on Sep 04, 2019. 50 students of Mechanical engineering IV – "C" students, accompanied by **Mr A Jeyanthan, Assistant Professor,** Dept. of Mechanical Engineering, and **Dr. K Ramesh, Associate Professor**, Dept. of Mechanical Engineering, assembled in the college at 9:30 PM on 23.09.2019 and proceeded to the destination by Private Travels.

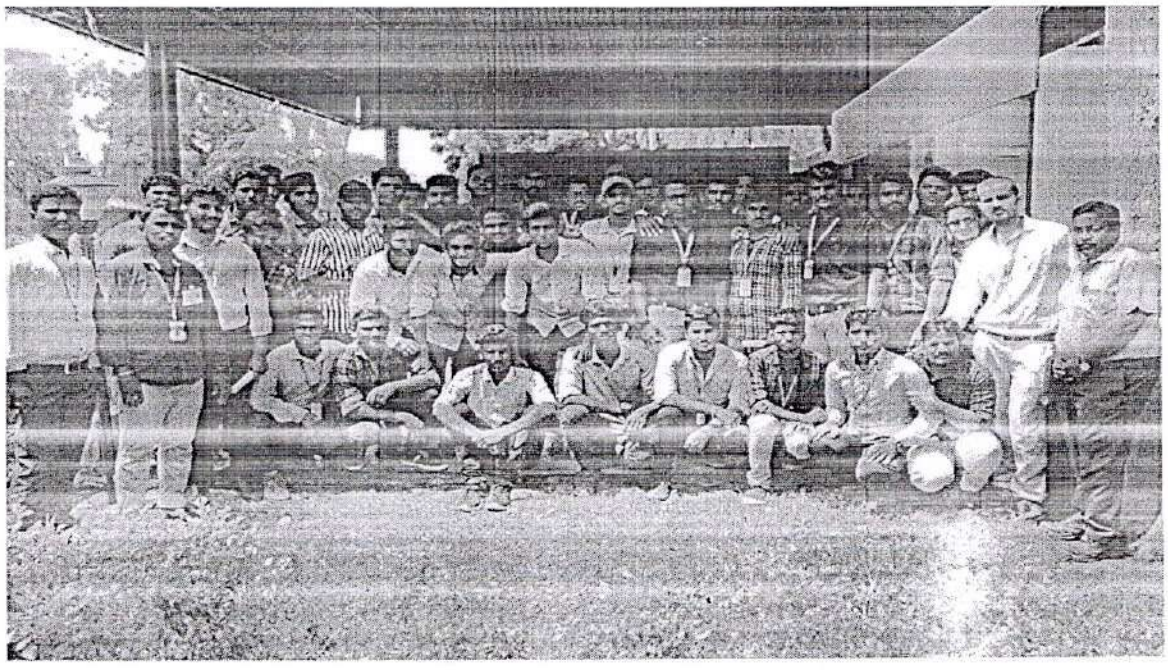
We reached SPIC at 09:30 am on 24.09.2019, and were received by a staff member who guided us to the conference hall, where the students and the faculty members were welcomed by **Mr. M Ganesh Murugan, AM (Training Center), SPIC**. He gave us a briefing regarding the program & the schedule for the day. After some refreshments, he started the session by talking to the students about the industry expectations from fresh graduates. He guided the students to be prepared for the road ahead, by detailing some self learning methods. He discussed about Chemical fertilizers & explained in details about its advantages and its extensive use in today's world. He talked about to balance economic performance with environmental and social responsibilities. He also gave us some inputs on the industrial safety. He encouraged the students to work towards their goals, and stressed on the importance of young minds for the development of the country.

After this session, we were taken to workshop, SPIC. Explanation on its various components and their maintenance system was given to the students, by the Staff members, SPIC. It was a nice experience. The SPIC, Tamilnadu is a green & well maintained one, & we loved it. At 1:00 pm, the session came to a close. We express our heartfelt gratitude to the **Mr. M Ganesh Murugan**. We are thankful to your staff members as well, SPIC, who guided us. It was a great learning experience.

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

Outcome of the Event:

The students understood the concept of fertilizer manufacturing process and the importance of responsibility of young minds for country development. The students saw the various machining process used by SPIC, and gained knowledge about Chemical Fertilizer, economics, Production rate, Industry expectation and industrial safety.



Signature of the HoD / Signature

HoD / T&P

Principal

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.

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learn here lead anywhere

Entrepreneurship Cell,
IIT Kharagpur

INTERNSHIP CERTIFICATION

This is to certify that

Mohamed Shaheen Shahul Hameed

has successfully completed an Internship Program Hybrid & Electric Vehicle
from 1/5/2020 to 1/7/2020.
During the Internship, the student was found to be
dedicated, hardworking, and diligent.

02-08-2020
DATE

VICE PRESIDENT - HR

UID : 4164364198

PRINCIPAL
M.I.E.T. ENGINEERING COLLEGE
GUNDUR, TIRUCHIRAPPALLI-620 007.