


HINDUSTHAN COLLEGE OF ENGINEERING AND TECHNOLOGY

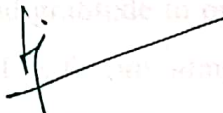
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BONAFIDE CERTIFICATE

Certified that this project report "TWO STAGE CASCADE HEAT PUMP IN HIGH TEMPERATURE" is the Bonafide work of "ASHIK R K (20108014), DEVA S (20108822), GIDEON SELVAKUMAR S (20108826), HARI BALA KRISHNAN V (20108828)" who carried out the project work under my supervision.


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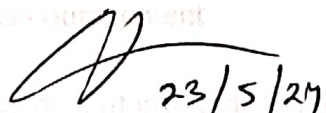
Dr.L. KARTHICK., M.E., Ph.D.,
SUPERVISOR, Assistant Professor,
Department of Mechanical Engineering
Hindusthan College of Engineering and
Technology, Coimbatore-641 032.

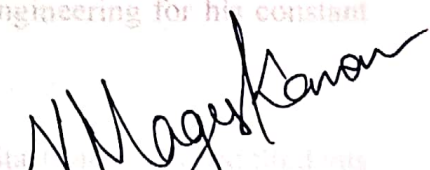

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Dr. K. SIVA., M.TECH., Ph.D.,
HEAD OF THE DEPARTMENT
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Hindusthan College of Engineering and
Technology, Coimbatore - 641 032.



Submitted for the Anna University Project Viva-Voce conducted on 23/5/24....


23/5/24
INTERNAL EXAMINER


EXTERNAL EXAMINER

ANNA UNIVERSITY
CHENNAI-600025

BONAFIDE CERTIFICATE

Certified that this project report titled “**PERFORMANCE ANALYSIS OF JET IMPINGEMENT SOLAR AIR HEATER**” is the bonafide work of “**ANOOP H (20108018), ACHYUT S (20108801), AKSHAI S KUMAR (20108807), HARI L (20108829)**” who carried out the project work under my supervision.


SIGNATURE
22.5.2024

Dr.M.MOHANRAJ,

Professor,Supervisor.,

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Dr. K.SIVA,

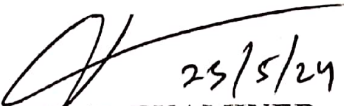
Head of the Department.,

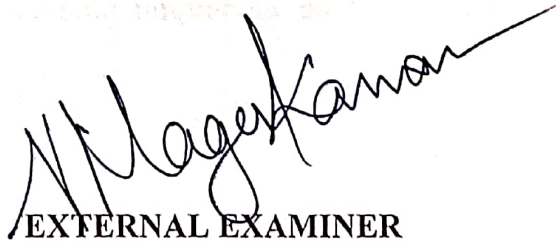
Department of Mechanical Engineering

Hindusthan College of Engineering and
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INTERNAL EXAMINER


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HINDUSTHAN COLLEGE OF ENGINEERING AND TECHNOLOGY

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Certified that this project report "DESIGN AND FABRICATION OF GREEN HOUSE SOLAR DRYER" is the Bonafide work of "AMTHADUL KAREEM A (20108015), JAVIDABUBAKAR A (20108033), DINESHKUMAR S (20108824), GOKUL S (20108827)" who carried out the project work under my supervision.


23/5/24
SIGNATURE

Mr. K. RAMESHKUMAR, M.E.,
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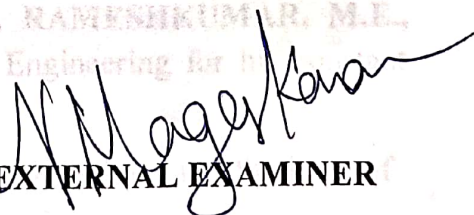

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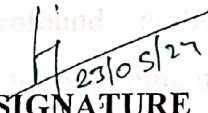
Certified that this project report "DESIGN AND ANALYSIS OF ROBOTIC MANIPULATOR IN THE CASTING INDUSTRY TO HANDLE SHELL" is the Bonafide work of "BALACHANDAR K (20108024), AFSAL AHAMED K (20108802), ARAVINTH S (20108812), HARI S (20108831)" who carried out the project work under my supervision.


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Dr.C.NITHYANANDAM.,M.E.,Ph.D.,

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Dr.K.SIVA.,M.TECH.,Ph.D.,

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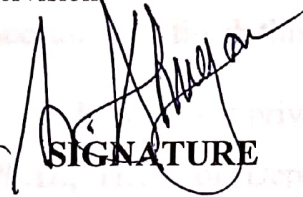

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Certified that this project report "EXPERIMENTAL INVESTIGATION ON WELDING OF HIGH STRENGTH LOW ALLOY STEEL WITH MECHANICAL AND METALLURGICAL BEHAVIOUR" is the bonafide work of "AJITHKUMAR T(20108006), AKASH R(20108010), ARJUNAN M M (20108020), DHAYANITHI B A(20108027)" who carried out the project work under my supervision.



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Dr.K.SRIHARRISH M.E, Ph.D.

Dr. K. SIVA., M.TECH., Ph.D.,

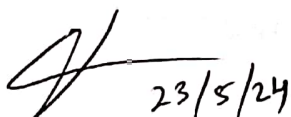
Assistant Professor,

HEAD OF THE DEPARTMENT

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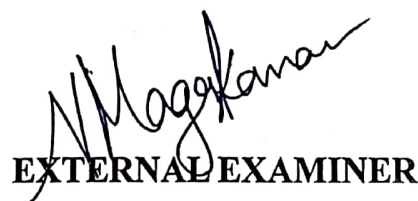
Department of Mechanical Engineering
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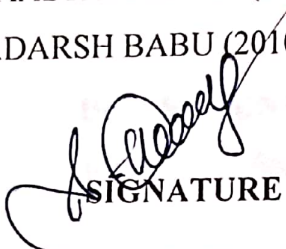
INTERNAL EXAMINER



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Certified that this project report “**EXPERIMENTAL ANALYSIS AND OPTIMIZATION OF CUT QUALITY ON Mg ALLOY BY USING WEDM**” is the Bonafide work of “**AADITHYAN S (20108001), ALAN THOMAS (20108013), AMAL S (20108013), ADARSH BABU (20108896)**” who carried out the project work under my supervision.



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Ir. A. NAZEERAHAMED, ME., Ph.D*

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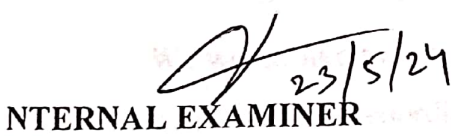


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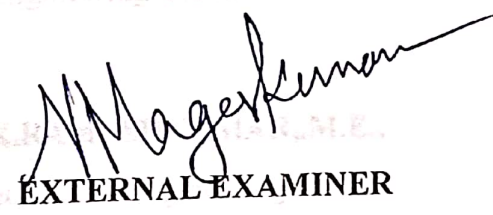
Dr. K. SIVA., M.TECH., Ph.D.,

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Hindusthan College of Engineering and
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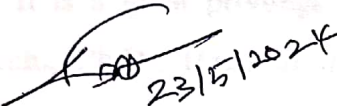
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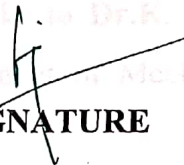
BONAFIDE CERTIFICATE

Certified that this project report "DESIGN AN ANALYSIS OF LOW-COST MOULD BY ARAMID FIBER REINFORCED POLYMER (AFRP) USING 3DPRINTER" is the bonafide work of ABHINAND CB (20108002):AJO JOSE JR (20108007); AKSHAY KANNAN U (20108012): DERICK KENNEDY (20108026) who carried out the project work under my supervision.


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Dr. C. NITHYANANDAM., M.E., Ph.D.,
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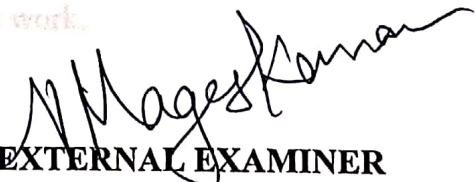

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Dr. K. SIVA., M.TECH., Ph.D.,
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Department of Mechanical Engineering
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Submitted for The End Semester Project Viva-Voce conducted on .23/5/24


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Certified that this project report "PERFORMANCE ENHANCEMENT OF DIESEL ENGINE BY OPTIMIZING HYDROGEN FLOW RATE AND INJECTION TIMING" is the Bonafide work of "ABU ASLAM (20108003), AHAMMED NAHEEL EP (20108004), FADHIL RAHMAN M (20108028); FEBIN ROSAN M (20108029)" who carried out the project work under my supervision.


SIGNATURE

Dr. P. JEYALAKSHMI., M.E., Ph.D.,

SUPERVISOR, Professor,

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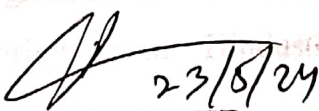

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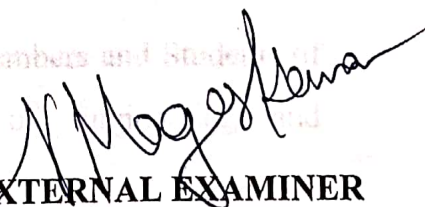
Dr. K. SIVA., M.TECH., Ph.D.,

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Hindusthan College of Engineering and
Technology, Coimbatore – 641 032.

Submitted for the Anna University Project Viva-Voce conducted on 23/05/24


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INTERNAL EXAMINER

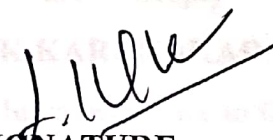

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Certified that this project report “ **TWO STAGE CASCADE HEAT PUMP FOR LOW TEMPERATURE**” is the bonfide work of “AKILKUMAR C S (20108806), ALEXANDER A (20108808), BALACHANDRAN M (20108818), HARI PRASATH R (20108830)” who carried out the project work under my supervision.


SIGNATURE

Dr. L. KARTHICK., M.E., Ph.D.,
Assistant Professor,

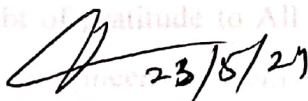
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Dr. K. SIVA., M.TECH., Ph.D.,
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Hindusthan College of Engineering and
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Submitted for the Anna University Project Viva-Voce conducted on 23/5/2024...


INTERNAL EXAMINER


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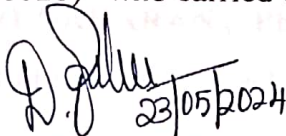
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Certified that this project report "MUSHROOM DRYING WITH SOLAR ASSISTED HEAT PUMP SYSTEM" is the bonafide work of "AJAY KANNAN M (20108005), AMUTHAN M (20108016), ARAVINDH P S (20108019), ASISH K (20108021)" who carried out the project work under my supervision.


23/05/2024

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Mr. D. PRABHU, M.E.,

SUPERVISOR, Assistant Professor,

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Technology, Coimbatore-641 032.


23/05/2024

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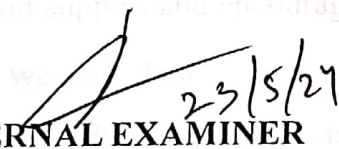
Dr. K. SIVA., M.TECH., Ph.D.,

HEAD OF THE DEPARTMENT

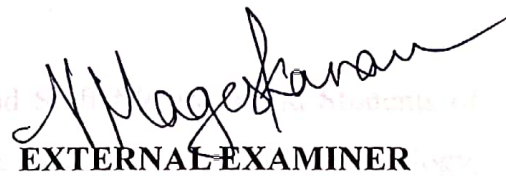
Department of Mechanical Engineering

Hindusthan College of Engineering
and Technology, Coimbatore -641032.

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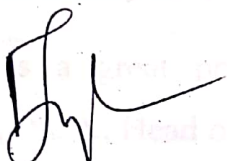
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TECHNOLOGY**

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BONAFIDE CERTIFICATE

Certified that this project report "HYDROGEN ENRICHMENT EFFECTS ON PERFORMANCE AND EMISSION CHARACTERISTICS OF A DIESEL ENGINE OPERATED WITH DIESEL - BIODIESEL BLENDS" is the Bonafide work of "AKASH P (20108804), ANU KRISHNAN R (20108810), EBIN VARGHESE (20108825)," who carried out the project work under my supervision.



SIGNATURE

Dr. P. JEYALAKSHMI, M.E., Ph.D.,

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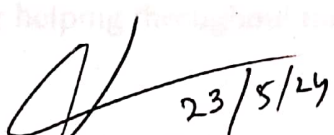
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Dr. K. SIVA., M.TECH., Ph.D.,

HEAD OF THE DEPARTMENT

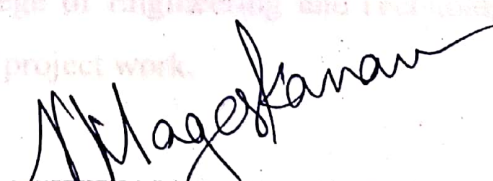
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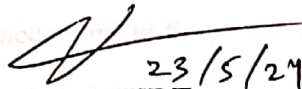
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BONAFIDE CERTIFICATE

Certified that this project report "DESIGN AND FABRICATION OF SMART SEEDING AND SPRAYING ROBOT" is the bonafide work of "AMBARISH VIGNESH (20108809), JEGAN P (20108034), ASHWATH KIRSHIV J (20108815), DANIEL X (20108821)" who carried out the project work under my supervision.


23/5/24
SIGNATURE

Mr.K.RAMESHKUMAR,ME.,

Assistant Professor,

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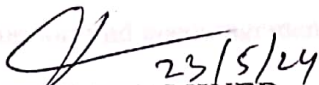
Dr. K. SIVA., M.TECH., Ph.D.,

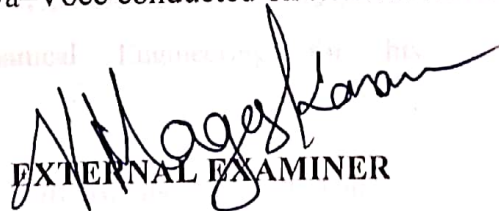
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Certified that this project report "TOOL AND DIE USING REVERSE ENGINEERING CONCEPT" is the bonafide work of "AKASH A (20108008), AYYANAR R (20108022), BABU B (20108023), HARSHAWARTTAN L R (20108031)" who carried out the project work under my supervision.


SIGNATURE 22/5/24

Dr. S.KANNAN, M.E., Ph.D.,
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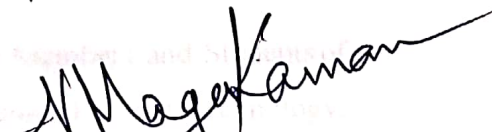

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Dr. K. SIVA, M.TECH., Ph.D.,
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Certified that this project report “**DESIGN AND DEVELOPMENT OF BIOMASS GASIFIER**” is the Bonafide work of “AKILVINYAK S (20108805), ARUN S (20108813), ATHIRAJ M (20108816), BHARATHRAJ U (20108819)” who carried out the project work under my supervision.


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Dr. P. JEYALAKSHMI., M.E., Ph.D.,

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ACKNOWLEDGEMENT

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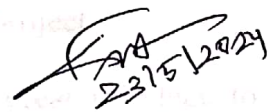
At this pleasing moment of having completed our project, we wish to acknowledge with thanks, the significant contribution given by the management of our college. We also

BONAFIDE CERTIFICATE

Certified that this project report “**DESIGN AND STRUCTURAL ANALYSIS OF A ROBOTIC ARMREST**” is the bonafide work of G. GOPIKRISHNA (20108030); M. ANIRUTH (20108017); S.DHANUSH (20108025) who carried out the project work under my supervision.

It is a pleasure to express our profound gratitude to Dr. J. J. A. S. M. Tech., Ph.D., for his cooperation in providing us with all the facilities necessary to finish this project.

It is a pleasure to express our sincere thanks to Dr. K. SIVA., M.Tech., Ph.D., Head of the Department, and Department of Mechanical Engineering, Hindusthan College of Engineering and Technology, Coimbatore for his cooperation in providing us with all the facilities necessary to finish this project.


23/5/2024

SIGNATURE



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Dr. C. NITHYANANDAM., M.E., Ph.D.,

Dr. K. SIVA., M.TECH., Ph.D.,

SUPERVISOR,

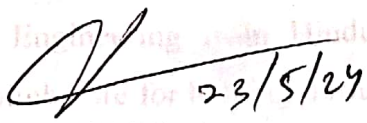
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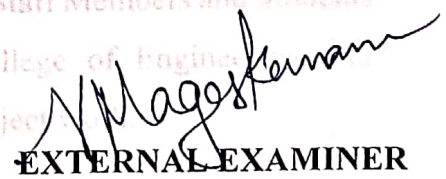
Department of Mechanical Engineering
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Submitted for the Anna University Project Viva-Voce conducted on 23/05/2024

We owe a debt of gratitude to All Faculty and Staff Members and Students of Mechanical Engineering, Hindusthan College of Engineering and Technology, Coimbatore for their cooperation throughout project.


23/5/24

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Certified that this project report "DESIGN AND DEVELOPMENT OF CARGO ELECTRIC VEHICLE" is the Bonafide work of NILAN SUJAI (20108057), KARTHICK S (20108837), KARTHIKEYAN K(20108838), JERSHIN MOSE S(20108834), who carried out the project work under my supervision.

SIGNATURE

Dr. Y. RAS MATHEW, ME., Ph.D

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SIGNATURE

Dr. K. SIVA., M.TECH., Ph.D.,

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Certified that this project report “ DESIGN AND FABRICATION OF ON ROAD DYNAMIC CHARGER FOR ELECTRIC VEHICLES ” is the Bonafide work of “KATHIRESEN K(20108040), LOGESH R M (20108045), KAVIN S (20108840), MOHANKUMAR S (20108857)” who carried out the project work under my supervision.



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Mr. A. NAZEER AHAMED M.E, Ph.D*.

Assistant Professor ,

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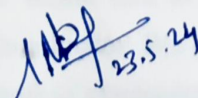
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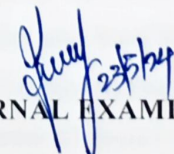
HEAD OF THE DEPARTMENT

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SUPERVISOR

Mr.S SIVAKUMAR M.E.,

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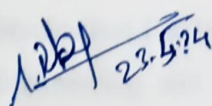
HEAD OF THE DEPARTMENT

Dr. K. SIVA., M.Tech., Ph.D.,

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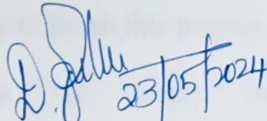
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Mr .D.PRABHU., M.E.,

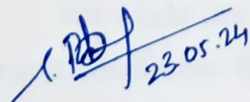
SUPERVISOR, Assistant Professor,
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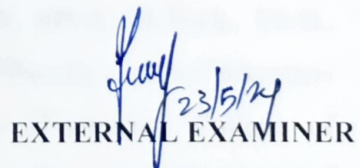

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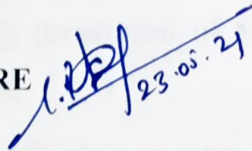
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Mr. RAM KUMAR S., M.E.,

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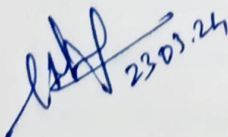
Dr.K.SIVA.,M.Tech.,Ph.D.,

HEAD OF THE DEPARTMENT

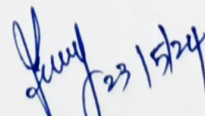
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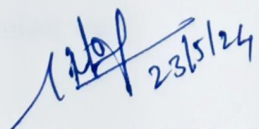
Dr. P. JEYALAKSHMI, M.E. Ph.D.,
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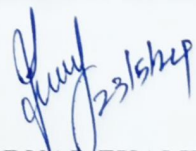
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Dr. K. SIVA., M.TECH., Ph.D.,
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Certified that this project report "STUDIES ON BIOOIL PRODUCTION FROM WASTE BIOMASS" is the Bonafide work of "RAMESH G (20108066), LAXMANAN PRABHU P (20108044), MOHAMED MUZZAMMIL S (20108049), JEROLD MARSHAL N (20108832)" who carried out the project work under my supervision.



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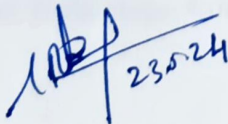
Dr.P. JEYALAKSHMI., M.E.,PH.D.,
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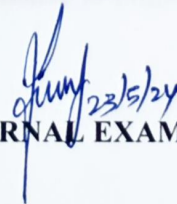
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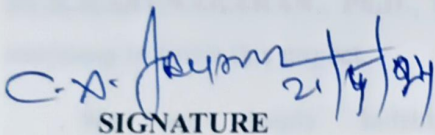
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Certified that this project report “ **DESIGN AND FABRICATION OF HOT AND COLD BADAM MILK VENDING MACHINE**” is the Bonafide work of “**KARTHIKEYAN S (20108039), MOHAMED USMAN A (20108051), RAMAKRISHNAN D (20108065), MAHESWARAN T (20108846)**” who carried out the project work under my supervision.


SIGNATURE

Mr. C.A. JAGADISH, M.E.,
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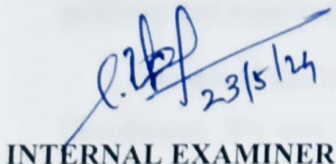
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Hindusthan College of Engineering and
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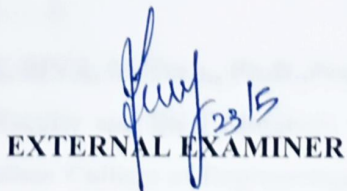

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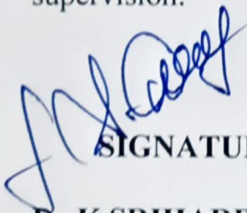

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Certified that this project report “ DESIGN, FABRICATION AND EXPERIMENTAL ANALYSIS OF HOT AND COLD BADAM MILK VENDING MACHINE” is the bonafide work of “KOWSHICK B (20108843), MOHAMMED IMRAN V (20108853), NIJANTH RAJ S.P (20108861), NESHANTH C.V (20108860)” who carried out the project work under my supervision.



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Dr.K.SRIHARRISH M.E, Ph.D.

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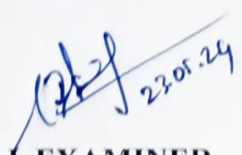
Dr. K. SIVA., M.TECH., Ph.D.,

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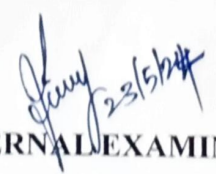
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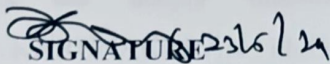
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Certified that this project report "EXPERIMENTAL INVESTIGATION MECHANICAL PROPERTIES OF ADDICTIVELY MANUFACTURED ASA POLIMER" is the bonafide work of "RAHUL MENON (20108063), MARK SHASWIN W (20108848), MOHAMED HASAN U (20108849), PRAVEEN P (20108062)" who carried out the project work under my supervision.



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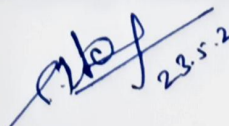
Dr. K. SIVA., M.TECH., Ph.D.,

HEAD OF THE DEPARTMENT

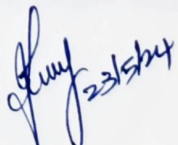
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Dr. K. SIVA., M.TECH., Ph.D.,

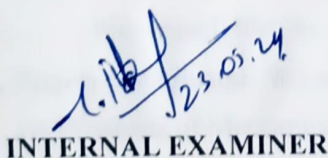
Professor & Head of the Department

Department of Mechanical Engineering

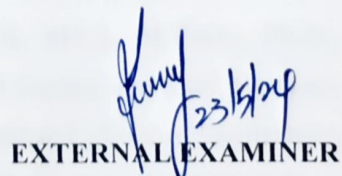
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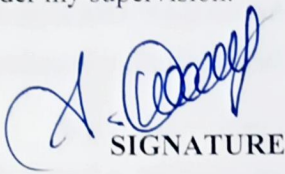
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A. NAZEER AHAMED , ME., Ph.D*

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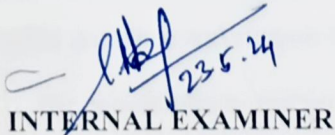
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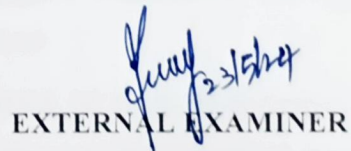
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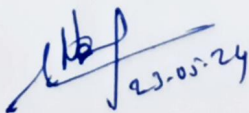
HEAD OF THE DEPARTMENT

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Hindusthan College of Engineering and

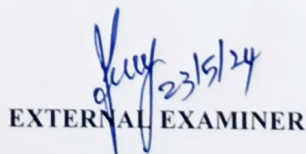
Technology, Coimbatore - 641 032.

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Certified that this project report "FLAT PLATE SOLAR WATER COLLECTOR USING A HYBRIDNANO-ENHANCED PHASE CHANGE MATERIAL (PCM)" is the Bonafide work of "RAHUL S (20108064), LIBIN M (20108844), LIBIN THOMAS K T (20108845), MYTHREYAN D (20108858)" who carried out the project work under my supervision.



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SUPERVISOR

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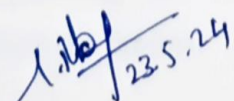
HEAD OF THE DEPARTMENT

Dr. K. SIVA., M.Tech., Ph.D.,

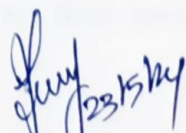
Professor and Head,

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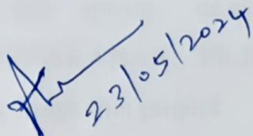
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Certified that this project report "DESIGN AND FABRICATION OF SOLAR SEED DRYER WITH AUTO TRACKING" is the Bonafide work of "KISHORE K (20108043), KARTHICK J (20108836), MOHAMED IMRAN PM (20108850), ABILASH P (20108897)" who carried out the project work under my supervision


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Mr. K.SIVAKUMAR., M.E.,

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Department of Mechanical Engineering
Hindusthan College of Engineering and
Technology, Coimbatore-641 032.

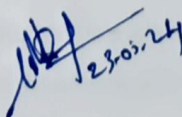

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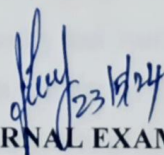
Dr. K. SIVA., M.TECH., Ph.D.,

HEAD OF THE DEPARTMENT

Department of Mechanical Engineering
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Technology, Coimbatore -641 032.

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Certified that this project report "MICROSTRUCTURE STUDY ON ABRASIVE WATERJET MACHINING USING TITANIUM ALLOY" is the bonafide work of "VELAN G (20108087), VIJAY RAGHAV P (20108891), SIVAPRAKASH V(20108879)" who carried out the project work under my supervision.

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Mr. RAM KUMAR S., M.E.,

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Dr. K. SIVA., M.TECH., Ph.D.,

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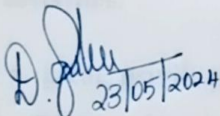
5977

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Certified that this project report "COMPARATIVE DRILLING CHARACTERISTICS AND GEOMETRICAL EVALUATION OF HSS AND PVD COATED [AITiN] ON SS202 STEEL" is the bonafide work of "SARANG V P (20108071), SIVANANDAN D (20108075), SURYANATH G (20108084), SWAROOP S (20108085)" who carried out the project work under my supervision.


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SIGNATURE

Mr. D. PRABHU M.E.,

SUPERVISOR,

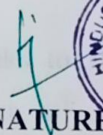
Assistant Professor,

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Engineering,

Hindusthan College of Engineering
and Technology,

Coimbatore-641 032.



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Dr. K. SIVA., M.TECH., Ph.D.,

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Department of Mechanical

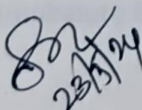
Engineering,

Hindusthan College of Engineering and
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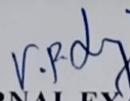
Coimbatore - 641 032.



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C.A. Jagadish
21/5/24
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K. Siva
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Mr. C.A. JAGADISH., M.E.,

Dr. K. SIVA., M.TECH., Ph.D.,

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S.A.
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Mr. D. PRABHU., M.E.,
SUPERVISOR,

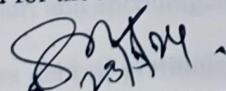
Assistant Professor,
Department of Mechanical Engineering,
Hinduathan College of Engineering and
Technology, Coimbatore-641032.

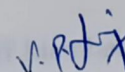

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Dr. K. SIVA., M.Tech., Ph.D.,
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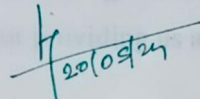


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Mr. S. ALAGAR, M.E.,

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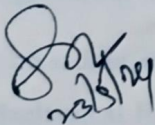
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Dr. K. SIVA., M.TECH., Ph.D.,

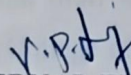
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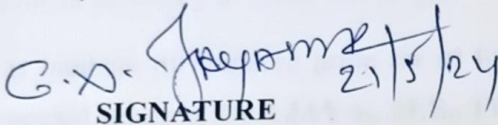
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BONAFIDE CERTIFICATE

Certified that this project report “**DESIGN AND FABRICATION OF SOLAR
BASED HOME-MADE VENTILATOR**” is the Bonafide work of “**SANTHOSH S
(20108070), SIBI S (20108074), SIVA SURIYA S (20108076), SURESH S
(20108081)**” who carried out the project work under my supervision.


SIGNATURE

Mr. C.A. JAGADISH., M.E.,

SUPERVISOR, Assistant Professor,
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Technology, Coimbatore-641 032.

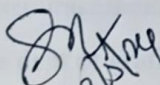

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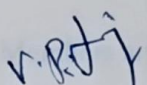
Dr. K. SIVA., M.TECH., Ph.D.,

HEAD OF THE DEPARTMENT

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Dr. S. KANNAN, M.E., Ph.D.,

Professor,

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Technology, Coimbatore-641 032.

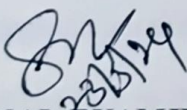

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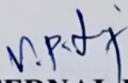
Dr. K. SIVA., M.TECH., Ph.D.,

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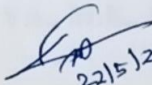

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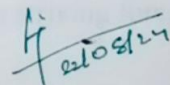
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Certified that this project report "DESIGN AND DEVELOPMENT OF PESTICIDE SPRAYER IN FARM ROVER" is the bonafide work of "PRINCE EPHRAIM S (20108866), PUKAZHENDHI T (20108867), SANJAI S (20108874), SHANMUGESHWARAN E (20108877)" who carried out the project work under my supervision.

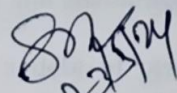

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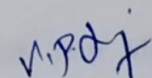
Dr.C.NITHYANANDAM.,M.E.,Ph.D.,
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Dr. K.SIVA., M.TECH., Ph.D.,
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C.K. Jayaraj
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Dr. K. SRI HARRISH., M.E., Ph.D.,
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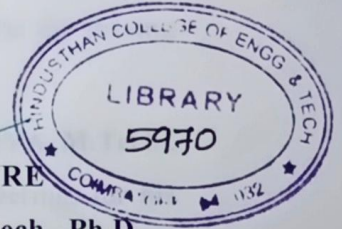
K. Siva
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Dr. K. SIVA., M.Tech., Ph.D.,

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Professor and Head,

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Hindusthan College of Engineering and
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S. S. Srinivasan
23/5/24

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V. P. Srinivasan

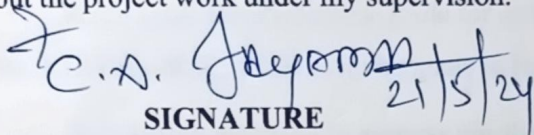
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Certified that this project report "EXPERIMENTAL INVESTIGATION AND OPTIMIZATION OF MACHINING PARAMETER OF HARD MATERIALS USING AI TOOL" is the Bonafide work of "VIJAY VALLARASU S (20108091), YASHVANTH RAM V (20108095), RAHUL JOSE J (20108097)" who carried out the project work under my supervision.


SIGNATURE 21/5/24

Dr. K. SRIHARRISH., M.E., Ph.D.,

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Dr. K. SIVA., M.Tech., Ph.D.,


HEAD OF THE DEPARTMENT,

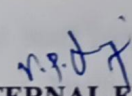
Professor and Head,

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VERTICAL AXIS WIND TURBINE" is the Bonafide work of "RONO GEORGE ROY
(20108068), RAHUL R (20108868), SARAVANAN S (20108072), VERON MATHEW
THOMAS (20108088)" who carried out the project work under my supervision.



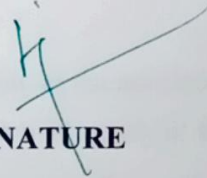
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SUPERVISOR

Dr. Y.RAS MATHEW., M.E., Ph.D.,

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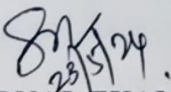
HEAD OF THE DEPARTMENT

Dr. K. SIVA., M.Tech., Ph.D.,

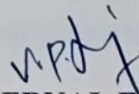
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SIGNATURE

Mr.K.SIVAKUMAR,M.E.,

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Dr.K.SIVA.,M.TECH.,Ph.D.,

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SIGNATURE

Dr. Y. RAS MATHEW., ME., Ph.D

Associate Professor,

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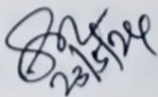
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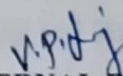
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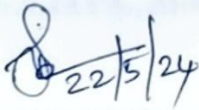
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who carried out the project work under my supervision.



SIGNATURE

Mr. S.SIVAKUMAR., M.E.,

Assistant Professor, SUPERVISOR

Department of Mechanical Engineering

Hindusthan College of Engineering and

Technology, Coimbatore-641 032.



SIGNATURE

Dr. K. SIVA., M.TECH., Ph.D.,

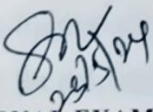
HEAD OF THE DEPARTMENT

Department of Mechanical Engineering

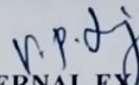
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