CRITERION 1- CURRICULAR ASPECTS			
1.3 Curriculum Enrichment			
1.3.3 Percentage of students undertaking project work/ field work/internship (Data for the latest completed academic year 2022-2023.			
Program name	**Program Code**	**List of students undertaking project work/ field work/Internship**	**Page No**
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B.E.MECH	114	**ARIKARAN N**	121
B.E.MECH	114	CHINNAIYA N	122
B.E.MECH	114	DEEPAK R	123
B.E.MECH	114	DHAYAL PRIYADHARSHAN	124
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B.E.MECH	114	JEEVAKUMAR S	134
B.E.MECH	114	KANNAN S	136
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B.E.MECH	114	MANOHARAN K	129
B.E.MECH	114	NAZEERKHAN B	126
B.E.MECH	114	POOVARASAN R	130
B.E.MECH	114	SANTHOSH KUMAR K	132
B.E.MECH	114	VENKAT ARJUN A	127
B.E.MECH	114	VIDHYA SHANKAR P	131
B.E.MECH	114	CHARANJITH K	133
B.E.MECH	114	KAVINARASU P	128
B.E.MECH	114	SUKUMAR K	135
B.E.MECH	114	**ABISHEK KUMAR M**	47
B.E.MECH	114	**AJAYKUMAR B**	51
B.E.MECH	114	**ARUNKUMAR K E**	47
B.E.MECH	114	MOHANRAJ S	55
B.E.MECH	114	RAGURAM B	47
B.E.MECH	114	RUBAN V	61
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B.E.MECH	114	SIVABALAN N	47
B.E.MECH	114	SIVAKUMAR P	65
B.E.MECH	114	THANGAVIMAL V	51
B.E.MECH	114	VENKADESAN N	55
B.E.MECH	114	**ABU ALI A**	69
B.E.MECH	114	**ARUN KUMAR R**	65
B.E.MECH	114	**ASFAR SHARUK HUSSAIN L**	73
B.E.MECH	114	**ASKAR ALI N**	69
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B.E.MECH	114	GOPINATH T	65
B.E.MECH	114	KABILAN J	80
B.E.MECH	114	KAMALESWARAN V	84
B.E.MECH	114	KARTHICK S	88
B.E.MECH	114	KARTHICK RAJ S	80
B.E.MECH	114	LALITH KUMAR M	84
B.E.MECH	114	MAHADU J	92
B.E.MECH	114	MOHAMMED HARISH H	92
B.E.MECH	114	MOHAMMED ALI JINNAH S	73
B.E.MECH	114	MOHAMMED IRFAAN J	92
B.E.MECH	114	NITHESH M	51
B.E.MECH	114	PRAKASH KUMAR G	80
B.E.MECH	114	RAGUL R	88
B.E.MECH	114	RAJMOHAN R	76
B.E.MECH	114	RAJ VENKATESH R	65
B.E.MECH	114	SANJAY KUMAR K	51
B.E.MECH	114	SEENIVASAN A	61
B.E.MECH	114	SHRIRAM M	92
B.E.MECH	114	SIBIN B	88
B.E.MECH	114	SIVA KUMAR S	76
B.E.MECH	114	SOURAB SHINDE S	55
B.E.MECH	114	SURYA A	84
B.E.MECH	114	TAMIL ARASAN R N	84
B.E.MECH	114	VENKATESH S	69
B.E.MECH	114	VIGNESHWARAN B	88
B.E.MECH	114	VISHNU BALA C	61
B.E.MECH	114	**ABILASH A**	11
B.E.MECH	114	**ANBARASAN V**	19
B.E.MECH	114	AYYAM PERUMAL P	31
B.E.MECH	114	BALAKUMARESAN S	31
B.E.MECH	114	DINESHPANDI B	35
B.E.MECH	114	GOWTHAMAN M	27
B.E.MECH	114	IMAN MOHAMMED I	27
B.E.MECH	114	MAHA LAKSHMI G	15
B.E.MECH	114	MANIKANDAN N	11
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B.E.MECH	114	MEENAKSHI SUNDARAM G	19
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B.E.MECH	114	MUTHUSAMY P	31
B.E.MECH	114	NAGARAJ S	19
B.E.MECH	114	NAVEENRAJ K	31

B.E.MECH	114	NITHESWAR M	39
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B.E.MECH	114	RAKESH M	27
B.E.MECH	114	RAKESH S	15
B.E.MECH	114	RAMAKRISHNAN B	11
B.E.MECH	114	RAMANAN M	23
B.E.MECH	114	RAMKUMAR A	43
B.E.MECH	114	RUBAN P	27
B.E.MECH	114	SANKAR G	43
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B.E.MECH	114	SHAARIF AHAMED S	43
B.E.MECH	114	SHOBANA K	15
B.E.MECH	114	SIVA KUMAR S	43
B.E.MECH	114	VELPACKIYARAJ M	15
B.E.MECH	114	JEGATHGURUNAATHA ASHWIN	23
B.E.MECH	114	SAI PRASAD P	39

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Department of Mechanical Engineering

The below table shows the project details of academic year 2022-23

Batch No.	Students Name	Title of the Project	Specialization	Type of Project (Application, Product, Research, Review)	Relevance (Environment, safety, ethics, cost, standards)	Contribution / Achievements / Research Output	Mapping with stated Pos and PSOs	
							PO	PSO
1.	Abilash A Manikandan N Ramakrishnan B Saravanakumar M **Guide:** Mr. T. Balasubramani	Design and Fabrication of Multipurpose Machine using CAM Operated Mechanism	Design Engineering	Application	cost	Students are able to acquire knowledge Design and Fabrication of Multipurpose Machine using CAM Operated Mechanism	PO1, PO2 ,PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12	PSO1, PSO2
2.	Mahalakshmi G Rakesh S Shobana K Velpackiyaraj M **Guide:** Mr. M. Mathan Raj	Design and Fabrication of Mobile operated Medical Assistance Robot in Hospital	Production Engineering	Product	cost	Students are able to gain knowledge in Design and Fabrication of Mobile operated Medical Assistance Robot in Hospital Machine	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12	PSO1, PSO2

NATHAM

3.	Anbarasan V Meenakshi Sundaram G Nagaraj S Raghulpandian B **Guide:** Mr.G.Sundarrajan	Self Rechargeable Electric Car	Production Engineering	Product	Environment	Students are able to gain knowledge in Self Rechargeable Electric vehicle	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12	PSO1, PSO2
4.	Ashwin S.J Manikandan R Mohana Ragul P Ramanan M **Guide:** Dr.M.Pal Pandi	Study of Mechanical Properties of Aluminium Graphene Composites	Production Engineering	Research	cost	Students are able to gain knowledge about Study of Mechanical Properties of Aluminium Graphene Composites	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12	PSO1, PSO2
5.	Gowthaman M Iman Mohammed T Rakesh M Ruban P **Guide:** Mr.T.Balasubramani	Design and Fabrication of Development of Humanoid Robot system for cleaning Sewage by 3D Printed Parts	Automobile Engineering	Application	Environment	Students are able to understood Humanoid about Robot system for cleaning Sewage by 3D Printed Parts	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12	PSO1, PSO2
6.	Ayyamperumal P Balakumaresan S Muthusamy P Naveenraj K **Guide:** Mr.P.Gopi	Retrofittings of normal Bicycle into Electrical Bicycle	Production Engineering	Product	Environment	Students are able to understood Retrofittings of normal Bicycle into Electrical Bicycle	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12	PSO1, PSO2,

7.	Dineshpandi B Mohamed Siddiq A Sangaran S Veeramanikandan M **Guide:** Mrs.K.R.Kavitha	Performance and Emission Characteristics of Bio Diesel from Orange Peel with Cashew Nut Shell Liquid	Automobile Engineering	Research	Environment	Students are able to acquire knowledge Performance and Emission Characteristics of Bio Diesel from Orange Peel with Cashew Nut Shell Liquid	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12	PSO1, PSO2
8.	Mugeshwaran N Nitheswar M Sai prasad P **Guide:** Dr.S.Paulsingarayar	Mechanical Properties of Alkali Treated Madar Hibiscus Cannabinus and Gongura Fiber Reinforced Polymer Composites	Automobile Engineering	Research	cost	Students are able to gain knowledge in Mechanical Properties of Alkali Treated Madar Hibiscus Cannabinus and Gongura Fiber Reinforced Polymer Composites	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12	PSO1, PSO2
9.	Ramkumar A Sankar G Shaarif Ahamed S Sivakumar S **Guide:** Dr.N.Mathan Kumar	An Investigation of corrosion Behaviour on Mg-Ag Alloy	Automobile Engineering	Research	Standards	Students are able to acquire knowledge in An Investigation of corrosion Behaviour on Mg-Ag Alloy	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12	PSO1, PSO2

Project Coordinator

COLLEGE OF ENGG. & TECHNOLOGY NATHAM

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Department of Mechanical Engineering

Design and fabrication Project

The below table shows the project details of academic year 2022-23

Batch No.	Students Name	Title of the Project	Specialization	Type of Project (Application, Product, Research, Review)	Relevance (Environment, safety, ethics, cost, standards)	Contribution / Achievements / Research Output	Mapping with stated Pos and PSOs	
							PO	PSO
1.	Abishek Kumar M Arunkumar K E Raguram B Sivabalan N	Electrical Cycle with Bike Gear box	Automobile Engineering	Application	Environment	Students are able to acquire knowledge Electrical Cycle with Bike Gear box	PO1, PO2 ,PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12	PSO1, PSO2
2.	Ajaykumar B Thangavimal V Nithesh M Sanjay Kumar K	Mini Excavator	Automobile Engineering	Application	cost	Students are able to gain knowledge in Mini Excavator	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12	PSO1, PSO2

3.	Mohanraj S Sabarinathan S Venkadesan N Sourab Shinde S	Wind Solar Hybrid Street Lamp	Thermal Engineering	Application	Environment	Students are able to gain knowledge in Wind Solar Hybrid Street Lamp	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12	PSO1, PSO2
4.	Ruban V Dhakshinamoorthi T Seenivasan A Vishnu Bala C	Design and fabrication of Bladeless Turbine	Production Engineering	Research	cost	Students are able to gain knowledge about Design and fabrication of Bladeless Turbine	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12	PSO1, PSO2
5.	Arun Kumar R Gopinath T Sivakumar P Raj Venkatesh R	Design and fabrication of Pneumatic Lifting Jack	Automobile Engineering	Application	Environment	Students are able to understood abut Pneumatic Lifting Jack	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12	PSO1, PSO2
6.	Abu Ali A Askar Ali N Babu Shankar V Venkatesh S	Voice Controlled Arm	Production Engineering	Product	Environment	Students are able to understood about Voice Controlled Arm	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12	PSO1, PSO2,

7.	Asfar Sharuk Hussain L Mohammed Alijinnah S	Fabrication of Dual Process Agriculture Robot	Production Engineering	Product	Environment	Students are able to acquire knowledge in Fabrication of Dual Process Agriculture Robot	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12	PSO1, PSO2
8.	Ilancheran A Rajmohan R Sivakumar S Maheswaran S	Design and fabrication of Pneumatic Powered Pick and Place Arm	Automobile Engineering	Research	cost	Students are able to gain knowledge in Design and fabrication of Pneumatic Powered Pick and Place Arm	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12	PSO1, PSO2
9.	Kabilan J Karthick Raj S [illegible] Prakash Kumar G	Design and Fabrication of Electric Vehicle	Automobile Engineering	Product	Environment	Students are able to acquire knowledge in Design and Fabrication of Electric Vehicle	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12	PSO1, PSO2
10	Kamaleswaran V Lalith Kumar M Surya A Tamil Arasan R N	Springless Suspension	Production Engineering	Application	cost	Students are able to acquire knowledge in Springless Suspension	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12	PSO1, PSO2

11	Karthick S Ragul R Sibin B Vigneshwaran B	Design and Fabrication of RC Floor Cleaning	Production Engineering	Application	cost	Students are able to acquire knowledge about Design and Fabrication of RC Floor Cleaning	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12	PSO1, PSO2
12	Mahadu J Mohamed Harish H Mohmmed Irfaan J Shriram M	Design and Fabrication of Power Generation of Hand pump	Thermal Engineering	Application	Environment	Students are able to acquire knowledge about Design and Fabrication of Power Generation of Hand pump	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12	PSO1, PSO2

Project Coordinator

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NPR COLLEGE OF ENGG. & TECHNOLOGY ★ NATHAM

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MECH23 - 953

DESIGN AND FABRICATION OF MULTIPURPOSE MACHINE USING CAM OPERATED MECHANISM

A PROJECT REPORT

Submitted by

ABILASH.A	**(920819114001)**
MANIKANDAN.N	**(920819114014)**
RAMAKRISHNAN.B	**(920819114029)**
SARAVANAKUMAR.M	**(920819114035)**

In partial fulfillment for the award of the degree

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IN

MECHANICAL ENGINEERING

NPR COLLEGE OF ENGINEERING TECHNOLOGY

NATHAM-624401

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MAY-2023

I

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BONAFIDE CERTIFICATE

Certified that this project report on **"DESIGN AND FABRICATION OF MULTIPURPOSE MACHINE USING CAM OPERATED MECHANISM"** is the bonafide work of **ABILASH.A (920819114001)** who carried out the work under my supervision.

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Submitted for the ANNA UNIVERSITY Viva-Voice examination held on 18-05-2023 at NPR College of Engineering and Technology, Natham

18/05/23

INTERNAL EXAMINER

EXTERNAL EXAMINAR

NPR COLLEGE OF ENGG. & TECHNOLOGY NATHAM

CHAPTER-1

ABSTRACT

This deals with the design, development and fabrication of multipurpose mechanical machine which perform four operations at a time namely drilling, shaping, power hacksaw, circular cutter and grinding.

Today we see that these operations are the heart of any workshop/machine shop and they are indispensable, so for the time saving of any organisation four different operation on four different jobs can be performed simultaneously, however jigs and fixtures are required to attain this, but when our need is specified and particular then this machine can be a time saving equipment. This machine is automatic and controlled by electric motor and it is based on the Belt and pulley mechanism. It can be used in small scale industries/workshop to work upon thin metallic sheets and on wood in carpentry shop.

CHAPTER-11

CONCLUSION

The conclusion can be made that the project on multipurposemachine considering economic aspect of productions performing well and with certain modifications can easily in small scale industry successfully We can see that all the production based industries wanted low production cost and high work rate which is possible through the utilization of multi-function operating machine which will less power as well as less time, since this machine provides working at different center it really reduced the time consumption up to appreciable limit. In an industry a considerable portion of investment is being made for machinery installation. So, in this paper we have proposed a machine which can perform operations like drilling, angle cutting, grinding at different working centers simultaneously which implies that industrialist have not to pay for machine performing above tasks individually for operating operation simultaneously.

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DESIGN & FABRICATION OF MOBILE OPERATED MEDICAL ASSISTANCE ROBOT IN HOSPITAL

A PROJECT REPORT

Submitted by

MAHALAKSHIMI .G **(920819114013)**

RAKESH.S **(920819114028)**

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MAY 2023

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Certified that this project report **"MOBILE OPERATED MEDICAL ASSISTANCE ROBOT IN HOSPITAL"** is the bonafide work of **M.VELPACKIYARAJ (920819114039)** who carried out the project work under super vision

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18/05/23	18/05/2023
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II

NPR COLLEGE OF ENGG. & TECHNOLOGY NATHAM

ABSTRACT

- Healthcare workers are among the most vulnerable to the coronavirus owing to their proximity to infected patients. Social distancing is controlling the spread of disease between one to another individuals. To ensure social distancing in hospital, the medical assistance robot is designed.
- In this project, the mobile operated medical assistance Robot is proposed for patients. This project consists of ESP Module, servo motor, Relay driver, Tray, 3wheel, 2 gear motors & pump motor respectively.
- This system is controlled by mobile application through the Bluetooth module & that is coded in ESP controller. Initially, the Electric Robot setup can consist of a base at the two ends of which the wheels are mounted & connected a gear motors.
- When controlling the bluetooth, the medibot is stopped & switch the sanitizer by using pump motor. Then the servo motor is activated to provide a tablet & food for patients by using a tray.
- Then the medibot moves to next bed & give a tablet & food to avoid a physical interaction.

CHAPTER-12

CONCLUSION

A mobile controlled Medical robot for a health care management system can play a vital role in the field of hospitality. Robotics is a grooming technology. By using robot in the government & private hospitals the cost for the cure can be reduced. It can be very beneficially for the patients. In India many people hesitate to admit in the hospital because of costly medical practitioner. Monitoring of every patient is very difficult for the nurses in the hospital. This proposed system provides is an alternate to the existing system by replacing health workers, labors & doctors check up with robotic machinery. It can turned to provide a foods for the patients in less time with better accuracy & a lower per capital cost.

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MECH23-951

SELF RECHARGEABLE ELECTRIC CAR

A PROJECT REPORT

Submitted by

ANBARASAN.V	**(920819114003)**
MEENAKSHI SUNDARAM.G	**(920819114016)**
NAGARAJ.S	**(920819114022)**
RAGHULPANDIAN.B	**(920819114026)**

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Of

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in

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ANNAUNIVERSITY::CHENNAI 600025

MAY 2023

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BONAFIDE CERTIFICATE

Certified that this project report " **SELF RECHARGEABLE ELECTRIC CAR** " is the bonafide work of **RAGHULPANDIAN.B, (920819114026),**who carried out the project work under my supervision.

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18/05/23

INTERNALEXAMINER

18/05/2023

EXTERNALEXAMINER

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ABSTRACT

The proposed work deals with a design of a battery electric vehicle with self-charging system for one passenger and for weight up to 50 kg. This method has been made to fabricate a self-charging battery electric vehicle which utilizes the rotational energy of wheels to charge the batteries, thereby introducing a system which makes the vehicle pollution free. In order to work with more efficient, the dynamo can also be implemented on the rear wheel of the car. The fabrication of chassis is made for the similar dimensions with some modification in its size and shape using Mild Steel (MS) material. The components such as DC Generator, Motor and was arranged in a manner to transfer the rotational energy being experienced by the MS bright rod to the dc generator. The dc generator here has the capacity to produce 12V to 24V, which is directed to buck-boost converter through a battery source. Here in buck-boost converter the voltage source is stepped up to 24V, which is enough to charge the two set of series connection which yields to 24V usage. The batteries are used to provide the rotational energy to the shaft through a motor. Batteries are receiving back the sufficient voltage source to recharge.

10.1 CONCLUSION

With the increasing consumption of natural resources of petrol, diesel it is necessary to shift our way towards alternate resources like the Electric bike and others because it is necessary to identify new way of transport. Electric bike is a modification of the existing cycle by using electric energy and also solar energy if solar panels are provided, that would sum up to increase in energy production. Since it is energy efficient, electric bike is cheaper and affordable to anyone. It can be used for shorter distances by people of any age. It can be contrived throughout the year. The most vital feature of the electric bike is that it does not consume fossil fuels thereby saving cores of foreign currencies. The second most important feature is it is pollution free, eco – friendly and noiseless in operation. For offsetting environmental pollution using of on – board Electric Bike is the most viable solution. It can be charged with the help of AC adapter if there is an emergency. The Operating cost per/km is very less and with the help of solar panel it can lessen up more. Since it has fewer components it can be easily dismantled to small components, thus requiring less maintenance

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STUDY OF MECHANICAL PROPERTIES OF ALUMINIUM GRAPHENE COMPOSITES

Submitted by

S. JEGATHGURUNAATHA ASHWIN	**(920819114004)**
R. MANIKANDAN	**(920819114015)**
P. MOHANA RAGUL	**(920819114019)**
M. RAMANAN	**(920819114030)**

in partial fulfillment for the award of the degree

of

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in

MECHANICAL ENGINEERING

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NATHAM, DINDIGUL

ANNA UNIVERSITY :: CHENNAI 600 025

MAY 2023

ANNA UNIVERSITY :: CHENNAI 600 025

BONAFIDECERTIFICATE

Certified that this project report " **STUDY OF MECHANICAL PROPERTIES OF ALUMINIUM GRAPHENE COMPOSITES** " **S. JEGATHGURUNAATHA ASHWIN(920819114004), R. MANIKANDAN (920819114015),P. MOHANA RAGUL (920819114019), M. RAMANAN (920819114030)**who carried out the project work under my supervision.

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HEAD OF THE DEPARTMENT	SUPERVISOR
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Submitted for the ANNA UNIVERSITY viva-voce Examination held on 18.5.2023.....at NPR College of Engineering and Technology,Natham.

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INTERNAL EXAMINER	**EXTERNAL EXAMINE**

II

ABSTRACT

This abstract describes the study of the properties and potential applications of Aluminium 7178 and graphene composite materials. The research aimed to investigate the potential of graphene as a reinforcement material for Aluminium 7178 to enhance its mechanical and thermal properties..

This paper analysis the material on mechanical properties of the graphene , Aluminium 7178 material by using composite model Leaf spring and evaluate the mechanical properties

This study investigates the fabrication of leaf springs using a metal matrix composite (MMC) material made from aluminum 7178 reinforced with graphene. The purpose of this study is to evaluate the feasibility of using this MMC material as a replacement for traditional leaf spring materials such as steel. The study focuses on the mechanical properties of the MMC material, including its tensile strength, compressive strength, and fatigue behaviour.

CHAPTER-5

CONCLUSION

In conclusion, the present study investigated the effect of graphene reinforcement on the mechanical properties of Aluminium 7178 Metal Matrix Composite (MMC) for fabricating leaf springs. The mechanical properties of the MMC were studied through tensile, hardness and compression test . The results showed that the addition of graphene to the MMC resulted in an improvement in the tensile and hardness properties of the composite. Overall, the results demonstrate that the addition of graphene can significantly enhance the mechanical and wear properties of Aluminium 7178 MMC, making it a promising material for fabricating leaf springs. The findings of this study can be utilized in the design and development of lightweight and high-performance leaf springs for automotive and aerospace applications.

Design and Fabrication of Development of Humanoid Robot System for Cleaning Sewage by 3D Printed Parts.

A PROJECT REPORT

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in

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COLLEGE OF ENGG. & TECHNOLOGY NATHAM

ABSTRACT

3D printing which has turned into a remarkable point in today's innovative exchange. In this paper, we will look at additive manufacturing or 3D printing. We will firstly characterize what we mean by this term and what is so noteworthy about it. We will dive a bit into the history. At that point, we should see about the procedure of 3D printing and the materials utilized as a part of the production of 3D printed objects. We might likewise see the focal points and burdens of 3D printing. We should watch the various applications it is being out to utilize today. At last, the future capability of this innovation is illustrated.

A conceptual model of the manipulator has been created in solid model using solid works. It will give a clear understanding of the manipulator and its subsystem interactions. A prototype model of the manipulator has been developed based on the design concept and its working environment i. e, various goals that robot has to do after entering the sewage pipe and hence the functional requirements are finalized. It consists of various links and joints.

The joints are drive through the various motors which are discussed in the paper. Preliminary investigations are carried out on the developed prototype model and some of the results are discussed in the paper.

KEYWORDS : 3D PRINTING , SEWAGE CLEANING ,

CHAPTER 10

CONCLUSION

The present study investigated the application of 3D printing in different physicochemical and biological treatment techniques along with its limitations and sustainable aspects. The research on the 3D printing applications in waste water treatment is found to be at the beginning of the growth phase and is showing considerable promise. The advent of 3D printing has shown different advantages over conventional manufacturing techniques. In this regard, the present study reviewed the various 3D and We solved it.

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RETROFITTINGS OF NORMAL BICYCLE INTO ELECTRICAL BICYCLE

A PROJECT REPORT

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ABSTRACT

Now-a-days there are so many vehicles on road, which consumes more fuel and also hazards our environment. It is our responsibility to reduce the consumption of fuel and its hazardous emission products. Taking this into consideration it is our small step towards reducing the use of more fuel consuming vehicles and attract the eye of people towards its alternatives i.e. Electric bicycle. The main aim of this review paper is to present the idea of harnessing the various energy and use it in today's existence of human life .Now-a-days there are so manyvehicles on road, which consumes more fuel and also hazards our environment. It is our responsibility to reduce the consumption of fuel and its hazardous emission products. Taking this into consideration it is our small step towards reducing the use of more fuel consuming vehicles and attract the eye of people towards its alternatives i.e. Electric bicycle.

So we intend to design a cycle which would run on an alternative source and also reducing human efforts called as Battery Operated Cycle. In this paper we design an alternative mode of transport for betterment of social and environment.

CHAPTER 11

CONCLUSION

With the increasing consumption of natural resources of petrol, diesel it is necessary to shift our way towards alternate resources like the Electric bike and others because it is necessary to identify new way of transport. Electric bike is a modification of the existing cycle by using electric energy and also solar energy if solar panels are provided, that would sum up to increase in energy production. Since it is energy efficient, electric bike is cheaper and affordable to anyone. It can be used for shorter distances by people of any age. It can be contrived throughout the year. The most vital feature of the electric bike is that it does not consume fossil fuels thereby saving crores of foreign currencies. The second most important feature is it is pollution free, eco – friendly and noiseless in operation. For offsetting environmental pollution using of on – board Electric Bike is the most viable solution. It can be charged with the help of AC adapter if there is an emergency. The Operating cost per/km is very less and with the help of solar panel it can lessen up more. Since it has fewer components it can be easily dismantled to small components, thus requiring less maintenance.

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PERFORMANCE AND EMISSION CHARACTERISTICS OF BIO DIESEL FROM ORANGE PEEL WITH CASHEW NUT SHELL LIQUID

A PROJECT REPORT

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II

ABSTRACT

The polymer matrix composites attract many industrial applications due to its light weight, less cost and easy for manufacturing. In this paper, an attempt is made to prepare and study of the mechanical properties of hybrid (Three natural) fibers reinforced polymer matrix composites. The samples were prepared with hybrid reinforcement consists of three different fibers such as madar, hibiscus cannabinus and gongura fiber hybrid polymer consists of polyester resins. The hybrid composites mechanical properties is evaluated to study the influence of various fiber parameters on mechanical strength. The parameters considered here are the duration of fiber treatment, the concentration of alkali in fiber treatment and nature of fiber content in the composites.

Keywords: Natural Fiber, Composites, Polymer Matrix, Alkali Treatment

CHAPTER 8

CONCLUSION

Madar, hibiscus cannabinus and gongura fiber particulates composites had been successfully developed in this project. The mechanical properties of the composite has been studied and discussed here. The following conclusion shave been drawn from this study.

The tensile properties madar, hibiscus cannabinus and gongura fiber is yields compression strength of about **38.789N/mm²** The specimen yields compression strength of about **39.789N/mm²**. yields flexural strength of about **1548.544Gpa**. these specimen yields impact strength of about **21.8J** the percentage of absorption of water in specimen the average of these specimen is **0.01 %**. Finale the best mechanical properties it has wide range of engineering applications.

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MECHANICAL PROPERTIES OF ALKALI TREATED MADAR,HIBISCUS CANNABINUS AND GONGURA FIBER REINFORCED POLYMER COMPOSITES

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II

ABSTRACT

In recent years, there has been a steadily increasing in the amount of solid wastes because of the increasing human population and urbanization. Solids are includes industrial waste, agricultural waste, forest waste and waste bio-products.

Bio-energy has been produced total 10% participation of energy of global energy production, energy produced from the source of biomass: plants, animal, and organic waste.

In some seed like orange peel and cashew nut shell oil prepared and blended with together to produce the biodiesel and to check the performance of the biodiesel.

The study also includes examination of physical and chemical properties such as pH value, viscosity, density, flash point, fire point and acid values on the produced biodiesel as well as on the conventional diesel for comparison. The study revealed that the properties of the bio-diesel are very close to the conventional diesel

15. CONCLUSION

During this study we find that use of Biodiesel in diesel engine reduces the percentage of emitted pollutants, hence with increasing quantity of biodiesel Emission of HC and CO decreases. In this experiment orange peel and additive cashew nut shell liquid is taken as non-edible oil and mixed with methanol makes biodiesel and this biodiesel used in diesel engine instead of diesel to get the results about performance and emission of HC (hydrocarbons) & CO (carbon monoxide). So we find quantity of HC & CO reduced with increasing quantity of biodiesel. But this quantity of pollutants increases with load increasing.

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AN INVESTIGATION OF CORROSION BEHAVIOUR ON Mg-Ag ALLOY

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INTERNAL EXAMINER

ii

18/05/2023

EXTERNAL EXAMINER

COLLEGE OF ENGG. & TECHNOLOGY NATHAM NPR

ABSTRACT

In Engineering applications Mg-Ag alloy has been used widely. The present investigation has to find out the corrosion behavior of Mg-Ag alloy with various corrosion medium and different time span. The Mg-Ag alloy mainly used in aerospace application due to its light weight application.in this analysis there are totally three type of corrosion medium to be used such as 3.5% Nacl Solution, Ground water and Rain water. The immersion time of samples to be varied for identifying the mass loss of each sample. The time duration would be 10days, 20days and 30days. From the mass loss method the samples would be checked and will be measured by AC impedance spectra. A Chi instrument is used to find the corrosion rate. The mean value will be checked and to investigate the corrosion behavior of Mg-Ag alloy.

CONCLUSION:

The addition of Ag element to Mg-Zn alloy can improve not only the mechanical properties but also corrosion resistance of Mg alloys, which is mainly caused by that with the help of Ag element, more refined grains, and more finer and uniformly distributed secondary phases are easily formed.

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DESIGN AND FABRICATION OF E-CYCLE WITH GEAR BOX

A PROJECT REPORT

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ABSTRACT

Now-a-days there are so many vehicles on road, which consumes more fuel and also hazards our environment. It is our responsibility to reduce the consumption of fuel and its hazardous emission products. Taking this into consideration it is our small step towards reducing the use of more fuel consuming vehicles and attract the eye of people towards its alternatives i.e. Electric bicycle. The main aim of this project is to present the idea of harnessing the various energy and use it in today's existence of human life .Now-a-days there are so many vehicles on road, which consumes more fuel and also hazards our environment. It is our responsibility to reduce the consumption of fuel and its hazardous emission products. Taking this into consideration it is our small step towards reducing the use of more fuel consuming vehicles and attract the eye of people towards its alternatives i.e. Electric bicycle.

So we intend to design a cycle which would run on an alternative source and also reducing human efforts called as Battery Operated Cycle. We need to increase the speed of the battery vehicles using gear box. In this project we design an alternative mode of transport for betterment of social and environment.

CHAPTER 11

CONCLUSION

With the increasing consumption of natural resources of petrol, diesel it is necessary to shift our way towards alternate resources like the Electric bike and others because it is necessary to identify new way of transport. Electric bike is a modification of the existing cycle by using electric energy and also solar energy if solar panels are provided, that would sum up to increase in energy production. Since it is energy efficient, electric bike is cheaper and affordable to anyone. It can be used for shorter distances by people of any age. It can be contrived throughout the year. The most vital feature of the electric bike is that it does not consume fossil fuels thereby saving crores of foreign currencies. The second most important feature is it is pollution free, eco – friendly and noiseless in operation. For offsetting environmental pollution using of on – board Electric Bike is the most viable solution. It can be charged with the help of AC adapter if there is an emergency. The Operating cost per/km is very less and with the help of solar panel it can lessen up more. Since it has fewer components it can be easily dismantled to small components, thus requiring less maintenance.

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DESIGN & FABRICATION OF MINI EXCAVATOR

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II

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ABSTRACT

- Excavator is a work machine used in excavation works and also used to break hard objects such as concrete and rock, in rapidly growing industry excavators, on the ground, are expected to have a better performance.

- Especially during excavation, the excavating force produced by the actuators, undertakes a critical task: Furthermore, the excavating forces developed by the excavators must be larger than the resistance forces of the ground

- In this study, it is aimed to manufacture mini excavators, which are not manufactured and assembled in our country and Imported from abroad, and to reduce our dependency on the outside in this sector.

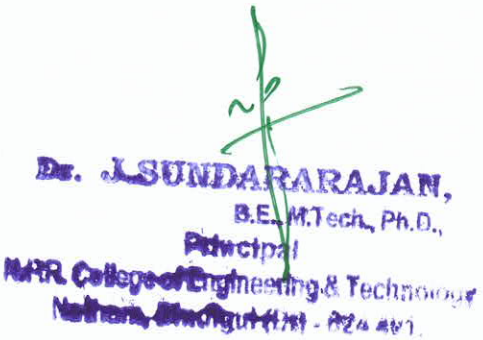
- In line with this goal, this study includes design and analysis of a mini excavator electric drive.

CHAPTER 11

CONCLUSION

We the students took the initiative in doing this project work "MINI EXCAVATOR " to the peak of success. We have gained sufficient technical as well as practical knowledge as how a work machine is to be designed, fabricated and priced.

Finally the mini excavator are economy affordable for every one of our country. We hope that this will be one among the most versatile and interchangeable one even in future.



DESIGN AND FABRICATION OF VERTICAL AXIS WIND TURBINE FOR STREET LAMP

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INTERNAL EXAMINER

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II

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ABSTRACT

The aim is to design and implement a magnetically levitated vertical axis wind turbine system that has the ability to operate in both low and high (1.5m/s to 40m/s) wind speed conditions. This technology provides an extreme efficient, versatile and elegant method of producing power from wind with nearly zero pollution.This model uses magnetic levitation to reduce the internal friction of the rotor which is considered as a revolution in the field of wind technology.

CHAPTER-8

CONCLUSION

By this project many villages can be lighted. For villages which are much away from the construction site of large power generating stations such as hydro and nuclear can be providedpower. In conclusion, designing and fabricating a vertical axis wind turbine (VAWT) for a street lamp offers a sustainable and efficient solution for powering street lighting infrastructure. VAWTs have distinct advantages, including wind direction independence, compact design, lower wind speed requirements, and self-starting capability. They contribute to renewable energy generation, reduce energy costs, and align with green initiatives and sustainability goals.

8.1 FUTURE SCOPE

The future scope of designing and fabricating vertical axis wind turbines (VAWTs) for street lamps

The future scope of VAWTs for street lamp applications is promising, with opportunities for technological advancements, integration with energy storage and smart grid systems, and vertical integration into street lamp poles. These advancements can further enhance the performance, efficiency, and reliability of VAWTs, while also aligning with urban planning strategies and smart city initiatives.

1. Technological Advancements: Continued advancements in VAWT design, materials, and manufacturing techniques can improve the overall efficiency, durability, and performance of VAWTs for street lamps. This includes innovations in blade design, generator technology, control systems, and aerodynamic optimization.

2. Energy Storage Integration: Integrating energy storage solutions, such as advanced batteries or supercapacitors, with VAWTs can enhance the

reliability and functionality of street lamp installations. Energy storage systems can store excess energy during high wind periods and release it during low wind periods or high power demand, ensuring uninterrupted lighting.

3. Smart Grid Integration: Integrating VAWTs for street lamps with smart grid technologies can enable enhanced monitoring, control, and optimization of energy generation and consumption. Smart grid integration can facilitate dynamic load management, demand-response capabilities, and real-time monitoring of energy usage, leading to more efficient and sustainable street lighting systems.

4. IoT and Data Analytics: Incorporating Internet of Things (IoT) technologies and data analytics can provide valuable insights into the performance, maintenance needs, and energy efficiency of VAWTs for street lamps. Real-time monitoring of turbine operation, weather conditions, and energy production can enable predictive maintenance, performance optimization, and better decision-making.

5. Hybrid Systems: Combining VAWTs with other renewable energy sources, such as solar panels or small-scale energy harvesting systems, can create hybrid energy systems for street lamps. This approach allows for diversification of energy sources, increasing overall system resilience and reducing reliance solely on wind energy.

6. Vertical Integration: Future advancements may involve vertically integrating VAWTs directly into the street lamp poles, eliminating the need for separate turbine structures. This integration can provide a more streamlined and aesthetically pleasing solution, further optimizing the use of urban space.

7. Grid Connectivity and Integration: As renewable energy policies and grid infrastructure evolve, there is potential for VAWT-powered street lamps to feed excess energy back into the grid. This can contribute to the overall

renewable energy mix and provide opportunities for energy sharing and community-based energy initiatives.

8. Urban Planning and Smart Cities: VAWTs for street lamps align with the concept of smart cities and sustainable urban planning. Incorporating VAWTs into urban landscapes can contribute to energy self-sufficiency, reduced carbon footprint, and enhanced quality of life for city dwellers.

It is important to note that realizing these future advancements and scope for VAWTs in street lamp applications requires ongoing research, development, and collaboration among stakeholders, including engineers, designers, policymakers, and energy providers.

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DESIGN AND FABRICATION OF DOMESTIC WATER TANK CLEANER

A PROJECT REPORT

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ABSTRACT

In today's era, the domestic water tanks are cleaned by humans by some unconventional methods. It will consume time and difficult for humans to go inside to the tank and cleaning. So, that we produce a environment friendly and conventional method to clean the water tank. We came up with the idea to create a device with pneumatic system.

This project objective is to develop a pneumatic system device for cleaning domestic water tanks. The mechanical system consists of two principal mechanisms that are rack and pinion gear mechanism and pneumatic actuators. The rack and pinion arrangement is used to transport the entire mechanical system up and down for cleaning the cylindrical tank. Brushes are connected to the ends. The linkage is made adjustable according to the interior diameter of the tank. When the motor begins the linkage rotates and with the assist of brushes, cleaning of the wall and base of the tank takes place. The reason for this project is to lessen human efforts and to keep away from the chemical impact on the health of someone entering the tank for cleaning. To overcome this we've aimed toward tackling the negative aspects of cleaning overhead tanks, so an overhead tank cleaning system is designed to provide excessive safety, excessive efficiency, and much less time for cleaning. The reason for this project is to clean a domestic cylindrical water tank with the help of a pneumatic system.

CHAPTER 11

CONCLUSION

In order to overcome the difficulties of cleaning the domestic water tank by some method we Investigated and studied about an Water tank cleaning mechanism. It is difficult to clean the water tank by unusual methods which require a lot of human labor. By implementing newly developed method it requires less time and less human effort for cleaning any kind of water tank. So a system of overhead tank cleaning is designed to provide high safety, high efficiency, less time for cleaning and to avoid environmental pollution problems. Purpose of this project is to clean domestic water tank with the help of powerful rack and pinion and a pneumatic actuator is provided with suitable mechanism.

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DESIGN & FABRICATION OF PESTICIDE SPRAYER

A PROJECT REPORT

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ABSTRACT

The population of India is increasing rapidly in order to fulfill their diet & needs, the production of foods must be increased. But this must come at affordable to everyone. In India farming is done by traditional ways beside that there has been larger development of industry and service sector as compared to that of agriculture sector. To mechanization of agriculture in India some equipment has been developed. The pesticide sprayer is one among them and it is done by traditional farm workers by carrying backpack type sprayer, which requires human effort or by using electric pump. To improve the agriculture system and to reduce the human effort and problems associated with the backpack sprayer new equipment is fabricated which will be beneficial to farmers. The main reason is to use the sprayer Is long time working without failure so we make a decision to avoid like smaller tank capacity and a short time functional motor are avoided on this project the one an only aim of the project is to reduce the work load of former's with lesser investment and also The equipment include renewable energy source (Solar energy) which is eco-friendly to function. The solar panel gives out electric supply to system, the radio controlled transmitter and receiver minimize drudgery of farmer. Also minimize the wastage of pesticide and time. Our contribution on our project is by using eco-friendly reliably available solar energy as a main source of energy making this multifunctional sprayer device by advancing the spraying methods which make friendly to use and operate which can be

CHAPTER 05

CONCLUSION

5.1 Conclusion:

The Proposed Solar device works on the Photovoltaic principle which is ecofriendly, low cost and very much helpful in remote location where supply is unavailable this device reduce the human effort and increases the efficiency of system The expense of the proposed framework is small more when contrasted with traditional sprayer yet the running expense of the framework is exceptionally less. The created framework utilized for show the compost, pesticides. A four wheeled vehicle is moved by itself in a pre-sustained way and showers pesticides utilizing a DC siphon and spout. Guidance is passed to the framework utilizing arduino information which guarantees no immediate conjudgment with human and hence security of administrator is guaranteed.
Additionally, it covers bigger territory in less time with uniform showering.

5.2 Future Scope:

By adopting Hydraulic system to wheels, the Ground clearance can be easily adjusted. The use of Latest computer technology will make to automate the system completely. By adopting adjustable width of frame, the robot can be used for all crops.

DESIGN & FABRICATION OF ROBOT ARM WITH SMARTPHONE CONTROL

A PROJECT REPORT

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ABSTRACT

In recent years the industry and daily routine works are found to be more attracted and implemented through automation via Robots. The pick and place robot is one of the technologies in manufacturing industries which is designed to perform pick and place operations. The system is so designed that it eliminates the human error and human intervention to get more precise work. There are many fields in which human intervention is difficult but the process under consideration has to be operated and controlled this leads to the area in which robots find their applications. Literature suggests that the pick and place robots are designed, implemented in various fields such as; in bottle filling industry, packing industry, used in surveillance to detect and destroy the bombs etc. The project deals with implementing an pick and place robot using RoboArduino for any pick and place functions. The pick and place robot so implemented is controlled using wireless Bluetooth signal. The chassis is supported for the displacement of robotic arm by four Omni wheels. The robotic arm implemented has two degrees of freedom. Many other features such as line follower, wall hugger, obstacle avoider, metal detector etc can be added to this robot for versatility of usage.

CHAPTER-9

CONCLUSION

The proposed concept of pick and place robot using Arduino is implemented via potentiometer. It is found that, the robot so implemented has the ability to locate itself to the location where the object to be lifted is available with the help of chassis and four dc motors. Further depending upon controlling action provided to servo motor it lifts the object and locates the same at required destination.

FUTURE SCOPE

The robot so programmed for pick and place operation can be made versatile and more efficient by providing the feedback and making it to work on own than any human interventions. It can be made possible by image processing tool interfaced with this Arduino. The features that can be added on to improve its efficiency, make it operate on its own thought without any human intervention are line follower, wall hugger, obstacle avoider, metal detector, bomb diffuser etc

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FABRICATION OF DUAL PROCESS AGRICULTURE ROBOT

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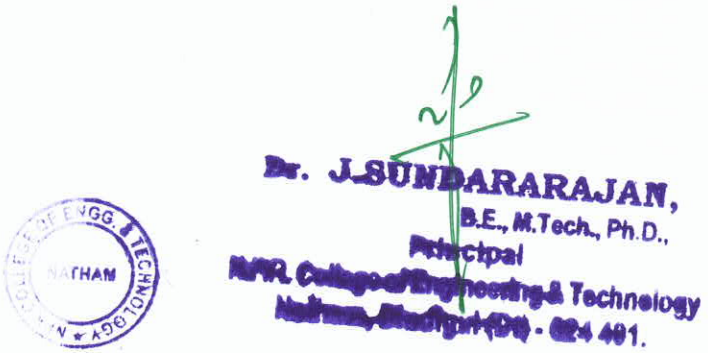
ABSTRACT

The agriculture industry is constantly looking for ways to improve the efficiency and productivity of farming practices. One solution to this problem is the fabrication of a dual-purpose agriculture vehicle for seeding and plowing. This vehicle would be designed to perform both tasks in a single pass, reducing the time and effort required for planting crops. To fabricate such a vehicle, a combination of mechanical engineering and agricultural science would be required. The vehicle would need to have a powerful engine, good ground clearance, and a comfortable operator's cabin. The dimensions of the vehicle would be determined by the size of the fields and the type of crops being planted. The seeding mechanism of the vehicle would be designed to distribute seeds uniformly across the land, using a hopper and a metering mechanism. The ploughing mechanism would be a series of blades or disks that turn over the soil, creating furrows for planting. Both mechanisms would be integrated into a single system that can be controlled by the operator using hydraulics. Safety features such as roll bars and seat belts would be added to protect the operator in case of an accident. Once the vehicle is built, it would be tested on a variety of terrains to ensure that it can handle the load and operate safely. Overall, the fabrication of a dual-purpose agriculture vehicle for seeding and plowing is an innovative solution to increase the efficiency of farming practices. By combining two important tasks into a single pass, farmers can save time and increase productivity, leading to a more sustainable and profitable agricultural industry.

CHAPTER-8

CONCLUSION

Dual-purpose agriculture robots for seeding and plowing have the potential to revolutionize the way that crops are planted and harvested. These robots can reduce labor costs, increase efficiency, and optimize crop growth and yield. They work by using a combination of sensors, mapping technology, and advanced algorithms to navigate and perform tasks in the field. However, there are also some challenges and limitations associated with these robots. They require significant upfront investment and may not be practical for all farming operations. They also require specialized training to operate and maintain, and may not be able to handle all soil and weather conditions. Overall, dual-purpose agriculture robots represent an exciting development in the field of agriculture technology, and are likely to become increasingly important in the years to come as farmers seek new ways to increase productivity and reduce costs.



DESIGN & FABRICATION OF PNEUMATIC VICE

A PROJECT REPORT

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INTERNAL EXAMINER

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EXTERNAL EXAMINER

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ABSTRACT

A vice is a mechanical screw apparatus used for holding or clamping a work piece to allow work to be performed on it with tools such as saws, planes, drills, mills, screwdrivers, sandpaper, etc. Vices usually have one fixed jaw and another parallel jaw which is moved towards or away from the fixed jaw by the screw. Vice is used to drill a wood, metal, etc.by holding your workpiece tightly, it gives you all stability you need so you can make precise cuts. A pneumatic system is controlled through manual or automatic process. In this pneumatic vice project for metal working is provided widely and quick movable clamping jaw and fixed jaw, when the workpiece can be accurate and unchangeable. Using automatically operated pneumatic vice will help you to get the work down easily and save energy.

CHAPTER – 10

CONCLUSION

The project thus gives a system that can easily fixed the work piece & work on it. The pneumatic vice provide extremely high clamping force & high accuracy and repeatability. Pneumatic system can get high production rate. When compressed air is released from the pneumatic components then noise can produced. The operation of pneumatic systems does not produce pollutants. So, the pneumatic vice can be use easily.

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DESIGN AND FABRICATION OF ELECTRIC VEHICLE

A PROJECT REPORT

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ABSTRACT

The proposed work deals with a design of a battery electric vehicle for one passenger and for weight up to 50 kg. This method has been made to fabricate a battery electric vehicle which utilizes the rotational energy of wheels to charge the batteries, there by introducing a system which makes the vehicle pollution free. In order to work with more efficient. The fabrication of chassis is made for the similar dimensions with some modification in its size and shape using Mild Steel (MS) material. The components such as DC Generator, Motor and was arranged in a manner to transfer the rotational energy being experienced by the MS bright rod to the dc generator. The dc motor here has the capacity to produce 12V to 24V, which is the two set of series connection which yields to 24V usage. The batteries are used to provide the rotational energy to the shaft through a motor.

CHAPTER 10
CONCLUSION

10.1 CONCLUSION

With the increasing consumption of natural resources of petrol, diesel it is necessary to shift our way towards alternate resources like the Electric bike and others because it is necessary to identify new way of transport. Electric bike is a modification of the existing cycle by using electric energy and also solar energy if solar panels are provided, that would sum up to increase in energy production. Since it is energy efficient, electric bike is cheaper and affordable to anyone. It can be used for shorter distances by people of any age. It can be contrived throughout the year. The most vital feature of the electric bike is that it does not consume fossil fuels thereby saving cores of foreign currencies. The second most important feature is it is pollution free, eco – friendly and noiseless in operation. For offsetting environmental pollution using of on – board Electric Bike is the most viable solution. It can be charged with the help of AC adapter if there is an emergency. The Operating cost per/km is very less and with the help of solar panel it can lessen up more. Since it has fewer components it can be easily dismantled to small components, thus requiring less maintenance.

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DESIGN & FABRICATION OF SPRINGLESS SUSPENSION CAR USING BEVEL GEAR

A PROJECT REPORT

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ABSTRACT

Suspension systems must support both road holding/handling and ride quality, which are at odds with each other. The tuning of suspensions involves finding the right compromise. It is important for the suspension to keep the road wheel in contact with the road surface as much as possible, because all the road or ground forces acting on the vehicle do so through the contact patches of the tires.

Our Project, The Springless Suspension System Combines a differential mechanism and an oscillating system. A differential is a gear train with three drive shafts that has a property such that the rotational speed of one shaft is the average speeds of the others, or a fixed multiple of that average and Oscillation is the repetitive or periodic variationof an object

The Frame of the system is mostly made of Mild steel. The frame that holds the tires oscillates freely. The same frame is connected to the differential.The motor makes sure that the gears and the wheels are in motion and the oscillating property makes sure that the vehicle is moving forward even in rough terrain.

CHAPTER 10

CONCLUSION

As we have seen the suspension is a revolutionary idea which will provide a comfortable ride by minimizing the vibrations and other factors. It would also allow to set the suspension stiffness as per requirement. Thereby magnetic suspension will be a best substitute for current problems and providing ultimate vehicle dynamics. An approach of the magnetic suspension system has been presented. The simplified mathematical model has been developed. The MSS has the ability to give much smoother ride than any luxury sedan, and less roll and pitch than any sports car.

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DESIGN & FABRICATION OF ELECTRICAL POWER GENERATION FROM GYM UNIT

A PROJECT REPORT

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ABSTRACT

The objective of this project is to generate the electric power by GYM unit. The power will be generated by the pushing movement of the pump activated by human beings. Now day's power demand is gradually more, so the project has been developed to generate the electrical power in order to compensate the electric power demand. This project is designed with Gym unit, non-return valve, air pressure, turbine arrangement, Dynamo, and Battery. Whenever the people steps on this gym unit arrangement, the pump will be made to push down. The non-return valve is connected across the pump. So whenever the pump comes down the valve will release the air. But it doesn't come back. So the air will be stored in the air tank when the pump is pushed down. The turbine arrangement will be rotated when the air releases from the air tank. The dynamo is coupled with the turbine, so the dynamo is rotated and generates the electrical power. When the dynamo rotates the output voltage is stored in the battery. An inverter is connected to the battery to convert DC to AC. From the inverter a CFL is made to glow.

CHAPTER-9

CONCLUSION

The purpose and a put into effect innovative exercise equipment to generate electrical power for the house appliances. These models vary in complexity and accuracy and therefore the model chosen must match the application for which it is needed. It will be very helpful for the rural areas. In this day where the world is challenged to be more responsible sourcing of electrical power. If additional design and study of this concept proves it effective in energy use reduction localized energy delivery and sustainability education, it could productive with effort. The Power generation gym equipment will convert human efforts into electrical energy which otherwise gets wasted. It will help in finding new sources of renewable energy & help us to overcome the energy crises that we are facing & increase in global warming that we are facing to increased use of nonrenewable energy sources for generation of electricity. If all the equipment in the fitness center are fabricated with power generating unit, we can generate more power.

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DESIGN & FABRICATION OF EMERGENCY BRAKING SYSTEM

A PROJECT REPORT

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BONAFIDE CERTIFICATE

Certified that this project report " **EMERGENCY BRAKING SYSTEM** " is the bonafide work of **MAHADU.J (920820114314) , MOHAMED HARISH.H (920820114315), MOHMMED IRFAAN.J (920820114319), SHRIRAM.M (920820114329)** who carried out the project work under supervision

SIGNATURE 30.5.23

Dr.T,SARAVANAKANNAN,M.Tech.,Ph.D

HEAD OF THE DEPARTMENT

Professor,
Department of
Mechanical Engineering,
NPR College of Engineering
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Natham, Dindigul–624001.

SIGNATURE 30/5/23

K.R.KAVITHA M.E.,(Ph.D).

SUPERVISOR

Associate Professor,
Department of
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Natham, Dindigul–624001.

Submitted for the ANNA UNIVESITY viva-voce examination held on 30.05.2023

INTERNALEXAMINER

EXTERNALEXAMINER 30/5/23

ABSTRACT

EMERGENCY BRAKING SYSTEM" is nothing but one of the braking system in automobile at the time of emergency. In this braking system pneumatically operated one. Here the additional pneumatic cylinder and Emergency Button is provided in the automobile itself.

The Use of Pneumatic System can prove to be useful in automation due to its Simplicityand ease of operation. Also IR Sensors to perform these Operation.

Pneumatic actuators also have life long and perform well with negligible maintenancer equirement .

Pneumatic provide spring effect when brakes and actuated, thus prove less Jamming of disk in heavy vehicles carrying huge loads.

Today's fast moving world, automobiles are facing Challenges in terms of having to Survive road accidents, bad road-Conditions and highways.

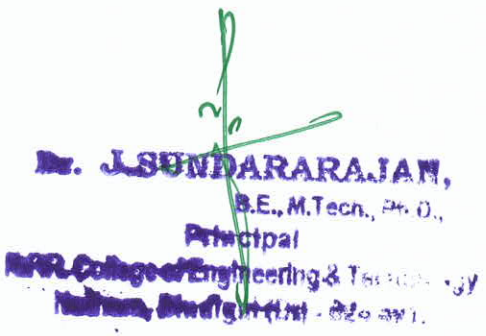
Braking System play a vital role in Controlling the vehicle speed while avoiding accidents. We are created an idea. about pneumatic braking System. It consist of an actuator, Solenoid valve, and Sensors for reactions.

It offers an advanced vehicle Control and minimize the Stopping distance in Slippery and dry Surface

CHAPTER 11

CONCLUSION

Automatic brake with pneumatic system is an additional safety to heavy vehicles with passenger car . It is easy to make such a system in heavy air brake vehicles. An emergency switch is provided for emergency uses . This switch avoids the driver to stand from his seat The system carried out by us made an impressing task in the field of automobile manufacturing industries. It is very useful for the workers work in the lath and small scale industries. This system will reduce the cost involved in the concern. system can be design to the entire requirement task at the shortest time available..



Ayyanar Thunai

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Osho Body builders

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Plot No.32, (S.V.D.Nagar)
Rajappa Nagar,
Kovil Pappakudi (P.o)
MADURAI - 625 018

Date: 20.01.2023

TO WHOM IT MAY CONCERN

This to certify that **Mr.Ruban.V** a student of BE (Mechanical Engineering – Third Year) NPR College of Engineering and Technology, Natham, Dindigul, India has successfully completed Internship (02.01.2023 to 12.01.2023) at Osho Body builders, Madurai. During the period of his Internship with us, he was found punctual, Hardworking and inquisitive.

We wish him every success in life.

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For Osho Body Builders
R. Anbezhini
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TO WHOM IT MAY CONCERN

This to certify that **Mr.Vishnu Bala .C** a student of BE (Mechanical Engineering – Third Year) NPR College of Engineering and Technology, Natham, Dindigul, India has successfully completed Internship (02.01.2023 to 12.01.2023) at Osho Body builders, Madurai. During the period of his Internship with us, he was found punctual, Hardworking and inquisitive.

We wish him every success in life.

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Date: 20.01.2023

TO WHOM IT MAY CONCERN

This to certify that **Mr. Dhakshinamoorthi.T** a student of BE (Mechanical Engineering – Third Year) NPR College of Engineering and Technology, Natham, Dindigul, India has successfully completed Internship (02.01.2023 to 12.01.2023) at Osho Body builders, Madurai. During the period of his Internship with us, he was found punctual, Hardworking and inquisitive.

We wish him every success in life.

NATHAM

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R. Anneleyshmi
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Date: 20.01.2023

TO WHOM IT MAY CONCERN

This to certify that **Mr.Seenivasan.A** a student of BE (Mechanical Engineering – Third Year) NPR College of Engineering and Technology, Natham, Dindigul, India has successfully completed Internship (02.01.2023 to 12.01.2023) at Osho Body builders, Madurai. During the period of his Internship with us, he was found punctual, Hardworking and inquisitive.

We wish him every success in life.

Dr. J. SUNDARARAJAN,
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For Osho Body Builders
R. Anuleyshmi
Partner

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CIN: U28131TZ2009PTC015549

Date:03.02.2023

TO WHOM IT MAY CONCERN

This is to certify that **Mr.Kabilan J** studying in Third year Mechanical Engineering of NPR College of Engineering & Technology, Natham has undergone Internship in our organization from **16.01.2023 to 31.01.2023.**

During the period, his conduct was found to be good.

With regards,

(For Thermo Solutions (INDIA) Pvt. Ltd)

Dr. J.SUNDARARAJAN,
B.E., M.Tech., Ph.D.,
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Natham, Dindigul (Dt) - 624 401.

COLLEGE OF ENGG. & TECHNOLOGY NATHAM

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tsi@thermosolutions.net / www.thermosolutions.net

CIN: U28131TZ2009PTC015549

Date:03.02.2023

TO WHOM IT MAY CONCERN

This is to certify that **Mr.Karthick Raj S** studying in Third year Mechanical Engineering of NPR College of Engineering & Technology, Natham has undergone Internship in our organization from **16.01.2023 to 31.01.2023.**

During the period, his conduct was found to be good.

With regards,

(For Thermo Solutions (INDIA) Pvt. Ltd)

Dr. J.SUNDARARAJAN,
B.E., M.Tech., Ph.D.,
Principal
N.P.R. College of Engineering & Technology
Natham, Dindigul [illegible].

COLLEGE OF ENGG. & TECHNOLOGY NATHAM

CIN: U28131TZ2009PTC015549

Date:03.02.2023

TO WHOM IT MAY CONCERN

This is to certify that **Mr.Prakash Kumar G** studying in Third year Mechanical Engineering of NPR College of Engineering & Technology, Natham has undergone Internship in our organization from **16.01.2023 to 31.01.2023.**

During the period, his conduct was found to be good.

With regards,

(For Thermo Solutions (INDIA) Pvt. Ltd)

Dr. J.SUNDARARAJAN,
B.E., M.Tech., Ph.D.,
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Natham, Dindigul (Dt) - 624 401.

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Chennai-Nadu 602105

Date: **20/01/2023**

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr.Ilancheran A** studying III year BE Mechanical Engineering in NPR College of Engineering & Technology, Natham, Dindigul, has successfully completed Twenty-One days internship from **21/12/2023 to 12/01/2023** in our company. During the period the training period he was has been extremely inquisitive and hard working. He summed to be writing to learn the functions/process with kwon interest.

We wish him every success in life.

Dr. S.SUNDARARAJAN,
B.E., M.Tech., Ph.D.,
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Chennai-Nadu 602105

Date: **20/01/2023**

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr.Raj Mohan R** studying III year BE Mechanical Engineering in NPR College of Engineering & Technology, Natham, Dindigul, has successfully completed Twenty-One days internship from **21/12/2023 to 12/01/2023** in our company. During the period the training period he was has been extremely inquisitive and hard working. He summed to be writing to learn the functions/process with kwon interest.

We wish him every success in life.

Dr. J.SUNDARARAJAN,
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Chennai-Nadu 602105

Date: **20/01/2023**

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr.Sivakumar S** studying III year BE Mechanical Engineering in NPR College of Engineering & Technology, Natham, Dindigul, has successfully completed Twenty-One days internship from **21/12/2023 to 12/01/2023** in our company. During the period the training period he was has been extremely inquisitive and hard working. He summed to be writing to learn the functions/process with kwon interest.

We wish him every success in life.

Dr. J.SUNDARARAJAN,
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Chennai-Nadu 602105

Date: **20/01/2023**

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr.Maheswaran S** studying III year BE Mechanical Engineering in NPR College of Engineering & Technology, Natham, Dindigul, has successfully completed Twenty-One days internship from **21/12/2023 to 12/01/2023** in our company. During the period the training period he was has been extremely inquisitive and hard working. He summed to be writing to learn the functions/process with kwon interest.

We wish him every success in life.

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Date: 30.01.2023

TO WHOM IT MAY CONCERN

This to certify that **Mr.Gowthaman.M** a student of BE (Mechanical Engineering – Final Year) NPR College of Engineering and Technology, Natham, Dindigul, India has successfully completed In-Plant Training (**23.01.2023 to 28.01.2023**) at Osho Body builders, Madurai. During the period of his In-Plant Training with us, he was found punctual, Hardworking and inquisitive.

We wish him every success in life.

Dr. J.SUNDARARAJAN,
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For Osho Body Builders
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Date: 30.01.2023

TO WHOM IT MAY CONCERN

This to certify that **Mr.Iman Mohammed.T** a student of BE (Mechanical Engineering – Final Year) NPR College of Engineering and Technology, Natham, Dindigul, India has successfully completed In-Plant Training **(23.01.2023 to 28.01.2023)** at Osho Body builders, Madurai. During the period of his In-Plant Training with us, he was found punctual, Hardworking and inquisitive.

We wish him every success in life.

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For Osho Body Builders
R. Anneleyshmi
Partner

COLLEGE OF ENGG. & TECHNOLOGY NPR NATHAM

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MADURAI - 625 018

Date: 30.01.2023

TO WHOM IT MAY CONCERN

This to certify that **Mr.Rakesh.M** a student of BE (Mechanical Engineering – Final Year) NPR College of Engineering and Technology, Natham, Dindigul, India has successfully completed In-Plant Training (**23.01.2023 to 28.01.2023**) at Osho Body builders, Madurai. During the period of his In-Plant Training with us, he was found punctual, Hardworking and inquisitive.

We wish him every success in life.

Dr. J.SUNDARARAJAN,
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For Osho Body Builders
R. Anuleyshmi
Partner

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Date: 30.01.2023

TO WHOM IT MAY CONCERN

This to certify that **Mr.Ruban.P** a student of BE (Mechanical Engineering – Final Year) NPR College of Engineering and Technology, Natham, Dindigul, India has successfully completed In-Plant Training (**23.01.2023 to 28.01.2023**) at Osho Body builders, Madurai. During the period of his In-Plant Training with us, he was found punctual, Hardworking and inquisitive.

We wish him every success in life.

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For Osho Body Builders
R. Anneleyshmi
Partner

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Date: **04/02/2023**

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Ms.Maha Lakshmi G** studying IV year BE Mechanical Engineering in NPR College of Engineering & Technology, Natham, Dindigul, has successfully completed Fourteen days internship from **17/01/2023 to 31/01/2023** in our company. During the period the training period she was has been extremely inquisitive and hard working. She summed to be writing to learn the functions/process with kwon interest.

We wish her every success in life.

Dr. J.SUNDARARAJAN,
B.E., M.Tech., Ph.D.,
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Chennai-Nadu 602105

Date: **04/02/2023**

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr.Nagaraj S** studying IV year BE Mechanical Engineering in NPR College of Engineering & Technology, Natham, Dindigul, has successfully completed Fourteen days internship from **17/01/2023 to 31/01/2023** in our company. During the period the training period he was has been extremely inquisitive and hard working. He summed to be writing to learn the functions/process with kwon interest.

We wish him every success in life.

Dr. J.SUNDARARAJAN,
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Chennai-Nadu 602105

Date: **04/02/2023**

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr.Raghulpandian B** studying IV year BE Mechanical Engineering in NPR College of Engineering & Technology, Natham, Dindigul, has successfully completed Fourteen days internship from **17/01/2023 to 31/01/2023** in our company. During the period the training period he was has been extremely inquisitive and hard working. He summed to be writing to learn the functions/process with kwon interest.

We wish him every success in life.

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Chennai-Nadu 602105

Date: **04/02/2023**

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr.Rakesh S** studying IV year BE Mechanical Engineering in NPR College of Engineering & Technology, Natham, Dindigul, has successfully completed Fourteen days internship from **17/01/2023 to 31/01/2023** in our company. During the period the training period he was has been extremely inquisitive and hard working. He summed to be writing to learn the functions/process with kwon interest.

We wish him every success in life.

Dr. J.SUNDARARAJAN, B.E., M.Tech., Ph.D.,
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Chennai-Nadu 602105

Date: **04/02/2023**

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Ms.Shobana K** studying IV year BE Mechanical Engineering in NPR College of Engineering & Technology, Natham, Dindigul, has successfully completed Fourteen days internship from **17/01/2023 to 31/01/2023** in our company. During the period the training period she was has been extremely inquisitive and hard working. She summed to be writing to learn the functions/process with kwon interest.

We wish her every success in life.

Dr. J.SUNDARARAJAN,
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Chennai-602 105.

NPR COLLEGE OF ENGG. & TECHNOLOGY
NATHAM

CIN: U28131TZ2009PTC015549

Date:01.02.2023

TO WHOM IT MAY CONCERN

This is to certify that **Mr.Abilash A** studying in final year Mechanical Engineering of NPR College of Engineering & Technology, Natham has undergone In-Plant training in our organization from **23.01.2023 to 28.01.2023.**

During the period, his conduct was found to be good.

With regards,

(For Thermo Solutions (INDIA) Pvt. Ltd)

Dr. J.SUNDARARAJAN,
B.E., M.Tech., Ph.D.,
Principal
N.P.R. College of Engineering & Technology
Natham, Dindigul (Dt.) - [illegible].

NPR COLLEGE OF ENGG. & TECHNOLOGY ★ NATHAM

CIN: U28131TZ2009PTC015549

Date:01.02.2023

TO WHOM IT MAY CONCERN

This is to certify that **Mr.Manikandan N** studying in final year Mechanical Engineering of NPR College of Engineering & Technology, Natham has undergone In-Plant training in our organization from **23.01.2023 to 28.01.2023.**

During the period, his conduct was found to be good.

With regards,

(For Thermo Solutions (INDIA) Pvt. Ltd)

Dr. J.SUNDARARAJAN,
B.E., M.Tech., Ph.D.,
Principal
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Natham, Dindigul (Dt.) - [illegible]

COLLEGE OF ENGG. & TECHNOLOGY NATHAM

CIN: U28131TZ2009PTC015549

Date:01.02.2023

TO WHOM IT MAY CONCERN

This is to certify that **Mr.Ramakrishnan B** studying in final year Mechanical Engineering of NPR College of Engineering & Technology, Natham has undergone In-Plant training in our organization from **23.01.2023 to 28.01.2023.**

During the period, his conduct was found to be good.

With regards,

(For Thermo Solutions (INDIA) Pvt. Ltd)

Dr. J.SUNDARARAJAN,
B.E., M.Tech., Ph.D.,
Principal
N.P.R. College of Engineering & Technology
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NATHAM

CIN: U28131TZ2009PTC015549

Date:01.02.2023

TO WHOM IT MAY CONCERN

This is to certify that **Mr.Saravanakumar M** studying in final year Mechanical Engineering of NPR College of Engineering & Technology, Natham has undergone In-Plant training in our organization from **23.01.2023 to 28.01.2023.**

During the period, his conduct was found to be good.

With regards,

(For Thermo Solutions (INDIA) Pvt. Ltd)

Dr. J.SUNDARARAJAN,
B.E., M.Tech., Ph.D.,
Principal
N.P.R. College of Engineering & Technology
Natham, Dindigul (Dt) - 624 401.

NPR COLLEGE OF ENGG. & TECHNOLOGY NATHAM

JM Frictech India Pvt Ltd (JMI)
G27, SIPCOT Industrial Park,
Katrambakkam Village, Irrungattukottai,
Chennai-Nadu 602105

Date: **04/08/2023**

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr.Aathiraja D** studying IV year BE Mechanical Engineering in NPR College of Engineering & Technology, Natham, Dindigul, has successfully completed Thirty days internship from **03/07/2023 to 01/08/2023** in our company. During the period the training period he was has been extremely inquisitive and hard working. He summed to be writing to learn the functions/process with kwon interest.

We wish him every success in life.

Dr. J.SUNDARARAJAN,
B.E., M.Tech., Ph.D.,
Principal
NPR College of Engineering & Technology
Natham, Dindigul (Dt). 624 401.

JM Frictech India Pvt. Ltd,
G-27, SIPCOT Industrial Park,
Irrungattukottai,
Chennai-602 105.

NPR COLLEGE OF ENGG. & TECHNOLOGY NATHAM

JM Frictech India Pvt Ltd (JMI)
G27, SIPCOT Industrial Park,
Katrambakkam Village, Irrungattukottai,
Chennai-Nadu 602105

Date: **04/08/2023**

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr.Arikaran N** studying IV year BE Mechanical Engineering in NPR College of Engineering & Technology, Natham, Dindigul, has successfully completed Thirty days internship from **03/07/2023 to 01/08/2023** in our company. During the period the training period he was has been extremely inquisitive and hard working. He summed to be writing to learn the functions/process with kwon interest.

We wish him every success in life.

Dr. J.SUNDARARAJAN, M.E., M.Tech., Ph.D.,
Principal
NPR College of Engineering & Technology
Natham, Dindigul (Dt) - 624 401.

JM Frictech India Pvt. Ltd,
G-27, SIPCOT Industrial Park,
Irrungattukottai,
Chennai-602 105.

NPR COLLEGE OF ENGG. & TECHNOLOGY ★ NATHAM

JM Frictech India Pvt Ltd (JMI)
G27, SIPCOT Industrial Park,
Katrambakkam Village, Irrungattukottai,
Chennai-Nadu 602105

Date: **04/08/2023**

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr.Chinnaiya Raja N** studying IV year BE Mechanical Engineering in NPR College of Engineering & Technology, Natham, Dindigul, has successfully completed Thirty days internship from **03/07/2023 to 01/08/2023** in our company. During the period the training period he was has been extremely inquisitive and hard working. He summed to be writing to learn the functions/process with kwon interest.

We wish him every success in life.

Dr. J.SUNDARARAJAN,
B.E., M.Tech., Ph.D.,
Principal
N.P.R. College of Engineering & Technology
Natham, Dindigul (Dt) - 624 401.

JM Frictech India Pvt. Ltd,
G-27, SIPCOT Industrial Park,
Irrungattukottai,
Chennai-602 105.

NPR COLLEGE OF ENGG. & TECHNOLOGY ★ NATHAM

JM Frictech India Pvt Ltd (JMI)
G27, SIPCOT Industrial Park,
Katrambakkam Village, Irrungattukottai,
Chennai-Nadu 602105

Date: **04/08/2023**

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr.Deepak R** studying IV year BE Mechanical Engineering in NPR College of Engineering & Technology, Natham, Dindigul, has successfully completed Thirty days internship from **03/07/2023 to 01/08/2023** in our company. During the period the training period he was has been extremely inquisitive and hard working. He summed to be writing to learn the functions/process with kwon interest.

We wish him every success in life.

Dr. J.SUNDARARAJAN,
B.E., M.Tech., Ph.D.,
Principal
N.P.R. College of Engineering & Technology
Natham, Dindigul(Dt) - 624 401.

JM Frictech India Pvt. Ltd,
G-27, SIPCOT Industrial Park,
Irrungattukottai,
Chennai-602 105.

NATHAM

JM Frictech India Pvt Ltd (JMI)
G27, SIPCOT Industrial Park,
Katrambakkam Village, Irrungattukottai,
Chennai-Nadu 602105

Date: **04/08/2023**

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr.Dhayal Priyadharsan S** studying IV year BE Mechanical Engineering in NPR College of Engineering & Technology, Natham, Dindigul, has successfully completed Thirty days internship from **03/07/2023 to 01/08/2023** in our company. During the period the training period he was has been extremely inquisitive and hard working. He summed to be writing to learn the functions/process with kwon interest.

We wish him every success in life.

Dr. J.SUNDARARAJAN,
B.E., M.Tech., Ph.D.,
Principal
N.P.R. College of Engineering & Technology
Natham, Dindigul(Dt) - 624 401.

JM Frictech India Pvt. Ltd,
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Irrungattukottai,
Chennai-602 105.

NATHAM

JM Frictech India Pvt Ltd (JMI)
G27, SIPCOT Industrial Park,
Katrambakkam Village, Irrungattukottai,
Chennai-Nadu 602105

Date: **30/01/2023**

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr.Gunapathi V** studying II year BE Mechanical Engineering in NPR College of Engineering & Technology, Natham, Dindigul, has successfully completed Eight days In-Plant training from **18/01/2023 to 25/01/2023** in our company. During the period the training period he was has been extremely inquisitive and hard working. He summed to be writing to learn the functions/process with kwon interest.

We wish him every success in life.

Dr. J.SUNDARARAJAN,
B.E., M.Tech., Ph.D.,
Principal
NPR College of Engineering & Technology
Natham, Dindigul (Dt) - 624 401.

JM Frictech India Pvt. Ltd,
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Irrungattukottai,
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G27, SIPCOT Industrial Park, Katrambakkam Village, Irrungattukottai, Chennai-Nadu 602105
E-mail: gestamp@gmail.com website : http:www.jmil.in

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JM Frictech India Pvt Ltd (JMI)
G27, SIPCOT Industrial Park,
Katrambakkam Village, Irrungattukottai,
Chennai-Nadu 602105

Date: **30/01/2023**

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr.Nazeer Khan B** studying II year BE Mechanical Engineering in NPR College of Engineering & Technology, Natham, Dindigul, has successfully completed Eight days In-Plant training from **18/01/2023 to 25/01/2023** in our company. During the period the training period he was has been extremely inquisitive and hard working. He summed to be writing to learn the functions/process with kwon interest.

We wish him every success in life.

Dr. J.SUNDARARAJAN,
B.E., M.Tech., Ph.D.,
Principal
NPR College of Engineering & Technology
Natham, Dindigul (Dt) - 624 401.

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Chennai-602 105.

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E-mail: gestamp@gmail.com website : http:www.jmil.in

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JM Frictech India Pvt Ltd (JMI)
G27, SIPCOT Industrial Park,
Katrambakkam Village, Irrungattukottai,
Chennai-Nadu 602105

Date: **30/01/2023**

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr.Venkat Arjun A** studying II year BE Mechanical Engineering in NPR College of Engineering & Technology, Natham, Dindigul, has successfully completed Eight days In-Plant training from **18/01/2023 to 25/01/2023** in our company. During the period the training period he was has been extremely inquisitive and hard working. He summed to be writing to learn the functions/process with kwon interest.

We wish him every success in life.

Dr. J.SUNDARARAJAN,
B.E., M.Tech., Ph.D.,
Principal
N.P.R. College of Engineering & Technology
Natham, Dindigul (Dt) - 624 401.

JM Frictech India Pvt. Ltd,
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Chennai-602 105.

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JM Frictech India Pvt Ltd (JMI)
G27, SIPCOT Industrial Park,
Katrambakkam Village, Irrungattukottai,
Chennai-Nadu 602105

Date: **30/01/2023**

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr.Kavin Arasu P** studying II year BE Mechanical Engineering in NPR College of Engineering & Technology, Natham, Dindigul, has successfully completed Eight days In-Plant training from **18/01/2023 to 25/01/2023** in our company. During the period the training period he was has been extremely inquisitive and hard working. He summed to be writing to learn the functions/process with kwon interest.

We wish him every success in life.

Dr. J.SUNDARARAJAN,
B.E., M.Tech., Ph.D.,
Principal
N.P.R. College of Engineering & Technology
Natham, Dindigul (Dt) - 624 401.

JM Frictech India Pvt. Ltd,
G-27, SIPCOT Industrial Park,
Irrungattukottai,
Chennai-602 105.

COLLEGE OF ENGG & TECH NATHAM

CIN: U28131TZ2009PTC015549

Date:01.08.2023

TO WHOM IT MAY CONCERTN

This is to certify that **Mr.Manokaran K** studying in second year Mechanical Engineering of NPR College of Engineering & Technology, Natham has undergone In-Plant training in our organization from **24.07.2023 to 28.07.2023.**

During the period, his conduct was found to be good.

With regards,

(For Thermo Solutions (INDIA) Pvt. Ltd)

Dr. J.SUNDARARAJAN,
B.E., M.Tech., Ph.D.,
Principal
N.P.R. College of Engineering & Technology
Natham, Dindigul (Dt) - 624 401.

NPR COLLEGE OF ENGG. & TECHNOLOGY
NATHAM

CIN: U28131TZ2009PTC015549

Date:01.08.2023

TO WHOM IT MAY CONCERN

This is to certify that **Mr.Poovarasan S** studying in second year Mechanical Engineering of NPR College of Engineering & Technology, Natham has undergone In-Plant training in our organization from **24.07.2023 to 28.07.2023.**

During the period, his conduct was found to be good.

With regards,

(For Thermo Solutions (INDIA) Pvt. Ltd)

Dr. J.SUNDARARAJAN,
B.E., M.Tech., Ph.D.,
Principal
N.P.R. College of Engineering & Technology
Natham, Dindigul (Dt) - 624 401.

COLLEGE OF ENGG. & TECHNOLOGY
NATHAM

CIN: U28131TZ2009PTC015549

Date:01.08.2023

TO WHOM IT MAY CONCERN

This is to certify that **Mr.Vidhya Shankar P** studying in second year Mechanical Engineering of NPR College of Engineering & Technology, Natham has undergone In-Plant training in our organization from **24.07.2023 to 28.07.2023.**

During the period, his conduct was found to be good.

With regards,

(For Thermo Solutions (INDIA) Pvt. Ltd)

Dr. J.SUNDARARAJAN,
B.E., M.Tech., Ph.D.,
Principal
N.P.R. College of Engineering & Technology
Natham, Dindigul (Dt) - 624 401.

COLLEGE OF ENGG. & TECHNOLOGY
NATHAM
N.P.R.

CIN: U28131TZ2009PTC015549

Date:01.08.2023

TO WHOM IT MAY CONCERN

This is to certify that **Mr.Santhosh Kumar K** studying in second year Mechanical Engineering of NPR College of Engineering & Technology, Natham has undergone In-Plant training in our organization from **24.07.2023 to 28.07.2023.**

During the period, his conduct was found to be good.

With regards,

(For Thermo Solutions (INDIA) Pvt. Ltd)

Dr. J.SUNDARARAJAN, B.E., M.Tech., Ph.D.,
Principal
NPR College of Engineering & Technology
Natham, Dindigul - 624 401.

NPR COLLEGE OF ENGG. & TECHNOLOGY NATHAM

Ayyanar Thunai

Web : oshobodybuilders.in
E.mail : osho.osho5@gmail.com
Ph : 0452 - 6562250

Cell : 98425 - 32220
98430 - 83074

Osho Body builders

ARAI ACCREDIATED &
ISO CERTIFIED COMPANY

TIN No. 33915023027

Plot No.32, (S.V.D.Nagar)
Rajappa Nagar,
Kovil Pappakudi (P.o)
MADURAI - 625 018

Date: 01.08.2023

TO WHOM IT MAY CONCERN

This to certify that **Mr.Charanjith.P** a student of BE (Mechanical Engineering – Second Year) NPR College of Engineering and Technology, Natham, Dindigul, India has successfully completed Internship **(30.06.2023 to 28.07.2023)** at Osho Body builders, Madurai. During the period of his Internship with us, he was found punctual, Hardworking and inquisitive.

We wish him every success in life.

Dr. J.SUNDARARAJAN, M.E., M.Tech., Ph.D.,
Principal
NPR College of Engineering & Technology
Natham, Dindigul (Dt) - 624 401.

For Osho Body Builders
R. Anneleyshmi
Partner

NPR COLLEGE OF ENGG. & TECHNOLOGY
NATHAM

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Ayyanar Thunai

Web : oshobodybuilders.in
E.mail : osho.osho5@gmail.com
Ph : 0452 - 6562250

Cell : 98425 - 32220
98430 - 83074

Osho Body builders

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ISO CERTIFIED COMPANY

TIN No. 33915023027

Plot No.32, (S.V.D.Nagar)
Rajappa Nagar,
Kovil Pappakudi (P.o)
MADURAI - 625 018

Date: 01.08.2023

TO WHOM IT MAY CONCERN

This to certify that **Mr.Jeeva Kumar.S** a student of BE (Mechanical Engineering – Second Year) NPR College of Engineering and Technology, Natham, Dindigul, India has successfully completed Internship (**30.06.2023 to 28.07.2023)** at Osho Body builders, Madurai. During the period of his Internship with us, he was found punctual, Hardworking and inquisitive.

We wish him every success in life.

Dr. J.SUNDARARAJAN,
B.E., M.Tech., Ph.D.,
Principal
NPR College of Engineering & Technology
Natham, Dindigul (Dt) - 624 401.

For Osho Body Builders
R. Anneleghmi
Partner

NPR COLLEGE OF ENGG. & TECHNOLOGY
NATHAM

ELEGANCE IN SHAPE AND EXCELLENCE IN QUALITY IS OUR WATCH WORD

Ayyanar Thunai

Web : oshobodybuilders.in
E.mail : osho.osho5@gmail.com
Ph : 0452 - 6562250

Cell : 98425 - 32220
98430 - 83074

Osho Body builders

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ISO CERTIFIED COMPANY

TIN No. 33915023027

Plot No.32, (S.V.D.Nagar)
Rajappa Nagar,
Kovil Pappakudi (P.o)
MADURAI - 625 018

Date: 01.08.2023

TO WHOM IT MAY CONCERN

This to certify that **Mr.Sukumar.K** a student of BE (Mechanical Engineering – Second Year) NPR College of Engineering and Technology, Natham, Dindigul, India has successfully completed Internship **(30.06.2023 to 28.07.2023)** at Osho Body builders, Madurai. During the period of his Internship with us, he was found punctual, Hardworking and inquisitive.

We wish him every success in life.

Dr. J.SUNDARARAJAN,
B.E., M.Tech., Ph.D.,
Principal
NPR. College of Engineering & Tech...
Natham, Dindigul Dt. ...

For Osho Body Builders
R. Anneleyshmi
Partner

COLLEGE OF ENGG. & TECHNOLOGY ★ NPR
NATHAM

ELEGANCE IN SHAPE AND EXCELLENCE IN QUALITY IS OUR WATCH WORD

Ayyanar Thunai

Web : oshobodybuilders.in
E.mail : osho.osho5@gmail.com
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Cell : 98425 - 32220
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Osho Body builders

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ISO CERTIFIED COMPANY

TIN No. 33915023027

Plot No.32, (S.V.D.Nagar)
Rajappa Nagar,
Kovil Pappakudi (P.o)
MADURAI - 625 018

Date: 01.08.2023

TO WHOM IT MAY CONCERN

This to certify that **Mr.Kannan.S** a student of BE (Mechanical Engineering – Second Year) NPR College of Engineering and Technology, Natham, Dindigul, India has successfully completed Internship **(30.06.2023 to 28.07.2023)** at Osho Body builders, Madurai. During the period of his Internship with us, he was found punctual, Hardworking and inquisitive.

We wish him every success in life.

Dr. J.SUNDARARAJAN.
B.E., M.Tech., Ph.D.,
Principal
NPR College of Engineering & Technology
Natham, Dindigul (Dt) - 624 401.

For Osho Body Builders
R. Annalakshmi
Partner

COLLEGE OF ENGG. & TECHNOLOGY ★ NPR
NATHAM

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Ayyanar Thunai

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Osho Body builders

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Plot No.32, (S.V.D.Nagar)
Rajappa Nagar,
Kovil Pappakudi (P.o)
MADURAI - 625 018

Date: 01.08.2023

TO WHOM IT MAY CONCERN

This to certify that **Mr.Kesavabommaiah.T** a student of BE (Mechanical Engineering – Second Year) NPR College of Engineering and Technology, Natham, Dindigul, India has successfully completed Internship **(30.06.2023 to 28.07.2023)** at Osho Body builders, Madurai. During the period of his Internship with us, he was found punctual, Hardworking and inquisitive.

We wish him every success in life.

Dr. J.SUNDARARAJAN,
B.E., M.Tech., Ph.D.,
Principal
NPR College of Engineering & Technology
Natham, Dindigul (Dt) - 624 401.

For Osho Body Builders
R. Anandeghini
Partner

NPR COLLEGE OF ENGG. & TECHNOLOGY
NATHAM

ELEGANCE IN SHAPE AND EXCELLENCE IN QUALITY IS OUR WATCH WORD