BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY

Mangalpally (Village), Ibrahimpatnam (Mandal), Ranga Reddy (District), Telangana-501510

1.3.3 : Percentage of students undertaking project work/ field work / internship (Data for the latest completed academic year) (10)

Academic Year 2018-19

S. No.	Department	Descriptions	Total Count
1.	B.Tech-CIVIL	Major Project Work	74
2.	B.Tech-EEE	Major Project Work	116
3.	B.Tech-MECHANICAL	Major Project Work	72
4.	B.Tech-ECE	Major Project Work	161
5.	B.Tech-CSE	Major Project Work	222
6.	B.Tech-IT	Major Project Work	43
7.	MBA	Major Project Work	10
8.	M.TECH	Major Project Work	19
9.	B.Tech-(CIVIL, EEE, MECHANICAL, ECE, CSE) MBA	Internship	134
10.	B.Tech-(EEE, MECHANICAL,ECE, CSE, 1ST YEAR STUDENTS) MBA,	Industrial visit	693
TOTAL COUNT			1544

BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY
Mangalpally(V), Ibrahimpatnam, R R District E1

PRINCIPAL

Principal
Bharat Institute of Engg. and Tech
Mangalpally(V), Ibrahimpatnam(M)
Ranga Reddy (Dist)-Telangana-501510

Major Project Guide Allocation List Mechanical Engineering-2018-19

Programme name	Program Code	List of students undertaking project work/field work/internship	Roll Number	Guide Name	Project Title	BATCH NO
B Tech	3	D ARVIND	15E11A0345	K RAJ NARAYAN	Design and Analysis of Turbine Blade by Using CATIA and Ansys	1
B Tech	3	G SAICHAND GOUD	15E11A0366			
B Tech	3	K RAKESH	15E11A0363			
B Tech	3	M SRIKANTH	15E11A0369	G KRISHNAVENI	Design Analysis and Production of Modular Modelling Tool for FRP Component	2
B Tech	3	P VAMSHI KRISHNA	15E11A0370			
B Tech	3	G KALYAN	16E15A0305			
B Tech	3	N KARAN	15E11A0354	G KRISHNAVENI	Design and Realisation of Handling Beam for Rocket Motor	3
B Tech	3	P MAHESH	15E11A0358			
B Tech	3	A SHRAVAN	16E15A0302	DR. DIPESH POPLI	Desig nand Fabrication of Seedsowing and Drill Machine	4
B Tech	3	CH NAVEEN CHARY	16E15A0303			
B Tech	3	S LAXMA REDDY	16E15A0311			
B Tech	3	R AKHIL VARDHAN	15E11A0344	N RAJASHEKAR	Development of investment Casting Process for Production of Turbine Blade	5
B Tech	3	M MAHESH	15E11A0357			
B Tech	3	J RAKESH REDDY	15E11A0362			
B Tech	3	MD ZEESHAN UMER	15E11A0376			
B Tech	3	A BHARATH KUMAR	16E15A0301	P SRINIVAS KUMAR	Modeling and Analysis of Heavy Vehical Chassis	6
B Tech	3	K RAVITEJA	16E15A0306			
B Tech	3	K RAVITEJA	15E11A0364	P LOKESH	Development and Manufacturing a Single Impression of Injection Mould for VVPAT Printer Cover	7
B Tech	3	N SHANMUKHA SAI	16E15A0309			
B Tech	3	D BIYANI	15E11A0347	K RAJU GUPTHA	Two Point Incremental Sheet Forming (TRIF) of Aerospace Component Made of SS-304 Steel	8
B Tech	3	S THRILOK GOUD	16E15A0310			
B Tech	3	D GANESH	15E11A0349	C ANIL KUMAR REDDY	Design and Fabrication of Rocket Nozzel and Fixture	9
B Tech	3	D SATHISH	15E11A0367			
B Tech	3	G SRAVAN	15E11A0368			
B Tech	3	G DILIP	15E11A0348			
B Tech	3	G VAMSHI KRISHNA	15E11A0372	B MOUNIKA NAIDU	Modelling and Structural Analysis of Aircraft Wing	10
B Tech	3	P VARUN RAJ	15E11A0373			
B Tech	3	Y VINOD	15E11A0375			
B Tech	3	P SAI KUMAR	15E11A0365	G MADHU BABU	Design and Development of Blanking and Piercing Tool for the Aluminium washer	11
B Tech	3	P VAMSHI KRISHNA	15E11A0371			
B Tech	3	P JAYANTH	15E11A0352			
B Tech	3	MOHAMMED BAKHTIYAR UZ ZAMAN	15E11A0346	DR. JS SONI	Design and Analysis of Ceramic Composite Radome	12
B Tech	3	MOHD IMRAN	15E11A0351			
B Tech	3	T RAKSHIT REDDY	15E11A0378			
B Tech	3	MOHAMMED ASIM	16E15A0308			
B Tech	3	Y SWETHA	15E11A0302	A HARISH KUMAR	Spraying of Fertilizers with Unmanned Aerial Vehicle (UAV)	13
B Tech	3	E SATISH KUMAR	15E11A0331			
B Tech	3	K SUDHEER KUMAR	15E11A0336			
B Tech	3	T YAGNA SAI KUMAR	15E11A0342			

B Tech	3	P ABHILAH	15E11A0304	M VIDYASAGAR	Drones for Supllying the Medical Aid in Remote Locations	14
B Tech	3	K HEMANTH ADITYA	15E11A0310			
B Tech	3	B UMA VENKAT REDDY	15E11A0338			
B Tech	3	GUNDA YASHWANTH	15E11A0343			
B Tech	3	K KONDAL REDDY	16E15A0314	K RAJU	Development of Thermoacoustic Refrigeration	15
B Tech	3	L DEEPAK	16E15A0315			
B Tech	3	P HARISH	16E15A0316			
B Tech	3	P VENKATESH	15E11A0340	PRADEEP CHAVAN	Design and Analysis of the Deep Draw Tool for AL Container	16
B Tech	3	J NARENDAR	16E15A0313			
B Tech	3	D VAISHNAVI	15E11A0303	DR. CSK PRASAD RAO	Analysis of Water Plasma Arc Cutting for Mild Steel and Stainless-Steel Plates	17
B Tech	3	R LALU NAIK	15E11A0314			
B Tech	3	P NAGENDRA BABU	15E11A0322			
B Tech	3	P SAATWIKA	15E11A0301	DR. JS SONI	Development of Unmanned Aerial Vehicle for Landmine Detection	18
B Tech	3	T HARISHIKESH	15E11A0311			
B Tech	3	J JASEAN KUMAR	15E11A0313			
B Tech	3	N VINAY	15E11A0341			
B Tech	3	K MAHESH	15E11A0316	CH RAVI KISHORE	of Welding Characteristics of Stainless Steel using Water Plasma Arc W	19
B Tech	3	P MAHESH	15E11A0317			
B Tech	3	B RAMANJANEYULU	15E11A0327			
B Tech	3	G SHIVA KUMAR YADAV	15E11A0334			
B Tech	3	T ARUN	15E11A0309	K MOUNIKA	Finite Element Analysis of Rocket Motor	20
B Tech	3	G JAGADEESH REDDY	15E11A0312			
B Tech	3	U MADHAVA KRISHNA	15E11A0315			
B Tech	3	K SHIVA KUMAR	15E11A0333	D CHANDRA SHEKAR	Advance Body Armour and Affordable Protection for Futuristic Combat Exoskeleton	21
B Tech	3	S MITHIN REDDY	15E11A0320			
B Tech	3	M VEDANTH ABHISHEK	15E11A0305			
B Tech	3	B VAMSHI KRISHNA	15E11A0339			
B Tech	3	P ANJANEYULU	15E11A0307	D SRINIVAS	Study of Characteristics of Stainless steel During Rotary Welding	22
B Tech	3	G NARASIMHA	15E11A0323			
B Tech	3	V RAJASHEKAR REDDY	15E11A0326			
B Tech	3	B ANIL KUMAR	15E11A0306	N NAGARAJAN	Design of Experiments Using Taguchi and Orthogonal Arrays for Structural Design	23
B Tech	3	G NARESH	15E11A0324			
B Tech	3	A SHARATH KUMAR REDDY	15E11A0332			

A Major Project Report On

DESIGN AND ANALYSIS OF TURBINE BLADE BY USING CATIA AND ANSYS

Submitted To

Jawaharlal Nehru Technological University Hyderabad

In partial fulfillment of the requirements for

the award of the degree of

BACHELOR OF TECHNOLOGY

IN

MECHANICAL ENGINEERING

BY

D.ARAVIND (15E11A0345)

G.SAICHAND GOUD (15E11A0366)

K.RAKESH (15E11A0363)

Under The Guidance Of

Mr. Raj Narayan Asst. Professor

DEPARTMENT OF MECHANICAL ENGINEERING

BHARAT INISTITUTE OF ENGINEERING AND TECHNOLOGY

(Affiliated to JNTUH Hyderabad, Approved by AICTE and Accredited by NBA)

Mangalpally(V) ,Ibrahimpatnam – 501510, Hyderabad.

2018-2019

BHARAT INSTITUTE OF ENGINEERING & TECHNOLOGY

(Approved by AICTE , Affiliated to J.N.T.University,HYD)

Mangalpally (V) Ibrahimpatnam-501510 (R.R. Dist) T.S.

CERTIFICATE

This Is To Certify That The Project Report Entitled "DESIGN AND ANALYSIS OF TURBINE BLADE BY USING CATIA AND ANSYS" Is Being Submitted By D.ARAVIND, G.SAICHAND GOUD, K.RAKESH. Bearing Roll Numbers 15E11A0345, 15E11A0366, 15E11A0363 Respectively In Partial Fulfillment For The Award of Degree of Bachelor of Technology In Mechanical Engineering of Bharat Institute of Engineering , Affiliated To Jawaharlal Nehru Technological University, And is A Bonafide Work Carried out By Them Under The Guidance of Mr. RAJ NARAYAN, Department of Mechanical Engineering, BIET, Hyderabad. The Result Embodied In This Thesis Has Not Been Submitted To Any other Institute or University for The award of any other Degree or Diploma.

INTERNAL GUIDE
(Mr. RAJ NARAYAN)

HEAD OF THE DEPARTMENT
(Dr.J.S.Soni)

EXTERNAL EXAMINER

SIGNATUTRE OF PRINCIPAL

एमएसएमई-टूल रूम
MSME - TOOL ROOM
केन्द्रीय उपकरण अभिकल्प संस्थान
CENTRAL INSTITUTE OF TOOL DESIGN
(भारत सरकार की सोसाइटी - सूक्ष्म, लघु और मध्यम उद्यम मंत्रालय)
(A Govt. of India Society - Ministry of Micro, Small & Medium Enterprises)
स्थापित : 1970
ESTD : 1970

CITD/CAD/CAM/PW/18-19

दिनांक :
Date : 08-04-2019

CERTIFICATE

This is to certify that this Project work entitled **"DESIGN AND ANALYSIS OF TURBINE BLADE USING CATIA AND ANSYS"** is the bonafide work done by

STUDENT NAME	ROLL NO
D ARAVIND	15E11A0345
G SAICHAND GOUD	15E11A0366
K RAKESH	15E11A0363

In the Partial fulfillment of Bachelor of Technology in Mechanical Engineering from **BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY, IBRAHIMPATNAM;** course and Project work done under our guidance and supervision.

CENTRAL INSTITUTE OF TOOL DESIGN • CAD / CAM AESL & LCA • HYDER

G.SANATH KUMAR
Dy. Director (Trg.)

ABSTRACT

As there is need of power everywhere, there will be a huge usage of machine to generate, store and use the power. Turbines play a key role in power generation. As the machine is being used, there will be wear and tear of the machine. So, proper maintenance have to be done for the proper functioning of the turbines, or good material have to be used in the manufacture of the turbines to attain long run of the turbines.

The main objective of the project is to bring out a material used in the manufacture of the turbines which is less in cost, gives a long run and can with stand all the properties required in required condition. Here, we took three samples of materials that are used in the manufacture of turbines and performed Static and Thermal analysis on the material in simulation software. All the modeling process is carried out in CATIA Software package, Simulation is done in ANSYS Mechanical Workbench.

This project work mapping with the Program Outcomes (POs): PO1, **PO2, PO3, PO4**, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12 and Program Specific Outcomes (PSOs): PSO1, POS2 & POS3.

10. CONCLUSION

From the above result Nimonic is having high thermal stress and hence we cannot use it for marine application. Although Titanium alloy is having some best properties like less weight and corrosive resistance we can use it here. Super alloy is having medium stress between Nimonic and Titanium alloy it can be used. Structural Steel and Cast Iron having high thermal stress and corrosive resistance is also high. But Titanium is having less stresses than other four materials. Hence we conclude that Titanium alloy best suited for turbine blade applications.

This Project Work addressed the Program Outcomes (POs): PO1, PO2, PO3, PO4, PO5, **PO6, PO7, PO8**, PO9, PO10, PO11, PO12 and Program Specific Outcomes (PSOs): PSO1, POS2 & POS3. These Program Outcomes (POs) and Program Specific Outcomes (PSOs) are attained by demonstrating the working model of the project.

A Major Project Report On

DESIGN ANALYSIS AND PRODUCTION OF MODULAR MODELLING TOOL FOR FRP COMPONENT

Submitted To

Jawaharlal Nehru Technological University Hyderabad

In partial fulfillment of the requirements for

the award of the degree of

BACHELOR OF TECHNOLOGY

IN

MECHANICAL ENGINEERING

BY

M.SRIKANTH (15E11A0369)

P.VAMSHI KRISHNA (15E11A0370)

G.KALYAN (16E15A0305)

Under The Guidance Of

Mrs.G.KRISHNAVENI Asst professor

DEPARTMENT OF MECHANICAL ENGINEERING

BHARAT INISTITUTE OF ENGINEERING AND TECHNOLOGY

(Affiliated to JNTUH Hyderabad, Approved by AICTE and Accredited by NBA)

Mangalpally(V) ,Ibrahimpatnam – 501510, Hyderabad.

2015-2019

BHARAT INSTITUTE OF ENGINEERING & TECHNOLOGY

(Approved by AICTE , Affiliated to J.N.T.University,HYD)

Mangalpally (V) Ibrahimpatnam-501510 (R.R. Dist) T.S.

CERTIFICATE

This Is To Certify That The Project Report Entitled **"Design, Analysis and Production of modular modelling tool for FRP component"** Is Being Submitted By **MERUGU SRIKANTH , P.VAMSHI KRISHNA, G.KALYAN** bearing roll numbers **15E11A0369, 15E11A0370, 16E15A0305** Respectively In Partial Fulfillment For The Award Of Degree Of Bachelor Of Technology In Mechanical Engineering Of Bharat Institute Of Engineering , Affiliated To Jawaharlal Nehru Technological University, And Is A Bonafide Work Carried Out By Them Under The Guidance of Department Of Mechanical Engineering, BIET, Hyderabad. The Result Embodied In This Thesis Has Not Been Submitted To Any Other Institute Or University For The Award Of Any Other Degree Or Diploma.

INTERNAL GUIDE
(Mrs.G.KRISHNAVENI)

HEAD OF THE DEPARTMENT
(Dr.J.S.Soni)

EXTERNAL EXAMINER

SIGNATUTRE OF PRINCIPAL

ABSTRACT

Fiber reinforced plastic (FRP) Moulding is a relatively new technology developed in recent years. Tooling for fabrication of FRP components calls for a critical examination of the process, design, and problems. The reliability of the process leads to the reliability of the product essential for vital aerospace applications. This project covers the ablative applications in airborne defence and space rocketry. This project presents the problems encountered and remedial measures suggested during the production of FRP components. The requirement of high surface finish homogeneous structure, high strength and closed dimensional control was tooling for any other material. The designer gets from tools precisely what he put in them. The other design aspects like material, accuracy, and ejection system have also been discussed incidentally the use of solid works is a recent addition to this field.

In a sense, the tooling for reinforced plastics is no different from article highlights the simplification made in order to get a cost effective tooling fabricated in a short lead time, although it may not be really suitable for mass production. Besides, it presents in details the various design factors such as the method of mould size, material, pressure applied to be mould, accuracy and surface finish of the mould, type of pinch off edges, die and punch clearance, type of guide pins and method.

This project work mapping with the Program Outcomes (POs): PO1, PO2, PO3, PO4, PO5, **PO6, PO7, PO8**, PO9, PO10, PO11, PO12 and Program Specific Outcomes (PSOs): PSO1, POS2 & POS3.

Key words: CATIA & ANSYS

CHAPTER-10
CONCLUSION AND FUTURE SCOPE

10.1 Conclusion

1. It has been experienced that Moulding of FRP components isa skill and experience of the shop or an art rather than theoretical know how. Though a lot of technical literature is available it provides only guide lines

2. The quality of the components is to be achieved by trails and based on the previous experiences on the same type of the materials ,mould and components. Further refine is required in the tool

3. The tool manufactured is used for the Production of smaller components and it's also very economical as the number of the process are less here when compared to the other manufacturing techniques, which saves the process cost the tool and the manufacturing

The minimum temperature is calculated at room temperature minimum deflection caused is 3.176e-9w/M2 maximum and the maximum distortion is noted as 1.1426e5 w/M2 at 210.24C

This Project Work addressed the Program Outcomes (POs): PO1, PO2, PO3, PO4, PO5, **PO6, PO7, PO8**, PO9, PO10, PO11, PO12 and Program Specific Outcomes (PSOs): PSO1, POS2 & POS3. These Program Outcomes (POs) and Program Specific Outcomes (PSOs) are attained by demonstrating the working model of the project

10.2 Future scope

The tool which we are using now is a basic Moulding tool . The productivity of the tool is limited to few number of FRP components and the tool is also operated manually by press. So, in future work productive and automatic mould tool is to be designed and manufactured

A Major Project Report On

Design and realisation of handling beam for rocket motor

Submitted To

Jawaharlal Nehru Technological University Hyderabad

In partial fulfilment of the requirements for

the award of the degree of

BACHELOR OF TECHNOLOGY

IN

MECHANICAL ENGINEERING

BY

N. KARAN (15E11A0354)

P. MAHESH (15E11A0358)

Under The Guidance Of

Mrs. GuvvaKrishnaveni
assistant professor,biet.

DEPARTMENT OF MECHANICAL ENGINEERING

BHARAT INISTITUTE OF ENGINEERING AND TECHNOLOGY

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2015-2019

BHARAT INSTITUTE OF ENGINEERING & TECHNOLOGY

(Approved by AICTE, Affiliated to J.N.T.U, HYD)

Mangalpally (V) Ibrahimpatnam-501510 (R.R. Dist.) T.S.

CERTIFICATE

This Is to Certify That the major project Report Entitled **"DESIGN AND REALISATION OF HANDLING BEAM FOR ROCKET MOTOR"**Is Being Submitted by NAGULAPALLY KARAN,POSHALA MAHESH Bearing Roll Numbers 15E11A0354,15E11A0358 Respectively In Partial Fulfilment For The Award of Degree of Bachelor of Technology In Mechanical Engineering of Bharat Institute of Engineering, Affiliated To Jawaharlal Nehru Technological University, And Is A Bonafide Work Carried Out By Them Under The Guidance of Ms. G KRISHNAVENI, Department of Mechanical Engineering, BIET, Hyderabad. The Result Embodied In This Thesis Has Not Been Submitted To Any Other Institute Or University For The Award Of Any Other Degree Or Diploma.

INTERNAL GUIDE

(G KRISHNAVENI)

HEAD OF THE DEPARTMENT

(Dr.J.S. Soni)

EXTERNAL EXAMINER

SIGNATUTREOF PRINCIPAL

Government of India
Ministry of Defence
Defence R&D
Organization
ASL, Hyderabad

CERTIFICATE

This is to certify that the following students have carried out their final year project work entitled **"DESIGN & REALISATON OF HANDLING BEAM FOR ROCKET MOTOR"** under my supervision at ASL, Hyderabad.

Names	Roll no.
N.KARAN	15E11A0354
P. MAHESH	15E11A0358

P. Sivakumar.

PROJECT GUIDE

SHRI P. SIVA KUMAR
SCIENTIST 'E',
DO SPRITE,
ASL, HYDERABAD

पी. शिव कुमार/P. SIVA KUMAR
वैज्ञानिक/SCIENTIST
रक्षा अनुसंधान एवं विकास संगठन/Min of Defence, DRDO
एडवांस्ड सिस्टम्स लेबोरेटरी/ASL, HYDERABAD-58

ABSTRACT

This project entitled "Design and Realisation of Handling Beam for Rocket Motor" is about designing a handling beam to carry a load of 5 ton. Rocket motor is an essential component of a rocket. It is a costly equipment and it is imperative that it should be handled carefully. This project is about designing a handling beam to lift a rocket motor weighing 5 ton. Primarily individual parts of the beam is designed by theoretical approach and followed by designing using software's such as CATIA and ANSYS for authentication of design. Theoretical values and software values are tabulated which is the result.

10 CONCLUSIONS

Design and realisation of handling beam for rocket motor has been successfully completed, the handling beam has the capacity to lift the rocket motor weighting 5 ton. The process of designing each part individually by theoretical approach and software approach brought optimum result. The software approach has two parts, primarily the parts are designed using CATIA software and the analysis of those parts are done by ANSYS approach. The final result is tabulated by comparing stressby theoretical and software showsthat the beam is safe to handle rocket motor.

A

Major Project Report On

DESIGN AND FABRICATION OF SEEDSOWING AND DRILL MACHINE

Submitted To

Jawaharlal Nehru Technological University Hyderabad

In partial fulfillment of requirements for

the award of the degree of

BACHELOR of TECHNOLOGY

In

MECHANICAL ENGINEERING

BY

A.SHRAVAN-16E15A0302

CH.NAVEEN CHARY-16E15A0303

S.LAXMA REDDY-16E15A0311

Under The Guidance of

Dr. DIPESH POPLI(Asst. professor)

DEPARTMENT OF MECHANICAL ENGINEERING

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Mangalpally (V) Ibrahimpatnam-501510 (R.R. Dist) T.S.

2016-19

BHARAT INSTITUTE OF ENGINEERING & TECHNOLOGY

(Approved by AICTE , Affiliated to J.N.T.University,HYD)

Mangalpally (V) Ibrahimpatnam-501510 (R.R. Dist) T.S.

CERTIFICATE

This Is To Certify That The Major Project Report Entitled Design And Fabrication Of Seed Sowing And Drilling Machine Is Being Submitted By **A.SHRAVAN-16E15A0302, CH.NAVEENCHARY-16E15A0303,S.LAXMAREDDY-16E15A0311**Respectively In Partial Fulfillment For The Award Of Degree Of Bachelor Of Technology In Mechanical Engineering Of Bharat Institute Of Engineering , Affiliated To Jawaharlal Nehru Technological University, And Is A Bonafide Work Carried Out By Them Under The Guidance Of **Dr.DIPESH POPLI**, Department of Mechanical Engineering, BIET, Hyderabad. The Result Embodied In This Has Not Been Submitted to Any Other Institute or University For The Award of Any Other Degree Or Diploma.

INTERNAL GUIDE **HEAD OF THE DEPARTMENT**

(Dr.Dipesh Popli) **(Dr.J.S.Soni)**

EXTERNAL EXAMINER **SIGNATUTRE OF PRINCIPAL**

ABSTRACT

The Basic Requirements For Small Scale Cropping Machines Are They Should Be Suitable For Small Farms, SimpleIn Design And Technology And Versatile For Use In Different Farm Operations. A Manually Operated Template RowPlanter Was Designed And Developed To Improve Planting Efficiency And Reduce Drudgery Involved In ManualPlanting Method. Seed Planting Is Also Possible For Different Size Of Seed At Variable Depth And Space BetweenTwo Seeds. Also It Increased Seed Planting, Seed/Fertilizer Placement Accuracies And It Was Made Of Durable AndCheap Material Affordable For The Small Scale Peasant Farmers. The Operating, Adjusting And MaintainingPrinciples Were Made Simple For Effective Handling By Unskilled Operators (Farmers).

Keyword:Seed, Sowing, Planting

This project work mapping with the programme out comes (POs): PO1,PO2,PO3,PO4,PO5,PO6,PO7,PO8,PO9,PO10,PO11,PO12 and programs specific outcomes (PSOs):PSO1,PSO2,PSO3,

CHAPTER- 7

CONCLUSION

Innovative Seed sowing equipment¡¦s has remarkable influence in agriculture. By using This innovative project of seed sowing equipment we can save more time required for Sowing process and also it reduces lot of laborer cost. It is very helpful for small scale Formersafter comparing the different method of seed sowing and limitations of the Existing machine, it is concluded that the this solar powered seed drilling machine can

a) Maintain row spacing and controls seed rate.

b) Control the seed depth and proper utilization of seeds can be done with less loss.

c) perform the various simultaneous operations and hence saves labor requirement

So as labor cost, labor time and also save lots of energy.

Hence it is easily affordable by farmers. So we feel that this project serves something Good to this world and we would like to present it before this prosperous world.

7.1 FUTURE SCOPE

1. Introduction of cutter in place of drill can be used as grass cutter equipment. Seed sowing machine is a device which helps in the sowing of seeds in the desired position hence assisting the farmers in saving time and money.
2. Using remote control machine can be made automatic
3. Addition of multi-hopper can be attached side by side for sowing of large farm
4. Water dripping unit could be included in seed sowing machine

A Major Project Report On

DEVELOPMENT OF INVESTMENT CASTING PROCESS FOR PRODUCTION OF TURBINE BLADE

Submitted To

Jawaharlal Nehru Technological University Hyderabad

In partial fulfillment of the requirements for

the award of the degree of

BACHELOR OF TECHNOLOGY

IN

MECHANICAL ENGINEERING

BY

R.AKHIL VARDHAN(15E11A0344)

M.MAHESH(15E11A0357)

J.RAKESH REDDY(15E11A0362)

MD.ZEESHAN UMER(15E11A0376)

Under The Guidance Of

Mr.N.Rajashekar
Asst.Professor.M.Tech (Mechanical Engineering).

DEPARTMENT OF MECHANICAL ENGINEERING

BHARAT INISTITUTE OF ENGINEERING AND TECHNOLOGY

(Affiliated to JNTUH Hyderabad, Approved by AICTE and Accredited by NBA)
Mangalpally(V) ,Ibrahimpatnam – 501510, Hyderabad.

2015-2019

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BHARAT INSTITUTE OF ENGINEERING & TECHNOLOGY

(Approved by AICTE , Affiliated to J.N.T.University,HYD)
Mangalpally (V) Ibrahimpatnam-501510 (R.R. Dist) T.S.

CERTIFICATE

This Is To Certify That The Project Report Entitled "**DEVELOPMENT OF INVESTMENT CASTING PROCESS FORPRODUCTION OF TURBINE BLADE**"Is Being Submitted

By

R.AKHIL VARDHAN (15E11A0344)

M.MAHESH (15E11A0357)

J.RAKESH REDDY (15E11A0362)

MA.ZEESHAN UMER (15E11A0376)

Respectively In Partial Fulfillment For The Award Of Degree Of Bachelor Of Technology In Mechanical Engineering Of Bharat Institute Of Engineering , Affiliated To Jawaharlal Nehru Technological University, And Is A Bonafide Work Carried Out By Them Under The Guidance of **Mr.N.Rajashekar**, Department Of **Mechanical Engineering**, BIET,Hyderabad. The Result Embodied In This Thesis Has Not Been Submitted To Any Other Institute Or University For The Award Of Any Other Degree Or Diploma.

INTERNAL GUIDE
(N.Rajashekar)

HEAD OF THE DEPARTMENT
(Dr.J.S.Soni)

EXTERNAL EXAMINER

SIGNATUTRE OF PRINCIPAL

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Abstract

Investment casting has been used to manufacture weapons, jewellery and art castings during the ancient civilization. Today, its applications include jewellery/art castings, turbine blades and many more industrial/scientific components. The present paper reviews various investigations made by researchers in different stages of investment casting and highlights their importance. The paper initially highlights the investigations made on pattern wax properties, effects of blending, additives and fillers. Different ways through which pattern properties (like surface finish, dimensional accuracy, etc.) could be enhanced by properly controlling the injection processing parameters are thoroughly discussed. The paper also looks into the investigations made to enhance the strength, surface finish, etc. of ceramic shell for ferrous alloys/non-ferrous alloys as well as superalloys in investment casting. Investigations made on incorporation of nylon fibers and polymer additions confirm that a ceramic shell reinforced with nylon fibers attains additional permeability compared to the one with polymer additions.Different investigations carried out on autoclave dewaxing and microwave dewaxing conclude that the wax properties are less altered with microwave dewaxing when compared to an autoclave dewaxing. Some recent investigations carried out on pouring and post-treatment operations are also discussed in the paper. The advent and emergence of rapid prototyping in investment casting are broadly exposed in the subsequent sections of the paper. Various aspects of rapid prototyping like rapid investment casting, rapid freeze prototyping, etc., along with their advantages are projected. The emerging areas of applications of rapid prototyping like dentistry, etc., are duly discussed.

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9. Conclusion

The most important benefits of the investment casting method:

1. It is possible to manufacture considerably more complex components than, for example, with machining.
2. The same product can be flexibly manufactured with several different materials
3. Combining investment casting with machining can lower your products price
4. Material loss in investment casting material is low
5. The use of 3D prints allows quick creation of protocols and brings agility to product development

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A

Major Project Report On

MODELING AND ANALYSIS OF HEAVY VEHICAL CHASSIS

Submitted To

Jawaharlal Nehru Technological University Hyderabad

In partial fulfillment of requirements for

the award of the degree of

BACHELOR of TECHNOLOGY

In

MECHANICAL ENGINEERING

BY

A. BHARATH KUMAR **16E15A0301**

K. RAVITEJA **16E15A0306**

Under The Guidance of

P. SRINIVAS KUMAR (Asst. professor)

DEPARTMENT OF MECHANICAL ENGINEERING

BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY

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ABSTRACT

Many types of pollution such as water pollution, noise pollution, thermal pollution and air pollution. Air pollution can be considered as one of the main hazard to the health of human being. The air pollution is due to the increasing number of vehicle use by human. When the number of vehicle increase, the usage of the petrol increase respectively. The lack of the source of the petrol makes the price increase by time to time. The emission from the vehicle makes the environment faces the air pollution that in critical level. Many steps need to reduce the number of the vehicle in other side to reduce the price of the petrol. Besides that also use to reduce the air pollution. The big number of vehicles in each country makes the prevention to reduce the number of vehicle difficult. So, the other prevention is increase the efficiency of the vehicle's engine. When the engine at the efficient level, the emission is at the low level and the most important is the usage of petrol is low. The prevention is reducing the weight of the body and chassis of each vehicle.

This project focused to reduce the usage of petrol by design and analysis the chassis to reduce the weight of the chassis of vehicle. At the same time, the global usage of the petrol also reduced.

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10. CONCLUSION

10.1 STATIC ANALYSIS CONCLUSION

The entire analysis is done with ansys software in which three different materials are considered. The deformation, stresses and strain values are compared at 12000N load. Stress values are less than yield point of materials. From the above three materials structural steel is the better material suitable for chassis which is having less deformation, stress and strain values compared to aluminum and stainless steel.

10.2 MODAL ANALYSIS CONCLUSION

From the modal analysis of structural steel material we observed frequencies of 36.409, 39.969, 40.997, 50.598 ,60..22 and 62.2 Hz. And also we observed the deforamtions at these frequencies

By using composite materials like aluminum alloy the weight of chassis is reduced four times less than structural steel material. But structural steel material is more economical than aluminum alloy, by taking this factor into consideration structural steel material is used for chassis.

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A Major Project Report On

DEVELPOMENT AND MANUFACTURING A SINGLE IMPRESSION OF INJECTION MOULD FOR VVPAT PRINTER COVER

Submitted To

Jawaharlal Nehru Technological University Hyderabad

In partial fulfillment of the requirements for

the award of the degree of

BACHELOR OF TECHNOLOGY

IN

MECHANICAL ENGINEERING

BY

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ABSTRACT

In today's scenario the applications of plastics is growing spirally high in the fields of Aeronautics, Ship Buildings, Marine Buildings, Automobiles and Domestic needs with various scope in all day to day activities.

Due to the development of high end computerizations with different software and manufacturing technologies. Plastic components with various designs and strength for respective applications have become very easy and parallelly developing a suitable moulds with various CAD/CAM facilities and conventional to non-conventional machines

The project involves developing a printer cover which is used in VVPAT. That involves the applications of CAD software's for developing the Product and Mould, and also CAM software used to generate tool path for manufacturing core and cavity inserts, and proving the mould with a suitable plastic material and injection moulding machine.

Taking the trail of the mould by suitable injection molding machines with the required plastic materials.

This project work mapping with the Program Outcomes (POs): PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12 and Program Specific Outcomes (PSOs): PSO1, POS2 & POS3.

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9. CONCLUSION

Therefore we develop Design for Printer cover used in voter verification paper audit trail (VVPAT) machine with the help of CAD and CAE software,

Because, in some areas Humidity is high. So, Paper is misleading its direction and struck the roll of paper to make problem. Hence due to the dimensional change in design paper moves only in given slot than misleading the direction and also paper roll revolve in smooth way.

In the future scope we designed another design of Printer cover in VVPAT. Here vents are placed at both sides of the printer cover for the heat exchange which is produced from the printer while continuous printing of ballots.

This Project Work addressed the Program Outcomes (POs): PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12 and Program Specific Outcomes (PSOs): PSO1, POS2 & POS3. These Program Outcomes (POs) and Program Specific Outcomes (PSOs) are attained by demonstrating the working model of the project.

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A MAJOR PORJECT ON

TWO POINT INCREMENTAL SHEET FORMING (TPIF) OF AEROSPACE COMPONENT MADE OF SS-304 STEEL

Submitted to

Jawaharlal Nehru Technological University Hyderabad

In partial fulfilment of the requirements for

the award of the degree of

BACHELOR OF TECHNOLOGY

IN

MECHANICAL ENGINEERING

BY

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No: DRDL/432/DPTT/PTDD/6/TRG Date: 25th Apr, 2019

CERTIFICATE

This is to certify that the project work entitled ***'Two Point Incremental Sheet Forming (TPIF) of Aerospace Component made of SS-304 Steel'*** is the bonafide record of work carried out at D.R.D.L, Hyderabad by **Sri. DAULAT BIYANI (Roll No. 15E11A0347)** and **Sri. S THRILOK GOUD (Roll No. 16E15A0310)** of **Department of Mechanical Engineering, Bharat Institute of Engineering and Technology** affliated to JNTU, Hyderabad, in partial fulfillment of the requirements for the award of the degree of **BACHELOR OF TECHNOLOGY** in **MECHANICAL ENGINEERING**.

This project work was carried out during the period **January 2019** to **April 2019**. During this project period, they were found to be sincere and their conduct was good.

25/4/19

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ABSTRACT

Incremental sheet forming (ISF) process is an advanced flexible manufacturing process to produce complex 3D products. Incremental forming technique is used producing sheet metal components without using punch and die. Conventional sheet metal forming processes involve high costs and lead time due to the design and manufacturing processes involved in it, the design for every individual component is unique, whereas in incremental forming we can manufacture different components over the similar fixture. The contemporary sheet metal industry employs forming methods which uses precise punch and dies to form components with precise tolerances. Incremental forming technique is used for producing sheet metal components in small batches. Two point incremental forming is a rapid forming process for forming the complex geometries with sharp edges. In this study experimental investigations on two point incremental forming of SS-304 alloy for forming the complex geometries with sharp corners and high geometrical accuracy. This process is carried out over CNC Machine using a complex fixture setup of TPIF for forming the sheet metal. Tool diameter, sheet thickness, feed rate, spindle speed, incremental depth are taken as the input parameters in this study. Study completes by manufacturing and achieving the actual geometry, geometrical accuracy with sharp edges over SS-304 sheets for forming the complex geometries in two point incremental forming (TPIF). This project work mapping with the Program Outcomes (POs): PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO12 and Program Specific Outcomes (PSOs): PSO1, POS2 & POS3.

Keywords Metal: Incremental forming, Dieless forming, Deforming tool

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6 CONCLUSIONS

6.1 CONCLUSIONS

A procedure for TPIF process has been developed by Tool path correction strategy with a partial die. A tool control algorithm that is a CNC program has been developed. The complex TPIF fixture is designed and fabricated based on the requirements for the operations to be conducted. In this work, the two point incremental forming behavior of stainless steel SS-304 sheet metal has been determined based on the effect of parameter selected for complex sharp edge part geometry. For this work the fixture with the degree of freedom and hemispherical form end tool used for forming is designed and fabricated. From the experiments the observation on surface roughness, measured thickness, wall angle are the output parameter were discussed and tabulated. The parameters are selected to perform the experimentation with the help of fabricated TPIF fixture over stainless steel-304 (SS-304). The experimental work should be performed for achieving the geometrical accuracy and sharp corner edges for complex geometry over the fixture through two point incremental forming.

1. Geometrical accuracy and surface finish are achieved by the degree of freedom at the pillars in TPIF fixture.
2. Increasing the spindle speed of the tool will increase the wall angle of the sheet, whereas reducing the feed rate and increasing the incremental depth will reduce the wall angle because the distortion and local plastic deformed region has lesser elastic energy stored.
3. The deviation between the measured wall angle and the actual wall angle .The deviations between the centers and the angles of the circles of the complex parts show that the overall accuracy of TPIF parts is higher.
4. The investigation also reveals that the fixture which is developed have 3 out of 9 degree of freedom needs to be kept free for the process.
5. The transition region between the inclined wall and the corner radius of the parts reveals that fracture in TPIF with partial die is not preceded by localized necking and that crack propagates under tensile stresses acting in stretching modes of deformation.
6. Accurate parts, sharp corners, complex geometries can be achieved in the TPIF process.

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A MAJOR PROJECT ON

DESIGN AND FABRICATION OF ROCKET NOZZLE AND FIXTURE

Submitted to

Jawaharlal Nehru Technological University Hyderabad

In partial fulfillment of the requirements for

the award of the degree of

BACHELOR OF TECHNOLOGY

IN

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ABSTRACT

In aerospace applications, most of the structural components mode of aluminium, magnesium, stainless steel alloys, because their low weight to high strength ratio. The quality and reliability requirements are stringent. Welding of this stainless steels is a challenging tasks. This project deals with the design aspects of welding fixture for rocket nozzle assembly which is used in rocket motor case. The welding fixture of nozzle casing assembly consists of fourteen parts which are to be assembled and is to be welded over it without ovality, distortions and other weld defects.

The material used for the manufacturing of all parts of welding fixture and nozzle casing is stainless steel. Modelling of all the parts of parts nozzle casing assembly and welding fixture is carried out in solid works 2015 and welding is carried out by tungsten Inert Gas welding.

This report highlights the design aspects of welding fixtures considering the quality and reliability requirements it highlights various important features of the fixtures such as backup, purging arrangement, spider mechanism , heat sink, clamping arrangements and collapsible system for ovality correction and also highlights the typical characteristics of stainless steel alloys from which nozzle casing assembly is made. This report also discusses the difficulties faced during design and welding of stainless steel components which are made up of thin rolled sheets.

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5. CONCLUSION

Quality of the weld mainly depends upon the design the design of fixture. Necessary care is to be taken about the factors discussed earlier to achieve good quality edge preparation, cleanliness, purging gas pressure and purging gas flow material, welding torch.

It is advantageous to have flexibility in design i.e., wherever it is feasible, all locating devices should permit some adjustment for changing locating dimension necessitated by design changes and engineering revisions or to compensate for expected weld distortion. In addition to this the fixture must be strong enough to withstand the mishandling during loading and unloading and the built up stresses from welding within the workpieces. They should be simply designed up stresses from welding within the workpiece. They should be simply designed to permit easy accessibility for components positioning and permit the welder to work from the most advantageous angle. Most of the welding defects can be minimized by taking care in design of fixture and controlling the process parameters.

In this project, we also discuss the influence of the power source, type of current, gas flow rate, electrodes, filer wire, TIG machines setting, arc penetration and defect free welds. To do these a thorough literature survey is carried out on various aspects of the proposed topic, in various peer-reviewed journals, patents, books and other research resources. All the necessary TIG welding principles, equipments parameters, shielding gases and tungsten electrodes for welding similar and dissimilar metals work have been explained.

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A Major Project Report On

MODELLING AND STRUCTURAL ANALYSIS OF AIRCRAFT WING

Submitted To

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(Approved by AICTE , Affiliated to J.N.T.University,HYD)

Mangalpally (V) Ibrahimpatnam-501510 (R.R. Dist) T.S.

CERTIFICATE

This Is To Certify That The Project Report Entitled "MODELLING AND STRUCTURAL OF AIRCRAFT WING Is Being Submitted By P.VARUN RAJ, G.VAMSI KRISHNA, Y.VINOD. Bearing Roll Numbers 15E11A0373, 15E11A0372, 15E11A0375 Respectively In Partial Fulfillment For The Award of Degree of Bachelor of Technology In Mechanical Engineering of Bharat Institute of Engineering , Affiliated To Jawaharlal Nehru Technological University, And is A Bonafide Work Carried out By Them Under The Guidance of B.MOUNIKA NAIDU, Department of Mechanical Engineering, BIET, Hyderabad. The Result Embodied In This Thesis Has Not Been Submitted To Any other Institute or University for The award of any other Degree or Diploma.

INTERNAL GUIDE
(B.MOUNIKA NAIDU)

HEAD OF THE DEPARTMENT
(Dr.J.S.Soni)

EXTERNAL EXAMINER

SIGNATUTRE OF PRINCIPAL

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एमएसएमई-टूल रूम
MSME - TOOL ROOM
केन्द्रीय उपकरण अभिकल्प संस्थान
CENTRAL INSTITUTE OF TOOL DESIGN
(भारत सरकार की सोसाइटी - सूक्ष्म, लघु और मध्यम उद्यम मंत्रालय)
(A Govt. of India Society - Ministry of Micro, Small & Medium Enterprises)
स्थापित : 1970
ESTD : 1970

संदर्भ : CITD/CAD/ CAM/PW/18-19
ref. :

दिनांक : 12.04.2019
Date : .....

CERTIFICATE

This is to certify that this Project work entitled **"MODELLING AND STRUCTURAL ANALYSIS OF AIRCRAFT WING"** is the bonafide work done by

STUDENT NAME	ROLL NO
POTHULA VARUN RAJ	15E11A0373
GADI VAMSI KRISHNA	15E11A0372
YARAKALAPUDI VINOD	15E11A0375

In the Partial fulfillment of Bachelor of Technology in Mechanical Engineering from **BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY, MANGALPALLY, HYDERABAD;** course and Project work done under our guidance and supervision.

CENTRAL INSTITUTE OF TOOL DESIGN * HYDERABAD * CAD / CAM AESL & LCA

G. SANATH KUMAR
Dy. Director (Trg.)

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ABSTRACT

Aircraft wing is the main component which produces LIFT required for the Aircraft to take-off. So, the maximum amount of load will be acted upon WING section of an aircraft. So, the WING must be designed in such a way that it can withstand the load acting upon it. For this withstanding capability the internal parts i.e. STRINGERS, RIBS etc., must withstand the load acting upon the WING. The material that is required to withstand this capability must withstand the maximum amount of load acting on the WING.

So, in order to know the withstanding capacity of the material used, STRESS analysis were made upon two different materials CFRP[Carbon Fiber Reinforced Polymer] and Titanium alloy , as these are most preferred materials used to construct the major portion of WING. Therefore the STRESS analysis, Maximum deformation analysis were made on the parts made up of these materials and the results are determined.

Index Terms: Stress, Strain, Airfoil, Wing.

This project work mapping with the Program Outcomes (POs): PO1, **PO2, PO3, PO4,** PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12 and Program Specific Outcomes (PSOs): PSO1, POS2 & POS3.

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10. CONCLUSION

Based on the data obtained from the above analysis we can say that Titanium alloy is more preferable for internal structures as the density of Titanium alloy has more density than the CFRP.
CFRP is more preferable is for external structures as the maximum stress that CFRP allows is more than that of the Titanium alloy.

This Project Work addressed the Program Outcomes (POs): PO1, PO2, PO3, PO4, PO5, **PO6, PO7, PO8**, PO9, PO10, PO11, PO12 and Program Specific Outcomes (PSOs): PSO1, POS2 & POS3. These Program Outcomes (POs) and Program Specific Outcomes (PSOs) are attained by demonstrating the working model of the project.

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A Major Project On

DESIGN AND DEVOLOPMENT OF BLANKING AND PIERCING TOOL FOR THE ALUMINIUM WASHER

Submitted to

Jawaharlal Nehru Technological University Hyderabad

In partial fulfillment of the requirements for

the award of the degree of

BACHELOR OF TECHNOLOGY

IN

MECHANICAL ENGINEERING

BY

P.SAI KUMAR **(15E11A0365)**

P. VAMSHI KRISHNA **(15E11A0371)**

P. JAYANTH **(15E11A0352)**

Under The Guidance Of

G. Madhu Babu , Asst. professor

DEPARTMENT OF MECHANICAL ENGINEERING

BHARAT INISTITUTE OF ENGINEERING AND TECHNOLOGY

(Affiliated to JNTUH Hyderabad, Approved by AICTE and Accredited by NBA)

Mangalpally(V) ,Ibrahimpatnam – 501510, Hyderabad.

2015-2019

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BHARAT INSTITUTE OF ENGINEERING &TECHNOLOGY

(Approved by AICTE , Affiliated to J.N.T.University,HYD)
Mangalpally (V) Ibrahimpatnam-501510 (R.R. Dist) T.S.

CERTIFICATE

This is to certify that the project report entitled "**DESIGN AND DEVOLOPMENT OF BLANKING AND PIERCING TOOL FOR ALUMINIUM WASHER** " is being submitted by **P.SAIKUMAR, P.VAMSHI KRISHNA, P. JAYANTH** bearing roll numbers **15E11A0365, 15E11A0371, 15E11A0352** respectively in partial fulfillment for the award of degree of bachelor of technology in mechanical engineering of Bharat institute of engineering , affiliated to Jawaharlal Nehru technological university, and is a Bonafede work carried out by them under the guidance of **Mr.G.MADHU BABU** department of mechanical engineering, biet, hyderabad. the result embodied in this thesis has not been submitted to any other institute or university for the award of any other degree or diploma.

INTERNAL GUIDE
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HEAD OF THE DEPARTMENT
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EXTERNAL EXAMINER

SIGNATUTRE OF PRINCIPAL

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ABSTRACT

Press tools are used to produce a particular component in large quantity, out of sheet metals where particular component achieved depends upon press tool construction and its configuration .he different types of press tool constructions leads to different operations namely blanking , bending, piercing ,forming, drawing, cutting off, parting off, embossing, coining, notching, shaving, trimming, curling etc.

Generally, metals having thickness less than 6mm is considered as strip. Blanking is one of the sheet metal operations where we produce flat components of prerequisite shape in blanking the required shape periphery is cut and cut-out piece is called blank. The press tool used is for blanking operation is called blanking tool, if piercing operation it is piercing tool and so on based on operation that we perform. The application of press operations are widely used in many industries like food processing, packing, defense, textile, automobile, aircraft and many apart from manufacturing industry. In this connection an attempt is made on to learn the press tool design, materials , manufacturing used for press tool and calculations involved in it . in this work a real time design of a simple blanking press tool and manufacturing of a prototype is made along with analysis where the output is a circular piece having diameter of 20mm. the press machine is of mechanical type. We use aluminum 1mm thick sheet to punch washers of 20mm inner dia and 30mm outer diameter.

This project work mapping with the Program Outcomes (POs): PO1, PO2, PO3, PO4, PO5, **PO6, PO7, PO8**, PO9, PO10, PO11, PO12 and Program Specific Outcomes (PSOs): PSO1, POS2 & POS3.

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11. CONCLUSION & FUTURE SCOPE

In this project a die punch for blanking and Piercing operations is designed and analyses for component. The theoretical calculations were done for calculating cutting force, fatigue life and stressed. The main objective of the project is to improve productivity and reduce production cost. The existing cycle time for blanking and Piercing is approximately four minutes which manufacturing cost is around six rupees. After implementation of this project we can expect the cycle time will be 30 to 40 seconds and cost will be around 1.5 to 2 rupees.

Thus, a prototype blanking tool is fabricated and its functions have been demonstrated and explained. The tool could be utilized in mass u produce identical parts with good geometrical tolerances.

By choosing appropriate tool steels for die, punch and other parts, the tool could increase for maximum range. It has the capacity up to blank the sheet up to thickness of 1mm of mild steel, aluminum and zinc. Etc.

Our tool could use in pressing for medium production quantity up to 8,000 to 12,000 units.

By using the high-grade die sets quantity can up to increase over 25000 units.

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A Major Project Report On

DESIGN AND ANALYSIS OF CERAMIC COMPOSITE RADOME

Submitted To

Jawaharlal Nehru Technological University Hyderabad

In partial fulfillment of the requirements for

the award of the degree of

BACHELOR OF TECHNOLOGY

IN

MECHANICAL ENGINEERING

BY

MOHAMMED BAKHTIYAR UZ ZAMAN (15E11A0346)

MOHD IMRAN (15E11A0351)

T. RAKSHIT REDDY (15E11A0378)

MOHAMMED ASIM (16E15A0308)

Under The Guidance Of

Dr. JANAKI SHARAN SONI

B.E (Mechanical), M.E (Production), Ph.D, Professor, HOD.

DEPARTMENT OF MECHANICAL ENGINEERING

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2015-2019

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CERTIFICATE

This Is To Certify That The Project Report Entitled "...**DESIGN AND ANALYSIS OF CERAMIC COMPOSITE RADOME**..." Is Being Submitted By ...**MOHAMMED BAKHTIYAR UZ ZAMAN, MOHD IMRAN T. RAKSHIT REDDY, & MOHAMMED ASIM**...Bearing Roll Numbers...**15E11A0346, 15E11A0351, 15E11A0378 & 16E15A0308**.... Respectively In Partial Fulfillment For The Award Of Degree Of Bachelor Of Technology In Mechanical Engineering Of Bharat Institute Of Engineering , Affiliated To Jawaharlal Nehru Technological University, And Is A Bonafide Work Carried Out By Them Under The Guidance of ...**D. CHANDRASHEKAR**..., Department Of Mechanical Engineering, BIET, Hyderabad. The Result Embodied In This Thesis Has Not Been Submitted To Any Other Institute Or University For The Award Of Any Other Degree Or Diploma.

INTERNAL GUIDE
(D. CHANDRASHEKAR)

HEAD OF THE DEPARTMENT
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EXTERNAL EXAMINER

SIGNATUTRE OF PRINCIPAL

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ABSTRACT

Radomes (Radar Domes) are defined as electromagnetic windows, consisting of covers or housings that serve to protect electronic equipment from damage and environmental conditions. They are required to have necessary structural strength and are not to exceed specified maximum deterioration in electromagnetic performance.

Radome design is a quantitative description of the radome configuration and composition. In a specific application, the radome shape and its materials are usually chosen to satisfy structural and environmental requirements. It is very difficult to make an exact analysis for the structural design of a radome because of its irregular shape, non-uniform distribution of pressure, non-isotropocity of radome material and factors; such as impact loads thermal loads. The analysis of radome made on the basis of simplifying assumptions or by rigorous methods, can be achieved only by Finite Element Analysis. The results of any analysis should be verified by structural tests.

In present project, design and analysis of a Parabolic radome using ANSYS is carried out.

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CHAPTER -9

CONCLUSION AND SCOPE FOR FURTHER WORK.

Conclusion:

Antenna head unit is modeled using Creo and static analysis is carried out by FEA method using ANSYS and the conclusion are listed below.

i. The maximum deformation obtained for hydrostatic pressure is 5.3284e-8m which is permissible.
ii. The maximum equivalent stress obtained for the radome is 159.66Pa.
iii. The maximum equivalent elastic strain for the radome is 6.3921e-9

Future Scope.

1. Dynamic analysis can be carried out to check the structures performance under dynamic loads.
2. To improve the electrical performance of the radome without compromising the mechanical properties. Hybrid radomes can be considered in futuristic radome developed.
3. Optimization can be done to reduce the size of Antenna head unit.

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A

MAIN PROJECT REPORT

On

SPRAYING OF FERTILIZERS WITH UNMANNED AERIAL VEHICLE (UAV)

A Thesis Work Submitted to JNTUH in Partial Fulfilment

of the Requirements for the Award of

BACHELOR OF TECHNOLOGY

IN

MECHANICAL ENGINEERING

By

Y SWETHA	(15E11A0302)
E SATISH KUMAR	(15E11A0331)
K SUDHEER KUMAR	(15E11A0336)
T YAGNA SAI KUMAR	(15E11A0342)

UNDER THE ESTEEMED GUIDANCE OF

MR. A. HARISH KUMAR

ASSISTANT PROFESSOR

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BHARAT INSTITUTIONS

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BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Affiliated to JNTUH Hyderabad, Approved by AICTE and Accredited by NBA)

Mangalpally (V) ,Ibrahimpatnam – 501510, Hyderabad.

(2015-2019)

DEPARTMENT OF MECHANICAL ENGINEERING

BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Affiliated to JNTUH Hyderabad, Approved by AICTE and Accredited by NBA)

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(2018-2019)

BHARAT INSTITUTIONS

CERTIFICATE

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Y SWETHA	*(15E11A0302)*
E SATISH KUMAR	*(15E11A0331)*
K SUDHEER KUMAR	*(15E11A0336)*
T YAGNA SAI KUMAR	*(15E11A0342)*

in partial fulfilment of the requirement for the award of BACHELOR OF TECHNOLOGY IN MECHANICAL ENGINEERING, under the guidance and supervision of Mr.A. HARISH KUMAR,, during the academic year 2018-2019.

The result embodied in this project report has not been submitted to any other university/institute for the award of any degree.

Internal Guide:

A. HARISH KUMAR

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Head of the Department:

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Professor,

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Viva-voce held on.....

Internal Examiner

External Examiner

ABSTRACT

Optimal consumption of fertilizers in farming plays a major role in deciding the quality and yield of crops. India has 60.45 % of land under cultivation and 118.7 million farmers as of 2015. Current hand held fertilizer spreaders spray fine droplets of fertilizers and provide inconsistent coverage over the crops which is harmful for farmers as they consume tiny amounts of these fertilizers that will accumulate over time and lead to intoxication. Hence, there is a need to address this problem by improving the efficiency of the process. Present day drone technology is reliable enough to address his technical challenge.

Chapter-9

CONCLUSION AND FUTURE SCOPE

9.1 FUTURE SCOPE:

The future of UAV for agriculture use has already piqued the interest of companies looking to add GPS-referenced, high-resolution mapping and imagery solutions to their business portfolio. Here are some examples of potential future uses for this technology:

- Surveying crops.
- Monitoring diseases.
- Determining precision application rates of pesticides and fertilizers.
- Monitoring Irrigation.
- Planting and harvest crop

9.2 CONCLUSIONS

In this paper we have described an architecture based on unmanned aerial vehicles (UAVs) that can be employed to implement a control loop for agricultural applications where UAVs are responsible for spraying chemicals on crops. Important savings (20% - 90%) in terms of water, chemical treatments and labor are expected. Since pesticides are sprayed from lower altitude, environmental pollution can be reduced. Flight regulations are an issue but UAVs, for most agriculture applications, have low weight and fly at low altitudes over uninhabited and private areas.

DRONES FOR SUPPLYING THE MEDICAL AID IN REMOTE LOCATIONS

A project report is submitted to

Jawaharlal Nehru Technological University Hyderabad

In partial fulfillment of the requirements for

The award of the degree of

BACHELOR OF TECHNOLOGY

IN

MECHANICAL ENGINEERING

By

P.ABHILASH (15E11A0304)

K.HEMANTH ADITYA (15E11A0310)

B.UMA VENKAT REDDY (15E11A0338)

GUNDA YASHWANTH (15E11A0343)

Under the guidance of

Mr.M.Vidyasagar

Department of mechanical engineering

BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY

Ibrahimpatnam - 501 510, Hyderabad, Telangana

2018-2019

BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY

Ibrahimpatnam - 501 510, Hyderabad, Telangana.

DEPARTMENT OF MECHANICAL ENGINEERING

CERTIFICATE

This is to certify that the project report entitled **DRONES FOR SUPPLYING THE MEDICAL AID IN REMOTE LOCATIONS** being submitted by

P.ABHILASH (15E11A0304)

K.HEMANTH ADITYA (15E11A0310)

B.UMA VENKAT REDDY (15E11A0338)

GUNDA YASHWANTH (15E11A0343)

in partial fulfillment for the award of the Degree of Bachelor of Technology in Mechanical engineering to the Jawaharlal Nehru Technological University, Hyderabad is a record of bonafide work carried out under my guidance and supervision.

The results embodied in this project report have not been submitted to any other University or Institute for the award of any Degree or Diploma.

Guide:

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Assistant professor,

Dept. of mechanical engineering,

Bharat institute of engineering and technology,

Ibrahimpatnam – 501 510, Hyderabad.

Head of the Department:

Dr. J. S Soni,

professor,

Dept. of mechanical engineering,

Bharat institute of engineering and technology,

Ibrahimpatnam – 501 510, Hyderabad.

Internal Examiner:

External Examiner:

ABSTRACT

In this project, the use of current drone technologies is reviewed, optimized, and used to demonstrate the feasibility of medical supply delivery to remote areas via UAV (unmanned aerial vehicle). This project focuses on the design of a biocompatible payload and a modified drone to accomplish medical supply delivery to remote areas. The design of the payload and UAV must consider the safety of medical supplies, medical equipment throughout the duration of the delivery various designs were implemented in a prototype to create a demonstration of concept feasibility. Each design has its own parameters and components that collectively make up the payload and drone delivery system. This research paper describes, analyzes and reports experimental results of the final drone delivery and payload design, as well as the steps taken throughout the duration of the project.

Drones can be used to gather and deliver medical samples, supplies, and medicine to remote or otherwise unreachable areas in a disaster zone. Drones can also use infrared sensors to detect humans by their heat signature which is helpful in search and rescue scenarios.

6. CHAPTER

CONCLUSION

Overall, the basis of this project was to apply engineering principles and design concepts to drones, medicine and biology to improve healthcare accessibility.

Through the design of a UAV, arm and payload, the transportation of medical and biological components is feasible. The use of UAVs for medical supply delivery will alleviate suffering and provide many citizens with the chance to recover from illnesses. In fact, research shows that "70.3% of people who need hospitalization had failed to be hospitalized because of the economic difficulty that doing so incurs". Medical supply delivery will significantly reduce the number of people who need to be hospitalized and, therefore, reduce the overall percentage and cost of medical services that comes with hospitalization. In summary, there are many different medical needs across the remote areas of, therefore, to adequately address the various needs there must be a medical drone network implemented to provide various supplies to people in remote areas. These supplies include blood, medicine, and portable medical equipment. Implementing a medical delivery system via UAVs would be helpful to an enormous magnitude of people.

In conclusion, this project provided insight on the feasibility of the goals set out to be accomplished. The team successfully designed and built a drone with an arm attachment to enable the transportation of medical supplies. Thus, the design and testing of the semi-automatic UAV successfully demonstrated the concept feasibility of implementing medical supply delivery drones in the healthcare system.

DEVELOPMENT OF THERMOACOUSTIC REFRIGERATION

A Project Report Submitted to

Jawaharlal Nehru Technological University Hyderabad

In partial fulfillment of the requirements for the award of the degree of

BACHELOR OF TECHNOLOGY
IN
MECHANICAL ENGINEERING

By

K.KONDAL REDDY	**(16E15A0314)**
L.DEEPAK	**(16E15A0315)**
P.HARISH	**(16E15A0316)**

Under the guidance of

Mr.K.Raju

B.E (Mechanical), M.E, Assistant Professor

DEPARTMENT OF MECHANICAL ENGINEERING

BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Affiliated to JNTUH Hyderabad, Approved by AICTE & Accredited by NAAC)
Ibrahimpatnam - 501 510, Hyderabad

2018-2019

DEPARTMENT OF MECHANICAL ENGINEERING

BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Affiliated to JNTUH Hyderabad, Approved by AICTE & Accredited by NAAC)
Ibrahimpatnam - 501 510, Hyderabad

Certificate

This is to certify that the project work entitled "Development of thermoacoustic refrigeration" is the bonafide work done

By

K.KONDAL REDDY	**(16E15A0314)**
L.DEEPAK	**(16E15A0315)**
P.HARISH	**(16E15A0316)**

in the Department of Mechanical Engineering Engineering, BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY, *Ibrahimpatnam is submitted to Jawaharlal Nehru Technological University, Hyderabad in partial fulfillment of the requirements for the award of B.Tech degree in Mechanical Engineering during 2016-2019.*

Guide:

Mr.K.Raju
Asst.Professor
Dept of Mechanical,
Bharat Institute of Engineering and Technology,
Ibrahimpatnam – 501 510, Hyderabad.

Head of the Department:

Dr.J.S Soni
Professor
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Ibrahimpatnam – 501 510, Hyderabad.

Viva-Voce held on..... 31/5/19 .....

Internal Examiner

External Examiner

ABSTRACT

Today's refrigerators works on the vapor compression cycle which uses a compressor, condenser, an expansion valve and an evaporator. It uses CFC's or ammonia as its refrigerants. To avoid the pollution created by this refrigerator's residue, a new innovation is needed with the better efficiency. Thermo acoustic refrigerator is an effective example of the same.

With the use of a stack, that is some closely spaced metal plates, as they have a higher capacity to store heat compared to air ,a temperature gradient is created that helps in heat exchanger with the refrigerated space using heat , that ultimately provides cooling effect in the refrigerated space. It works on two principles, first, on acoustics and second on thermodynamics i.e. it transfers heat by using oscillations of the sound waves produced.

It is effective in reducing the pollution created by normal refrigerators since this refrigerator consists of some gas such as helium or xenon that is eco-friendly gas. It is better also because it has no moving parts in it that undergoes any wear or tear.

Due to these advantages thermo acoustic refrigerator can prove to a better alternative for the normal refrigerators in near future.

This Project Work Quality is measured in terms of consideration to factors including, but not limited to, environment, safety, ethics, cost, type (application, product, research, review etc.) and standards. This project work mapping with the Program Outcomes (POs): **PO1**, PO2, **PO3**, **PO4**, PO5, **PO6**, **PO7**, **PO8**, **PO9**, **PO10**, **PO11**, **PO12** and Program Specific Outcomes (PSOs): PSO1, POS2 & POS3.

CHAPTER 14

CONCLUSION

Thermoacoustic engines and refrigerators were already being considered a few years ago for specialized application, where their simplicity, lack of lubrication and their use of environmentally harmless working fluids were adequate compensation for their lower efficiencies. This latest breakthrough, coupled with other developments in the design of high power, single frequency loud speakers and reciprocating electric generators suggests that thermoacoustics may soon emerge as an environmentally attractive way to power hybrid electric vehicles, capture solar energy, refrigerate food, air condition buildings, liquefy industrial gases and serve in other capacities. In future let us hope that these thermoacoustic devices which promise to improve standard of living while helping to protect the planet by completely eliminating the use of refrigerants.

Thermo acoustic cooling has been achieved quite simply without any refrigerants or use of a compressor under atmospheric conditions. Although the temperature drop below ambient was small, the clean technology poses as a potentially attractive alternative to the conventional system in view of the increasing concern over the degradation of the environment caused by refrigerants from the cooling industries. Further studies into the control and reliability of thermo acoustic systems could make them comparable to the available systems even for specific purposes if not for general applications.

Small scale construction of simple thermoacoustic systems are possible using common materials which are cheap and easily available. Development of such systems to higher efficiencies can be done by doing studies on the materials and arrangements of components like stack materials and optimum arrangements to get maximum output.

DESIGN AND ANALYSIS OF THE DEEP DRAW TOOL FOR AL CONTAINER

A Project Report Submitted to

Jawaharlal Nehru Technological University Hyderabad

In partial fulfillment of the requirements
for the award of the degree of

BACHELOR OF TECHNOLOGY
IN
MECHANICAL ENGINEERING

By

P.Venkatesh **(15E11A0340)**
J.Narendar **(16E15A0313)**

Under the guidance of

Mr.Pradeep Chavan
Asst. Professor, B.Tech,Mechanical Engineering

DEPARTMENT OF MECHANICAL ENGINEERING
BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY
(Affiliated to JNTUH Hyderabad, Approved by AICTE & Accredited by NAAC)
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2018-2019

DEPARTMENT OF MECHANICAL ENGINEERING

BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Affiliated to JNTUH Hyderabad, Approved by AICTE & Accredited by NAAC)
Ibrahimpatnam - 501 510, Hyderabad

Certificate

This is to certify that the project work entitled "Design and Analysis of the Deep Draw Tool For Al Container"is the bonafide work done

By

P.Venkatesh	**(15E11A0340)**
J.Narendar	**(16E15A0313)**

in the Department of Mechanical Engineering Engineering.BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY, Ibrahimpatnam is submitted to Jawaharlal Nehru Technological University, Hyderabad in partial fulfillment of the requirements for the award of B.Techdegree inMechanical Engineeringduring 2015-2019.

Guide:

Mr . Pradeep Chavan
Asst. Professor
Dept of Mechanical,
Bharat Institute of Engineering and Technology,
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Dr.J.S Soni
Professor
Dept of Mechanical,
Bharat Institute of Engineering and Technology,
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Viva-Voceheld on.....

Internal Examiner **External Examiner**

ABSTRACT

Deep drawing is a significant metal forming process used in the sheet metal forming Operation .From this process , complex shapes can be manufactured with fewer defects. Deep drawing process has different effectible process parameter from which an optimum level of parameter can be identified so that an effective final product with required mechanical properties will be obtained. The present work is to evaluate the formability of different metal sheet using deep drawing process. In which effects of different sheet and die/blank holder angle on deep drawing process observed for sheet metal of 0.8mm of SS304 and brass and 0.9mm of Al . The Experiments were performed by designing the deep drawing tool such as die, blank holder, and punch. In addition the numerical simulation are performed for deep drawing of cylindrical cups using three level of previously mentioned. Punch forces and dome height are evaluated for all the condition . From this work ,the formability for different metal sheet is observed for angular geometries of deep drawing tools.

This Project Work Quality is measured in terms of consideration to factors including, but not limited to, environment, safety, ethics, cost, type(Application, Product, research, Review etc.) and standards. This project work mapping with the Program Outcomes (POs): PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11, PO12 and Program Specific Outcomes (PSOs): PSO1, POS2 & POS3.

CHAPTER-9

CONCLUSION AND FUTURE SCOPE

In This Project I have Designed the Deep Drawing Tool for Aluminium cup and Structural analysis is done and results are shown above.

I have done stress. strain and the maximum deflection analysis using ANSYS on deep drawing tool made up of MILD STEEL.As the result show ,Mild steel has more Strength to with stand higher loads.

I have done Analysis on Mild steel and is suitable for mass Production.

FUTURE SCOPE:

Our Understanding of sheet metal forming process and materials is well matured, yet the level of industrial implementation lags behind current capabilities. There is a need for academics to develop pragmatic solution that are accessible to industrial partners while embedding the process knowledge in new adaptive machine control system.

ANALYSIS OF WATER PLASMA ARC CUTTING FOR MILD STEEL AND STAINLESS-STEEL PLATES

A Project Report Submitted to

Jawaharlal Nehru Technological University Hyderabad

In partial fulfillment of the requirements
for the award of the degree of

BACHELOR OF TECHNOLOGY
IN
MECHANICAL ENGINEERING

By

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Certificate

This is to certify that the project work entitled "Analysis Of Water Plasma Arc Cutting For Mild Steel And Stainless Steel Plates" is the bonafide work done

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ABSTRACT

This work is about the study and analysis of the plasma arc machine for its applicability and adaptability for cutting of mild steel and stainless steel plates of various thicknesses. For making of this work plasma arc machine of prescribed features have been selected and in addition mild steel pieces of size 150mm x150mm x 5mm and 150mm x150mm x10mm and 150mm x 150mm x 15mm were taken. And stainless steel of 50mm x 150mm x 5mm taken. At first the machine is conditioned for cutting process by suitable means of fluids and parts.

For this work Distilled water and acetone were chosen by 50:50 (v/v) and fed to the cutting torch. Actually methanol has to be used for this purpose however because of non-availability and non-affordability a similar kind of liquid acetone is used. Next the M.S. and S.S. plates are cleaned enough to making cutting. As the power input and output must be same based on this the voltage, current and resistance within the system are calculated after the initiation of cutting. In addition to this the angle of torch, direction of cutting, shielding gas flow rate, time for setting, holding, cutting, length of cut against time all these are recorded.

By applying suitable means of formulae analysis is done. At the end the material removal rate, time took for cut, angle of torch, voltage, current, resistance, hardness at various locations, roughness of cut were calculated for the purpose of further investigation and optimization of parameters. At the same time the changes that took place in the work piece were found such its change in hardness.

As plasma arc is mainly intended for making intricate holes but the present work is focused on cutting using the plasma arc process. So by default is adaptability has to be justified. This work has made an arena by plotting control charts. At the end the results and further scope discussed.

CHAPTER 5
CONCLUSIONS

Even though cutting process took place successfully, this process can be further improved in terms of following.

- Roughness reduction
- Reduction in Power Consumption
- Improvement of surface finish
- Improvement of Material Removal Rate

All these are achievable if the process parameters are optimized; hence there is a lot of scope in this regard for further development and enrichment.

The scope of the present paper was the experimental study of the water plasma arc cutting in order to identify the process parameters that influence the most the quality characteristics of the cut. Four process parameters were examined, namely the cutting speed, the cutting current, the plasma gas pressure and the distance of the plasma torch from the work piece surface (cutting height).

The quality characteristics that were assessed included the surface roughness, the heat affected zone and the iconicity of the cut geometry. Using design of experiments and analysis of variance, it was found that the surface roughness and the iconicity are mainly affected by the cutting height, whereas the heat affected zone is mainly influenced by the cutting current.

DEVELOPMENT OF UNMANNED AERIAL VEHICLE FOR LANDMINE DETECTION

A Project Report Submitted to

Jawaharlal Nehru Technological University Hyderabad

In partial fulfillment of the requirements
for the award of the degree of

BACHELOR OF TECHNOLOGY
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This is to certify that the project work entitled "Development of unmanned aerial vehicle for landmine detection" is the bonafide work done

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ABSTRACT

Mine detection using a surveillance drone is a modern conceptual prototype, which has been designed to detect landmines. Landmines were primarily used to create defensive and tactical barriers during the Second World War. They are still very much employed in large quantities in countries such as Afghanistan, Korea. A lot of these landmines still go undetected, increasing the death rate and creating havoc on the surroundings. The prototype developed helps us to detect a landmine using a flying drone. The prototype has a quadcopter, which has a mine detector mounted on it. This utilizes two different modes of detection, which have a induction type metal detector. These are extensively used in aiding this whole operation. The location of the mine can be traced back by the GPS and the detected location can be transmitted using the GSM module. The drone frame is made from the e-wastes, so that we can easily reduce the pollution and we can recycle the waste by manufacturing frames. There is a lot of untapped potential and scope of improvement for this prototype in the future. In this paper, we have successfully determined process of making a prototype on a mine detector that performs functions of vested interest towards the military and commercial organizations.

This Project Work Quality is measured in terms of consideration to factors including, but not limited to, environment, safety, ethics, cost, type (application, product, research, review etc.) and standards. This project work mapping with the Program Outcomes (POs): **PO1**, PO2, **PO3, PO4**, PO5, **PO6, PO7, PO8, PO9, PO10, PO11, PO12** and Program Specific Outcomes (PSOs): PSO1, POS2 & POS3.

CHAPTER-10

CONCLUSION AND FUTURE SCOPE

10.1 FUTURE SCOPE

The future of UAV for miltary use has already have the interest of companies looking to add GPS-referenced, high-resolution 3d mapping and advanced automatic tracking. Here are some examples of future uses for this technology:

- Self monitoring.
- Detection of other drone in any climate
- Self detonation.
- Neutralize threats.
- Detection range more than 50 km.

10.2 CONCLUSIONS

In this paper we have described an architecture based on unmanned aerial vehicles (UAVs) that can be employed to implement for an military applications where UAVs are made with e-wastes as a material. We used glass fiber with plastic resin as a drone frame material, we designed the Alien type frame in autocad and analyzed in ansys.

By using e-waste management we can easily recycle them environmental pollution can be reduced.

As there are several landmines are hidden inside the ground. It is difficult to detect the landmines with manual detection technique so it is very easy to detect the landmine from the aerial metal detection technique. We made a prototype which is low cost landmine detecting drone.

STUDY OF WELDING CHARACTERISTICS OF STAINLESS STEEL USING WATER PALSMA ARC WELDING

A Project Report Submitted to

Jawaharlal Nehru Technological University Hyderabad

In partial fulfillment of the requirements

for the award of the degree of

BACHELOR OF TECHNOLOGY

In

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Internal Examiner

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ABSTRACT

This project is to make plasma arc welding of stainless steel plates of various thickness. For that the edge preparation of the plates is done by filing the edges of the pieces with 45 degrees inclination. Later the plasma arc machine is make ready by filling the torch with distilled water and acetone on 50:50 volume by volume basis. This is further continued during compete welding processes. While doing welding the voltage, current and resistance are generated were recorded and found. And in addition the time required to weld, against length of tool travel for weld recorded. All these are analyzed for finding the interrelationships among the parameters. Later the hardness, microstructure were derived. After that the testing is done for knowing the weld strength and defects present if any. The hardness is found using brinnel's hardness machine. And the testing is done in two ways. They are Non destructive testing and destructive testing. In the non destructive testing Radiographic testing and Die penetrate testing were used. And in destructive testing tensile test is used.

CHAPTER 5

CONCLUSIONS

By optimizing the working parameters of the welding the adaptability and applicability can be improved further. It is also evident that this kind of welding can yield high hardness weld joints with high level of accuracy. And the initial and operating costs can be further reduced for the desired output by optimizing the parameters involved in the plasma arc welding process.

A Major Project Report On

FINITE ELEMENT ANALYSIS OF ROCKET MOTOR

Submitted To

Jawaharlal Nehru Technological University Hyderabad

In partial fulfilment of the requirements for
the award of the degree of

BACHELOR OF TECHNOLOGY

IN

MECHANICAL ENGINEERING

BY

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GATTUPALLI JAGADEESH REDDY **(15E11A0312)**

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In partial fulfillment for the award of the Degree of Bachelor of Technology indepartment of mechanical engineering to the Jawaharlal Nehru Technological University,Hyderabad is a record of bonafied work carried out under my guidance and supervision.

The results embodied in this project report have not been submitted to any other Universityor Institute for the award of any Degree or Diploma.

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Dr.J.S.SONI,M.Tech,Ph.D

EXTERNAL EXAMINER

SIGNATUTRE OF PRINCIPAL

ABSTRACT

Rocket motors are propulsion devices for both satellite launchers and missiles, which require guidance or steering to fly along a commanded trajectory and to compensate for flight disturbances. Structurally, a solid rocket motor consists of the solid propellant grain, the liner whose primary purpose is to provide an adhesive bond between the propellant grain and the insulation which provides thermal protection to the case from combustion products, the motor case which structurally supports the propellant grain, the igniter which ignites the grain, and the nozzle which helps in providing the desired thrust. In many solid rocket motors thrust vector control (TVC) is required. The nozzle itself can provide TVC; it is the case of movable nozzle hinged by a flexible bearing, a ball and socket, or a hydraulic bearing joint.

Rocket motor followed by 3d-finite element modeling and experimental validation. To accomplish the above challenging task, the working principles of different thrust vector control mechanisms were reviewed and addressed the critical issues in the design and development of large rocket motors. The flex seal design has been carried out with aft pivot point, cylindrical body configuration with spherical shims. Details on the design of flex seal, configuration of nozzle with envelope clearances, interfaces design and actuator requirements are highlighted. Development plan consists of tests in specimen level and flex seal level. The adequacy of the flex seal design is examined through finite element analysis (FEA) utilizing ANSYS software package. The FEA results show the predominant stresses that are developed in inner diameter of rocket motor casing.

CONCLUSION

Through our references, we had come to know that different scientists had used different materials in their research for making of rocket motor casing. So in our project we have used stainless steel-7075 grade as rocket motor casing material and we have performed the analysis of the casing using that material. Through our project we had come to know that the material can withstand the stresses developed in the casing and also the thermal stresses. In order to increase the resistance towards the high temperature we can add a small layer of fiber reinforced plastics on its inner surface. we have chosen this material because its light in weight and also easily available.

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ADVANCE BODY ARMOUR AND AFFORDABLE PROTECTION FOR FUTURISTIC COMBACT EXOSKELETON

A Project Report Submitted to

Jawaharlal Nehru Technological University Hyderabad

In partial fulfillment of the requirements
for the award of the degree of

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Internal Examiner

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ABSTRACT

The history of armour is as old as the evolution of mankind; indeed, it is an intrinsic instinct of humanity to protect and shield ourselves from danger, such as from various critical environments and from other humans, especially in a battlefield setting.

The development of high-speed projectiles and explosive materials changed the dynamics of the battlefield and led to an evolution in advanced ballistic personal protection systems, Protection creates a shift in the internal paradigm of the soldier and leads to multiplied psychological stamina for moving fearlessly in the battlefield which generates a major force-multiplier effect. Hence, the mechanized forces are still likely to be one of the dominant forces on the futuristic battlefield and would be the primary target of enemy forces capable of engaging from exoskeleton guns up to 4-5 km in a direct fire mode and up to 8-10 km in an indirect fire modes.

Increased protection is possible only using advanced armour technology. This armour also helps the soldiers build their confidence to fight, for those who lost their body parts like hands, legs, ears it serves as exoskeleton. This armour has capabilities of Exoskeleton, Weapons, Decoy Flares. The armour can be used in multiple roles such as Military Offence , Defense, Search & Rescue operations, Espionage.

This exoskeleton armour provides extra protection and strength than other half cover armours, this armour provides an extra strength for boy and reduce damage level.

In ancient times armours manufactured using oldest methods like moulding and forging by blacksmith but of this type of Advance armours can be developed using analytical methods for calculating various design parameter and strength required for the metal operation can be defined using the various mechanical software such as CATIA ,PRO-E,AUTOCAD and FINITE ELEMENT ANALYSIS using ANSYS.

CHAPTER-7

CONCLUSION

In this paper we have described an architecture based on ADVANCE BODY ARMOUR AND AFFORDALE PROTECTION FOR FUTURISTIC COMBACT EXOSKELETON that can be employed to implement high level protection for soldiers in the battle field and the explained the bullet impact on the armour and the level of safety and how often they are used and situation where they can be used.

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STUDY OF CHARACTERISTICS OF STAINLESS STEEL DURING ROTARY WELDING

A Project Report Submitted to

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In partial fulfillment of the requirements

for the award of the degree of

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In

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INTERNAL EXAMINER

EXTERNAL EXAMINAR

ABSTRACT

This project is to make rotary welding of stainless steel hallow pipes of various diameter sizes. For performing rotary welding a fixture is made. Using rotary fixture required welding is done for various pipes. For that the edge preparation of the pipes is done by filling the edges of the pieces, round the pipes with ss electrode using 250amp arc welding machine on rotary welding fixture. All these are analysed for finding the interrelationhips among the parameters. Later the hardness were derived. The hardness is found using brinell's hardness machine. And the testing is done in two ways. They are Non-destructive testing .In the non destructive testing Radiographic testing and Die penetrate testing were used. And in destructive and tensile tests is used.

CONCLUSION

- Orbital is observed on the weldments.
- More accurate when compared to manual welding processes.
- High weld Rotary TIG welding is used when reliable outstanding joint quality is required.
- No defect efficiency.

FUTURE SCOPE

The shortage of a skilled workforce is a very significant factor driving companies to automate. More welders are retiring every year, leaving manufacturers scrambling to fill the gap. Robotic automation can be a feasible solution to help keep American manufacturing cost-competitive. This does not mean, however, that robots are replacing humans.

DESIGN OF EXPERIMENTS USING TAGUCHI AND ORTHOGONAL ARRAYS FOR STRUCTURAL DESIGN

A Project Report Submitted to

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In the partial fulfillment for the award of degree in

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2018 -2019

BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY

IBRAHIMPATNAM - 501 510, TELANGANA

DEPARTMENT OF MECHANICAL ENGINEERING

CERTIFICATE

This is to certify that the project work entitled, **"DESIGN OF EXPERIMENTS USING TAGUCHI AND ORTHOGONAL ARRAYS FOR STRUCTURAL DESIGN"** is a record of bonafide work

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ABSTRACT:

Universal Testing machine (UTM) is widely used testing technique in manufacturing industries today for finding the various mechanical properties. The major problem associated with UTM is improper selection of parameters that leads error in results and machine performance too. Improper selection of parameter may cause problems with respect to both work pieces and machine too. That sophisticated behavior of this process must be optimizing to get better result for optimum testing parameters. This project investigates about the optimum tensile strength by setting varying parameters like length, diameter, thickness and weight. With the rapidly used of dissimilar materials in mechanical assemblies it is necessary to improve higher product quality. This project basically focuses on application of Taguchi method to optimization of strength of stainless steel materials. Experimentation process uses L27 orthogonal arrays. For experiment process stainless steel AISI 304 of equal thickness are selected. There are three levels are selected for four parameters. Testing time has been made for controlling parameters such as vertical displacement, Normal stress, shear stress and strain too. Experimental numerical analysis has been done by analysis of variance (ANOVA) and signal-to-noise ratio (S/N) for determining optimum tensile shear strength and F test value confirms most significant parameter that affect tensile shear strength at optimum level parameters to improve strength of the element. Tensile shear strength shows relationship between different levels of parameter. Experimental and confirmation test validate Taguchi method for better quality performance and to optimization of best combination of parameters in universal testing machine.

CONCLUSIONS:

- Taguchi analysis revealed that factor portion of notch has the weakest on peak load, tensile strain ,shear stress, and tensile normal stress
- Result have been confirmed on the desired beam setting parameters for single response on the errors in the numerical value
- It can be concluded that the Taguchi method is most ideal and suitable for the parametric analysis of the artificially damaged beam when using the single performance characteristics
- Maximum Load carrying capacity can be for the 640mm length and 32mm diameter
- Minimum Load carrying capacity can be for the 600mm length and 13mm diameter
- There is huge saving of cost and time in experimental work
- From Load vs Length it is found that as length increases load carring capacity decreases
- Artificial neutral network predicted good result