Temporary Registration No. : TPN / 94495

Project Proposal On

"Improvement in IC engine performance with the thermal barrier coating"

Submitted to

Division : Technology Development Transfer

Programme or Scheme : Technology Development Programme

Submitted by

Project Investigator:

Dr. ISNVR PRASANTH

MALLA REDDY ENGINEERING COLLEGE(AUTONOMOUS)-Hyderabad

Part 1 : General Information

General Information:

Name of the Institute/University/Organisation submitting the Project Proposal :

MALLA REDDY ENGINEERING COLLEGE(AUTONOMOUS)

State	Telangana
Principal Investigrator Name:	Dr. ISNVR PRASANTH
Category:	General
Type of the Institue :	Academic Institutions (Private)
Project Title :	Improvement in IC engine performance with the thermal barrier coating
Division :	Technology Development Transfer
Programme Or Scheme :	Technology Development Programme
Academic Area :	Mechanical Engineering,
Application Area :	Entrepreneurship and Innovation,
Goverment National Initiative :	Not Applicable,
Type of Proposal :	Proposal Against Call
Project Duration :	3 Years
Proposal Submit Date :	30/06/2023
Project Keywords :	Additive manufacturing, Advanced manufacturing processes, Thermal barrier coatings, Gradient coating, High-temperature applications

Project Summary :

Thermal barrier coatings have been utilized to shield structural components in both stationary and aviation gas-powered engines for more than 60 years. Due to the usage of those coatings, operating temperatures can be significantly raised, leading to improved efficiency. Yttria-stabilized zirconia YSZ was recognized as the best material for this use in the 1970s. Both atmospheric plasma spraying APS and electron beam physical vapor deposition EB-PVD have been established as important deposition techniques. Even if the subject is somewhat dated, there are frequently continuous efforts to advance the technology, particularly in the area of thermal spray. These attempts are focused on both material and micro structural concerns as well as the application of sophisticated coating technologies.
For more than 70 years, TBC's covering was crucial in a variety of nations around the globe. By insulating the piston and cylinder wall and covering them with ceramics that can sustain severe thermal loads, the heat transfer can be reduced to a minimum. Due to the coating materials' low thermal conductivity there is less heat flux into the piston, which in turn results in a decrease in heat transfer to the coolant. Zirconia is employed in the current work to cover engine components to reduce thermal conductivity.

Part 2: Particulars of Investigators

Principal Investigator:

1. Name:	Dr. ISNVR PRASANTH
Gender:	Male
Date of Birth:	10/12/1977
Designation :	Associate Professor
Department:	Mechanical Engineering
Institute/University:	MALLA REDDY ENGINEERING COLLEGE(AUTONOMOUS)
State:	Telangana
District:	MEDCHAL MALKAJGIRI
City/Place:	Hyderabad
Address:	Maisammaguda, Dhulapally, (post via Kompally), Secundarabad, Telangana.
Pin:	500100
Communication Email:	prasanth5109@mrec.ac.in
Alternate Email:	prasanth5109@gmail.com
Mobile:	9963244299
Phone:	
Fax:	
Category:	General

Co-Investigator:

1. Name:	Dr. A RAVEENDRA
Gender:	Male
Date of Birth:	17/12/1970
Designation :	Professor

Department:	Mechanical
Institute/University:	MALLAREDDY ENGINEERING COLLEGE (A)
State:	Andhra Pradesh
District:	Krishna
City/Place:	Hyderabad
Address:	Maisammaguda
Pin:	500100
Communication Email:	ravi.akunuru.a@gmail.com
Alternate Email:	mehod@mrec.ac.in
Mobile:	9502294258
Phone:	
Fax:	
Category:	OBC

Part 3: Suggested Refrees

Suggested Refrees: NA

Part 4: Financial Details

Financial Details:

A. Non - Recurring

Equipment

S.	Equipments	Qty.	Justification	1 Year	Total
1 .	4 Stroke 4 Cylinder Diesel engine Test Rig	1	Testing and analysis	520000	520000
2 .	4 Stroke 4 Cylinder Petrol engine Test Rig	1	Testing and analysis	650000	650000
			Total	**1170000**	**1170000**

B. Recurring

Project Staff

S.	Project Staff	No.	Justification	1 Year	2 Year	3 Year	Total
1 .	Junior Research Fellow (JRF)	1	Testing & Analysis	461280	461280	461280	1383840
			Total	**461280**	**461280**	**461280**	**1383840**

Consumables

S.	Items	Qty.	Justification	1 Year	2 Year	3 Year	Total
1 .	Desiel	1	for Operating the Engine	150000	0	50000	200000
2 .	Disiel	1	for Operating the Engine	0	120000	0	120000
			Total	**150000**	**120000**	**50000**	**320000**

Contingency

S.	Description	Justification	1 Year	2 Year	3 Year	Total
1 .	Emergency Fund		125000	100000	75000	300000
		Total	**125000**	**100000**	**75000**	**300000**

Travel

S.	Description	Justification	1 Year	2 Year	3 Year	Total
1 .	Industrial Visits	Result Verification & Validation	30000	30000	30000	90000
		Total	**30000**	**30000**	**30000**	**90000**

Overhead

S.	Description	Justification	1 Year	2 Year	3 Year	Total
1 .	Overhead	rent, utilities, insurance, legal fees, office supplies, etc	25000	25000	25000	75000
		Total	**25000**	**25000**	**25000**	**75000**

Budget Head Summary in (INR)

Budget Head	Year-1	Year-2	Year-3	Total
1- Non-Recurring				
Equipment	1170000	0	0	**1170000**
Subtotal (Capital)	1170000	0	0	**1170000**
2- Recurring				
Project Staff	461280	461280	461280	**1383840**
Consumables	150000	120000	50000	**320000**
Contingency	125000	100000	75000	**300000**
Travel	30000	30000	30000	**90000**
Overhead	25000	25000	25000	**75000**
Subtotal (General)	791280	736280	641280	**2168840**
Total Project Cost (Capital + General)	**1961280**	**736280**	**641280**	**3338840**

Part 5: PFMS Details

PFMS Unique Code Available: Yes

PFMS Unique Code : TLML00000156

Part 6: Current Ongoing Project

Current Ongoing Project: NA

List of Uploaded Documents:-

1. Complete Project proposal
2. Biodata
3. Certificate from PI
4. Conflict of interest
5. Endorsement from head of Institute
6. Quotation for Equipments

-9-9Department of Science & Technology (DST)

Technology Development & Transfer (TDT) Division

Project Proposal

under

TECHNOLOGY DEVELOPMENT PROGRAMME (TDP)

DST/TDP/Project_Proposal_Format

Table of Contents

Section-1. Overview of the Project

1.1. Proposal Submitted for Programme Areas under TDP:

(Please tick √ any of the below)

(**Note:** A PI can submit only one proposal against this DST-TDP Call under only one of the Programme Areas. Submission of more than one proposal from a PI would be liable for disqualification.)

Advanced Manufacturing Technologies (AMT)	
Waste Management Technologies (WMT)	
Biomedical Device and Technology Development Programme (BDTD)	
Technology Development Programme (TDP)	√

1.2. Title: Improvement in IC engine performance with the thermal barrier coating

1.3. **Thrust Area (Refer to Annexure-1):** Technology Development Programme(TDP)

1.4. Category (Please tick √ any of the given category):

Innovation	

(A technological innovation is a new or improved product or process whose technological characteristics are significantly different from before.)

Industrial Application	√

(An invention shall be taken to be capable of industrial application if it can be made or used in any kind of industry, including agriculture/An application capable of being made or used in an industry)

Societal Need	

(An underserved component of society would benefit from the furtherance of this technology)

1.5. TRL (at present) (3-6 scale)

(attach results and demonstration of lab prototype)

1.6. Total Cost:

35, 00,000/-

1.7. Project Duration: 3 years

1.8. Relevance to:

1) Sustainable Development Goals (SDGs):

- This project helps the lower efficiency compared to a standard CI engine running on diesel fuel and reduced exhaust emissions

- Environmental issues or climate change, such as rising temperatures are another significant worldwide concern. The greenhouse gases that are mostly released through the combustion of petroleum fuels are linked to global warming.
- To protect against the structural degradation and applicable in many commercial industries
- Minimize oxidation, hot corrosion and erosion, and thermal fatigue of the engine parts.

2) National Mission:

1.9.Lead Investigators

1.9.1. Principal Investigator (PI)

Name	Dr.I.S.N.V.R.PRASANTH
Designation	Associate Professor
Organization & address	Malla Reddy Engineering College Maisammaguda, Dhulapally (Post via. Kompally), Secunderabad, Rangareddy Dt, TELANGANA, HYDERABAD
Telephones (Mobile; Landline)	9963244299
E-mail	Prasanth5109@mrec.ac.in
Date of birth	10-12-1977

1.9.2. Co-Principal Investigator (Co-PI)

Name	Dr.A.Raveendra
Designation	Professor
Organization & address	Malla Reddy Engineering College Maisammaguda, Dhulapally (Post via. Kompally), Secunderabad, Rangareddy Dt, TELANGANA, HYDERABAD
Telephones (Mobile; Landline)	

	9502294258
E-mail	akunururaveendra@mrec.ac.in
Date of birth	17-12-1970

1.10.Details of Collaborating Institutes and Industry

1.10.1. Partner-1

Name	IIT, Hyderabad
Designation	Principal
Organization & address	ITH Road, Near NH-65, Sangareddy, Kandi, Telangana 502285
Telephones (Mobile; Landline)	040 2301 6033
E-mail	ramji_mano@iith.ac.in
Date of birth	

1.10.2. Partner-2

Name	Prop.G.Pulla Rao
Designation	Director
Organization & address	Skilltimate Technologies, Secunderabad-500011
Telephones (Mobile; Landline)	9505691737
E-mail	kvrjit54@gmail.com
Date of birth	12-2-1980

Section-2. Forwarding Letters

2.1.CERTIFICATE FROM THE INVESTIGATOR(S)

Project Title: Improvement in IC engine performance with thermal barrier coating

1. I/We agree to abide by the terms and conditions of the R&D grant.
2. I/We did not submit the project proposal elsewhere for financial support.
3. I/We have explored and ensured that equipment and basic facilities (enumerated in the proposal) will actually be available as and when required for the purpose of the projects. I/We shall not request financial support under this project, for procurement of these items.
4. I/We undertake that space time on permanent equipment (listed in the proposal) will be made available to other users.
5. I/We hereby submitting the Project Proposal complete in all respect, along with (a) Endorsement from the Head of the Organization (on letter head), and (b) Undertakings from the Collaborating Industries/Agencies.
6. I/We shall ensure that the project will be executed as per the General Financial Rules of (GFR) 2017 and the project fund will be kept only in a Zero Balance Subsidiary (ZBS) account of the Host Institute in Union Bank of India. I/We shall also ensure that the above said account will be registered in the Public Funds Management System (PFMS) and the EAT module has been successfully implemented before the submission of the proposal.
7. I/We shall acknowledge DST and the TDT division in all the Papers, Publications and Patents generated out of the proposed research work in every possible platform.

Name & Designation: Dr.I.S.N.V.R.PRASANTH Associate Professor, Department of Mechanical Engineering	Date: 30-06-2023
Signature:	Place: Hyderabad
Stamp/ Seal:	

2.2.Endorsement from Head of Organization*(On the official letter-head)*

Project Title: "Improvement in IC engine performance with thermal barrier coating''

Cost: 33, 38,840/- Duration: 3 years

1. Affirmed that the Organization welcomes the participation of Dr./Mr./Ms. I.S.N.V.R.Prasanth as the PI and Dr./Mr./Ms. Dr.A.Raveendra as the Co-PI for the Project and that in the unforeseen and legitimate event of discontinuation by the PI, the Co-PI will assume full responsibility for completion of the Project. Information to this effect, endorsed by me, will be promptly sent to DST
2. Affirmed that the equipment and basic as well as other administrative facilities as per the terms and conditions of the award of the Project will be made available to the Investigator(s) throughout the duration of the Project. All the equipment purchased under the projects will remain the administrative custody of the DST unless any order regarding the same issue by the DST.
3. The Organization shall ensure that as per the rule of GFR 2017, purchase of the equipments may done through the Government e-Marketplace (GEM), to the extent available there as the project involves government funding.
4. The organization shall ensure that under any circumstances, parking of Government Fund will not be done. The Fund will be utilized only for the purpose it was granted.
5. The organization/ institute shall ensure to use Expenditure Advance & Transfer (EAT) module of PFMS.
6. The Organization shall provide timely the Audited Statement of Expenditure and the Utilization Certificate of the Funds under the Grant as required by DST in the prescribed format and all interests and other earnings against released Grant shall be remitted to Consolidated Fund of India (through Non-Tax Receipt Portal (NTRP), i.e. www.bharatkosh.gov.in), immediately after finalization of accounts, as it shall not be adjusted towards future release of Grant.
7. The organization will abide by all the terms and conditions mentioned in the sanction order.

(Head of Organization)

Seal/Stamp

Date:

Place:

2.3.Undertaking from collaborating Industries/ Agencies

1. Name of Agency: Skillmate Technologies, Secunderabad-500011_____

2. I have gone through the Project Proposal entitled _ Improvement in IC engine performance with thermal barrier coating _____ submitted by Dr./Mr./Ms. I.S.N.V.R.Prasanth_____ of ___Malla Reddy Engineering College_____ for DST funding and I hereby affirm that my Organization/ Company is committed to participate in the Project to the full extent as indicated in the Project Proposal including following the technical and financial commitments described in the project proposal.

   a) Technical

   b) Financial

Name & Designation: Skillmate Technologies, Secunderabad-500011	Date: 30-06-2023
Signature:	Place: Secunderabad
Stamp/ Seal:	

2.4 Conflict of Interest

DEPARTMENT OF SCIENCE AND TECHNOLOGY

POLICY ON CONFLICT OF INTEREST
FOR REVIEWER & COMMITTEE MEMBER or APPLICANT or DST OFFICERASSOCIATED/ DEALING WITH THE SCHEME/ PROGRAM OF DST

Issues of Conflicts of Interest and ethics in scientific research and research management have assumed greater prominence, given the larger share of Government funding in the country's R & D scenario. The following policy pertaining to general aspects of Conflicts of Interest and code of ethics, are objective measures that is intended to protect the integrity of the decision making processes and minimize biasness. The policy aims to sustain transparency, increase accountability in funding mechanisms and provide assurance to the general public that processes followed in award of grants are fair and non-discriminatory. The Policy aims to avoid all forms of bias by following a system that is fair, transparent and free from all influence/ unprejudiced dealings, prior to, during and subsequent to the currency of the programme to be entered into with a view to enable public to abstain from bribing or any corrupt practice in order to secure the award by providing assurance to them that their competitors will also refrain from bribing and other corrupt practice and the decision makers will commit to prevent corruption, in any form, by their officials by following transparent procedures. This will also ensure a global acceptance of the decision making process adopted by DST.

Definition of Conflict of Interest:

Conflict of Interest means "any interest which could significantly prejudice an individual's objectivity in the decision making process, thereby creating an unfair competitive advantage for the individual or to the organization which he/she represents". The Conflict of Interest also encompasses situations where an individual, in contravention to the accepted norms and ethics, could exploit his/her obligatory duties for personal benefits.

1. Coverage of the Policy:

a) The provisions of the policy shall be followed by persons applying for and receiving funding from DST, Reviewers of the proposal and Members of Expert Committees and Programme Advisory Committees. The provisions of the policy will also be applicable on all individuals including Officers of DST connected directly or indirectly or through intermediaries and Committees involved in evaluation of proposals and subsequent decision making process.

b) This policy aims to minimize aspects that may constitute actual Conflict of Interests, apparent Conflict of Interests and potential Conflict of Interests in the funding mechanisms that are presently being operated by DST. The policy also aims to cover, although not limited to, Conflict of interests that are Financial (gains from the outcomes of the proposal or award), Personal (association of relative / Family members) and Institutional (Colleagues, Collaborators, Employer, persons associated in a professional career of an individual such as Ph.D. supervisor etc.)

2. Specifications as to what constitutes Conflict of Interest.

Any of the following specifications (non-exhaustive list) imply Conflict of Interest if,

(i) Due to any reason by which the Reviewer/Committee Member cannot deliver fair and objective assessment of the proposal.

(ii) The applicant is a directly relative# or family member (including but not limited to spouse, child, sibling, parent) or personal friend of the individual involved in the decision making process or

alternatively, if any relative of an Officer directly involved in any decision making process / has influenced interest/ stake in the applicant's form etc.

(iii) The applicant for the grant/award is an employee or employer of an individual involved in the process as a Reviewer or Committee Member; or if the applicant to the grant/awardhas had an employer-employee relationship in the past three years with that individual.

(iv) The applicant to the grant/award belongs to the same Department as that of the Reviewer/Committee Member.

(v) The Reviewer/Committee Member is a Head of an Organization from where the applicant is employed.

(vi) The Reviewer /Committee Member is or was, associated in the professional career of the applicant (such as Ph.D. supervisor, Mentor, present Collaborator etc.)

(vii) The Reviewer/Committee Member is involved in the preparation of the research proposal submitted by the applicant.

(viii) The applicant has joint research publications with the Reviewer/Committee Member in the last three years.

(ix) The applicant/Reviewer/Committee Member, in contravention to the accepted norms and ethics followed in scientific research has a direct/indirect financial interest in the outcomes of the proposal.

(x) The Reviewer/Committee Member stands to gain personally should the submitted proposal be accepted or rejected.

The Term "Relative" for this purpose would be referred in section 6 of Companies Act , 1956.

3. Regulation:

The DST shall strive to avoid conflict of interest in its funding mechanisms to the maximum extent possible. Self-regulatory mode is however recommended for stake holders involved in scientific research and research management, on issues pertaining to Conflict of Interest and scientific ethics. Any disclosure pertaining to the same must be made voluntarily by the applicant/Reviewer/Committee Member.

4. Confidentiality:

The Reviewers and the Members of the Committee shall safeguard the confidentiality of all discussions and decisions taken during the process and shall refrain from discussing the same with any applicant or a third party, unless the Committee recommends otherwise and records for doing so.

5. Code of Conduct

5.1 To be followed by Reviewers/Committee Members:

(a) All reviewers shall submit a conflict of interest statement, declaring the presence or absence of any form of conflict of interest.

(b) The reviewers shall refrain from evaluating the proposals if the conflict of interest is established or if it is apparent.

(c) All discussions and decisions pertaining to conflict of interest shall be recorded in the minutes of the meeting.

(d) The Chairman of the Committee shall decide on all aspects pertaining to conflict of interests.

(e) The Chairman of the Committee shall request that all members disclose if they have any conflict of interest in the items of the agenda scheduled for discussion.

(f) The Committee Members shall refrain from participating in the decision making process and leave the room with respect to the specific item where the conflict of interest is established or is apparent.

(g) If the Chairman himself/herself has conflict of interest, the Committee may choose a Chairman from among the remaining members, and the decision shall be made in consultation with Member Secretary of the Committee.

(h) It is expected that a Committee member including the Chair-person will not seek funding from a Committee in which he/she is a member. If any member applies for grant, such proposals will be evaluated separately outside the Committee in which he/she is a member.

5.2 To be followed by the Applicant to the Grant/Award:

(a) The applicant must refrain from suggesting referees with potential Conflict of Interest that may arise due to the factors mentioned in the specifications described above in Point No. 2.

(b) The applicant may mention the names of individuals to whom the submitted proposal should not be sent for refereeing, clearly indicating the reasons for the same.

5.3 To be followed by the Officers dealing with Programs in DST:

While it is mandatory for the program officers to maintain confidentiality as detailed in point no. 6 above, they should declare, in advance, if they are dealing with grant applications of a relative or family member (including but not limited to spouse, child, sibling, parent) or thesis/ post-doctoral mentor or stands to benefit financially if the applicant proposal is funded. In such cases, DST will allot the grant applications to the other program officer.

6. Sanction for violation

6.1 For a) Reviewers / Committee Members and b) Applicant

Any breach of the code of conduct will invite action as decided by the Committee.

6.2 For Officers dealing with Program in DST

Any breach of the code of conduct will invite action under present provision of CCS (conduct Rules),1964.

7. Final Appellate authority:

Secretary, DST shall be the appellate authority in issues pertaining to conflict of interest and issues concerning the decision making process. The decision of Secretary, DST in these issues shall be final and binding.

8. Declaration

I have read the above "Policy on Conflict of Interest" of the DST applicable to the Reviewer/ Committee Member/ Applicant/ DST Scheme or Program Officer # and agree to abide by provisions thereof.

I hereby declare that I have no conflict of interest of any form pertaining to the proposed grant *

I hereby declare that I have conflict of interest of any form pertaining to the proposed grant*

* & # (Tick whichever is applicable)

Name of the candidate

(Strike out whichever is not applicable)

(**Signature with date**)

Section-3. Relevance of Proposed Project

3.1. Current Status of the technology

3.1.1. Internationally

Many technologies have been invented to deal with the recent increase in the use of fossil fuels, which has a negative impact on the environment such as ozone depletion and the amount of hazardous emissions in the atmosphere. However, Thermal Barrier Coating (TBC) stands out due to its exceptional qualities, involving its ability to reduce toxic emissions such as NOX, CO, smoke, and SOX and to prevent thermal stresses, erosion, and corrosion on metallic surfaces [1].

The review of the TBC materials that can be used to IC engines is described in the current study along with the associated attributes. Each TBC material has distinct qualities. The right choice of TBC material must be made for any application [2]. Because of the coating, the amount of heat energy lost to the outside and required for cooling in low heat rejection engines was decreased, which increased the combustion of the test fuels [3]. The combustion conditions of small sections of the test fuels become more favorable as the cylinder gas and wall temperature in the coated engine rises. As a result, the shortened ignition delay time in coated engine has a positive impact on both chemical and physical responses [4]. The reduction in heat losses into the cooling system and subsequent transfer of this heat to the exhaust gas as a result of the thermal barrier coating may account for the rise in exhaust gas temperature in coated engines compared to uncoated engines [5]. In comparison to the ethanol-fueled uncoated engine with standard and retarded injection time, the CO emission of the engine with low heat rejection and retarded timing was reduced by 24.80% and 17.85%, respectively. This is owing to the fact that the increased combustion chamber temperature brought on by the insulation promotes greater vaporisation, which in turn improves the mixing of the injected ethanol [6]. This drop in HC emission in the coated engine could be explained by an increase in aftercombustion temperature brought on by a reduction in heat losses to cooling, which causes more unburned HC to be added to the combustion [7]. This drop in HC emission in the coated engine could be explained by an increase in after combustion temperature brought on by a reduction in heat losses to cooling, which causes more unburned HC to be added to the combustion [8]. Various researchers have improved the performance of the IC engine using various TBC materials. It has a favorable impact on the engine's output and exhaust emissions [9]. As a result, the

LHR engine operates more quietly than a regular engine [10]. The highest pressure of the LHR engine, which reached 76.3 bar at 12 CA after TDC due to its greater temperature, was higher than that of a standard CI engine's diesel pressure (69.2 bar). Due to the increase in temperature that speeds up in-cylinder combustion after zirconia coating, the maximum pressure for ethanol has greatly increased [11].

[1] Ekrem Buyukkaya, Muhammet Cerit, Experimental study of NOx emissions and injection timing of a low heat rejection diesel engine, Int. J. Therm. Sci. 47 (8) (2008) 1096–1106.
[2] Ekrem Buyukkaya, Tahsin Engin, Muhammet Cerit, Effects of thermal barrier coating on gas emissions and performance of a LHR engine with different injection timings and valve adjustments, Energy Convers. Manage. 47 (2006) 1298–1310.
[3] Hanbey Hazar, Characterization and effect of using cotton methyl ester as fuel in a LHR diesel engine, Energy Convers. Manage. 52 (1) (2011) 258–263.
[4] M. Mani, G. Nagarajan, Influence of injection timing on performance, emission and combustion characteristics of a DI diesel engine running on waste plastic oil, Energy 34 (2009) 1617–1623.
[5] Hanbey Hazar, Cotton methyl ester usage in a diesel engine equipped with insulated combustion chamber, Appl. Energy 87 (2010) 134–140.
[6] P. Lawrence, P.K. Mathews, B. Deepanraj, Experimental investigation on Zirconia coated high compression spark ignition engine with ethanol as fuel, J. Sci. Ind. Res. 70 (2011) 789–794.
[7] P.V.K. Murthy, M.V.S. Murali Krishna, A. SitaramaRaju, C.M. Vara Prasad, N.V.Srinivasulu, Performance evaluation of low heat rejection diesel engine with pure diesel, Int. J. Appl. Eng. Res. 1 (3) (2010) 428–451.
[8] A. Parlak, H. Yasar, B. Sahin, Performance and exhaust emission characteristics of a lower compression ratio LHR Diesel engine, Energy Convers. Manage. 44 (2003) 163–175.
[9] B.P. Rajendra Prasath, P. Tamilporai, F. Mohd. Shabir, Analysis of combustion, performance and emission characteristics of low heat rejection engine using biodiesel, Int. J. Therm. Sci. 49 (2010) 2483–2490.
[10] R. Soltani, H. Samadi, E. Garcia, T.W. Coyle, Development of Alternative Thermal Barrier Coatings for Diesel Engines, SAE Technical Paper, 2005, 2005-01-0650.
[11] N. Janardhan, M.V.S. Murali Krishna, Kesava Reddy, N. Durga Prasada Rao, Effect of injection timing on performance parameters of DI diesel engine with ceramic coated cylinder head, Int. J. Sci. Eng. Res. 5 (12) (2014) 1596–1607.

3.1.2. Indian scenario and technological gap

In India thermal barrier coatings have been utilized to shield structural components in both stationary and aviation gas-powered engines for more than 60 years. Due to the usage of those coatings, operating temperatures can be significantly raised, leading to improved efficiency. Yttria-stabilized zirconia (YSZ) was recognized as the

best material for this use in the 1970s. Both atmospheric plasma spraying (APS) and electron beam physical vapor deposition (EB-PVD) have been established as important deposition techniques. Even if the subject is somewhat dated, there are frequently continuous efforts to advance the technology, particularly in the area of thermal spray. These attempts are focused on material and micro structural concerns as well as the application of sophisticated coating technologies.

In addition to the roles employed in IC engines and turbines, BCs are also used on the surface of disc brakes to lessen the accumulation of heat caused by intense braking. Many automakers utilize coatings with less than 0.2 mm thickness to achieve great engine performance. There are a few variables that have to be considered in order to improve engine efficiency and emissions; these include the characteristics of the coating substances (nano or micro), deposition methods, the use of nano materials, exhaust characteristics, coating construction (multilayer), etc. In light of the colonial work of many investigators, this report describes these parameters.

3.1.3. Development status at the participating Institutions (Summary of data generated by investigator(s) in their lab)

A single-cylinder, four-stroke, constant speed, water-cooled engine with direct compression injection that generates 4.4 kW at 1500 rpm and has a compression ratio of 16.5:1 is the experimental setup employed in this study. It is connected to a generator that is loaded with variable resistance. The engine had a 200 bar rated injection pressure, and the static injection time was 23 BTDC. Prior to starting the engine, the gasoline level in the fuel tank, cooling water flow, and lubricating oil level in the engine oil sump were all checked. Warming up and starting the engine. The engine was kept at its rated speed. By monitoring the current and voltage, the power produced by the combustion chamber was estimated. Measurement of the cooling water was performed using a thermocouple with a digital temperature meter.

3.2.Significance of the project

3.2.1. Major applications of the proposed technology

IC engines and the gas turbines frequently use thermal barrier coatings (TBCs) to raise the turbine inlet temperature (TIT) or lessen cooling requirements, hence providing improved engine efficiency, reducing emissions, and attaining performance objectives.

3.2.2. Target Beneficiaries & Expected Impact

On the other hand, a variety of thermal barrier coating (TBC) methods have increased liner durability due to the lightweight design philosophy of combustion engine components. Liner temperature is lowered by cooling air, ceramic coating, and combustion catalysts. As a result, liner life is multiplied by many over the prior state of the art. The low NOx premix dry combustion aids in the fight against pollution.

Performance is improved when Functionally Graded Materials (FGM), Environmental Barrier Coating (EBC), and Temperature Barriers Coating (TBC) are used together rather than when TBC is used alone. However, the use of ceramic liners in place of metallic liners opens up new opportunities for the state-of-the-art in contemporary fashion.

3.2.3. What further works will require after the project, for commercial exploitation of technology?

The development of cutting-edge material applications and commercial applications has improved conventional combustion chamber liner designs in many performance capacities. In this regard, emphasis has been placed on refractory metal, ceramics, cermets, and inter-metallic compounds.

Section-4. Project Work Summary

4.1. Detailed Objectives

4.1.1. Specific Objectives

Thermal barrier coatings have been utilized to shield structural components in both stationary and aviation gas-powered engines for more than 60 years. Due to the usage of those coatings, operating temperatures can be significantly raised, leading to improved efficiency. Yttria-stabilized zirconia (YSZ) was recognized as the best material for this use in the 1970s. Both atmospheric plasma spraying (APS) and electron beam physical vapor deposition (EB-PVD) have been established as important deposition techniques. Even if the subject is somewhat dated, there are frequently continuous efforts to advance the technology, particularly in the area of thermal spray. These attempts are focused on both material and micro structural concerns as well as the application of sophisticated coating technologies.

For more than 70 years, TBC's covering was crucial in a variety of nations around the globe. By insulating the piston and cylinder wall and covering them with ceramics that can sustain severe thermal loads, the heat transfer can be reduced to a minimum. Due to the coating materials' low thermal conductivity; there is less heat flux into the piston, which in turn results in a decrease in

heat transfer to the coolant. Zirconia is employed in the current work to cover engine components to reduce thermal conductivity.

4.1.2. Scientific Basis and Methodology

The study attempts to summaries significant advancements in both domains, with a particular emphasis on thermal spray methods for processing and materials. The outcomes of burner rig testing for different systems provide an overview of the effects of both materials and processing. A brief forecast of potential future directions for development will also be provided.

While substantially reducing emissions of carbon monoxide and unburned hydrocarbons, switching a conventional engine to a low-heat rejection diesel engine additionally enhances thermal efficiency. However, due to the greater combustion temperature, oxides of nitrogen released into the atmosphere are also increased.

4.2. Technical Details

4.2.1. Targeted level of development under the project

(Describe the Prototypes/ Process Demonstration; with reference to Technology Readiness Levels)

The ceramic in modern systems is 7 weight percent yttria partly stabilized zirconia (7YSZ). The bond coat is a variant of the NiCoCrAIY composition applied either by air plasma spray (APS) or EB-PVD technique, depending on the application needs.

A single-cylinder, four-stroke, constant speed, water-cooled engine with direct compression injection that generates 4.4 kW at 1500 rpm and has a compression ratio of 16.5:1 is the experimental setup employed in this study. It is connected to a generator that is loaded with variable resistance. The engine had a 200 bar rated injection pressure, and the static injection time was 23 BTDC. Prior to starting the engine, the gasoline level in the fuel tank, cooling water flow, and lubricating oil level in the engine oil sump were all checked. Warming up and starting the engine. The engine was kept at its rated speed. By monitoring the current and voltage, the power produced by the combustion chamber was estimated. Measurement of the cooling water was performed using a thermocouple with a digital temperature meter.

The temperature of the cooling water was taken using a thermocouple with a digital temperature meter. A piezoelectric pressure sensor was employed to gauge the cylinder pressure. The QROTECH emissions analyzer was used to measure exhaust pollutants including CO, NOx, and HC. The smoke emission was measured using a TI Diesel Tune smoke meter. Numerous tests were conducted with loads ranging from no load to full load.

In essence, the plasma spraying method involves misting molten or heat-softened material onto a surface to create a coating. Zirconia powder is introduced into a plasma flame at a very high temperature, where it becomes extremely hot and accelerated to a high velocity. The heated substance makes contact with the substrate surface and quickly cools to form a coating. An electrode-maintained electric arc was used as heat in the plasma spraying technique.

The stream of inert gases leaving the chamber is heated to a very high temperature by this arc. The gas molecules become dissociated and ionized as a result of the elevated temperature. The elevated temperature causes the gas to expand significantly, forcing it to flow through the nozzle at an extremely rapid pace known as a plasma jet. With the help of gas that acts as a carrier, the material to be coated is injected from the input unit in a powdered state. These particles melt and adhere as a coating to the substance that has been treated.

4.2.2. Proposed target specifications & performance standards

Longer exposure times are produced by a proper and effective replacement using a multi-metallic bond coat and ceramic topcoat. Life is extended by simultaneous removal of dangerous components from the liner material, limitations on the use of low-quality fuels, and atmospheric impacts.

The control of parameters that limit ceramic top coat sintering, check TGO growth, and improve adherence of thicker TGO has been shown to be the foundation for studies of residual life assessment. For instance, stabilized zirconia stabilised with ceria or lanthana transforms at a temperature that is higher than stabilised zirconia stabilised with yttria.

4.2.3. Innovative Elements/Components of the Project

Although a variety of oxides, including MgO, Ce02, Sc03, and CaO, can stabilise zirconia, Y2 03 stabilised Zr02 (YSZ) has been proven to be the most effective for TBC application. When the material is 300–600 thick, YSZ-APS-TBCs reduce the topcoat's thermal conductivity from 2.3 W/mK for a fully dense material to 0.8–1.7 W/mK. Depending on the composition and temperature, YSZ can exist in three different polymorphs: monoclinic, tetragonal, and cubic. The most observable phase for TBC applications is the t-phase, which is stabilised by the addition of 7-8-wt.%Y2 0 3.

4.3. Project Work Plan

a) Milestones with Dates, Work Elements & Organization responsible for it (in the form of Gantt Chart)

b) Schedules/ Work-Packages (in the form of Gantt Chart) by PI/Co-PI/Partner institutes/Collaborating Industry

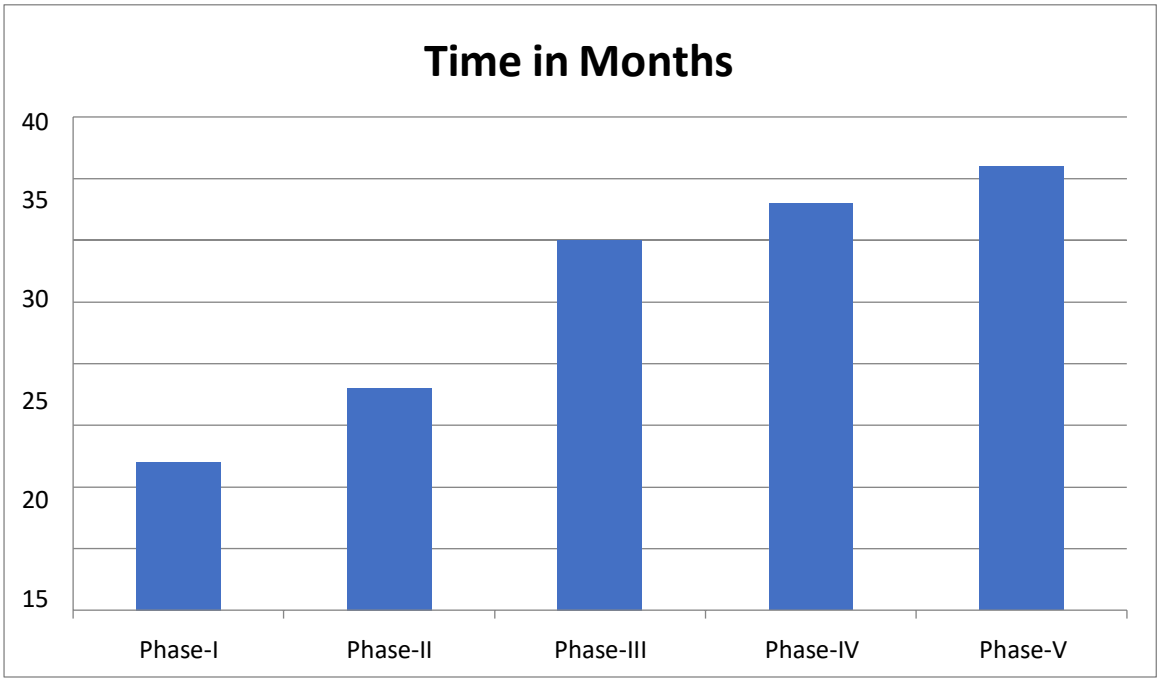
Phase 1: Purchase of equipments, raw material zirconia

Phase II: Performing initial experimentation from no load to full load

Phase III: Coating of cylinder head side (combustion chamber, valves) and piston crown area

Phase IV: Performance analysis (Measuring and analyze the engine performance)

Phase V: Determining maximum damping value of coated material



Section-5. Budget Summary (in ₹ 33, 38,840 lakhs)

5.1. Consolidated budget

	Item	1st Year			2nd Year			3rd Year			Total		
		DST	HI**	Industry ***	DST	HI*	Industry ***	DST	HI*	Industry ***	DST	HI*	Industry ***
1.	Manpower	4,61,280			4,61,280			4,61,280			13,83,840		
2.	Consumables	1,50,000			1,20,000			50,000			3,20,000		1,00,000
3.	Contingency	1,25,000			100,000			75,000			3,00,000		
4.	Other Costs*												
5.	Travel	30,000			30,000			30,000			90,000		
6	Permanent Equipment	13,31,160									13,31,160		4,00,000
7	Overhead Charges	25,000			25,000			25,000			75,000		
	Total												
	Gran Total	20,91,280			736280			641280			2546280		5,00,0000

(*Outsourced work, Fabrication & Testing)

(** Host Institute Contribution), (*** Industry's Contribution)

Total Project Budget = ₹ 33, 38,840 lakhs

Request for DST Grant = ₹ lakhs

Host Institute Contributions = ₹ lakhs

Industry Contribution = ₹ lakhs

5.2 Budget – In case of Multi Institutional Project

5.2.1 – Institute 1

	Item	1st Year	2nd Year	3rd Year	Total
		DST	DST	DST	DST
1.	Manpower				

2.	Consumables				
3.	Contingency				
4.	Other Costs*				
5.	Travel				
6	Permanent Equipment				
7	Overhead Charges				
	Total				
	Gran Total				

(*Outsourced work, Fabrication & Testing)

5.2.2 – Institute 2

	Item	1st Year	2nd Year	3rd Year	Total
		DST	DST	DST	DST
1.	Manpower				
2.	Consumables				
3.	Contingency				
4.	Other Costs*				
5.	Travel				
6	Permanent Equipment				
7	Overhead Charges				
	Total				
	Gran Total				

(*Outsourced work, Fabrication & Testing)

Norms for Manpower, Travel, Contingency & Overheads:

Manpower:

PIs may refer the following Office Memorandums for the manpower positions suitable for R&D

1. Positions for JRF/SRF/RA - OM: SR/S9/Z-05/2019 dated 10 July 2020
2. Positions other than JRF/SRF/RA - OM: SR/S9/Z-08/2018 dated 30 January 2019
3. For HRA OM No. 2/5/2017-E.II (B) issued by Ministry of Fin. dated 07 July 2017
   (*HRA has been revised to 27%, 18% and 9% with respect to the cities under the category of X, Y and Z respectively*)

Travel & Contingency:

₹50,000/- each per annum will be provided for Travel and Contingencies. Higher amount, based on the recommendations of the Expert Committee, to be provided where the research work involves field work or/and project has many investigators/institutions and larger manpower. The contingency amount may also be used for paying Registration Fees for attending international conferences.

Overheads:

Overhead amount is towards meeting the cost of academic expenses including infrastructural facilities at the host institutes, and is permissible as given below:

a) For projects costing upto ₹1 crore, 10% of the total cost for educational institutions and NGOs and 8% for laboratories and institutions under Central Government Departments/Agencies;
b) For projects costing more than ₹1 crore and upto ₹5 crore, overheads of ₹15 lakh or 10% of total cost whichever is less;
c) For projects costing more than ₹5 crores and upto ₹20 crore, ₹20 lakhs will be provided as overheads; and
d) For projects costing more than ₹20 crores, the quantum will be decided on a case to case basis.

Section-6. Itemised Budget

6.1.Manpower

Budget for Salaries - DST Grant

Designation	Qualification	Salary per month	Number of Persons	Amount (in ₹ lakhs)	Role Description
Asst.Professor	M.Tech	38,440	1	13,83,840/-	
				₹ 13,83,840/- lakhs	

6.2.Consumables

Please provide the quantified list of consumables along with cost estimates/quotations in the Annexure (*Item, Quantity & Unit cost*)

Budget for Consumable Materials - DST Grant *(in ₹ lakhs)*

1st Year	2nd Year	3rd Year	Total
₹ 1,50,000/-	₹ 1,00,000/-	₹ 50,000/-	₹ 3,00,000/-
₹	₹	₹	₹
₹	₹	₹	₹

6.3.Contingencies

Please provide the basis of cost estimates in the Annexure.

Budget for Contingencies- DST Grant (in ₹ lakhs)

1st Year	2nd Year	3rd Year	Total
₹ 1,25,000/-	₹ 1,00,000/-	₹ 75,000/-	₹ 3,00,000/-
₹	₹	₹	₹
₹	₹	₹	₹
₹	₹	₹	₹

6.4.Other Costs (Outsourcing/ Fabrication/ Testing/Patenting)

Please provide the basis of cost estimates/quotations in the Annexure.

Budget for Other Costs-DST Grant (in ₹ lakhs)

Item	1st Year	2nd Year	3rd Year	Total
Outsourcing	₹	₹	₹	₹
Fabrication	₹	₹	₹	₹
Testing	₹	₹	₹	₹
Others (Define if any)	₹	₹	₹	₹

6.5.Domestic Travel – from – DST Grant (in ₹ lakhs)

Please provide the basis of cost estimates in the Annexure. (journeys, purpose)

1st Year	2nd Year	3rd Year	Total
₹ 30,000/-	₹ 30,000/-	₹ 30,000/-	₹ 90,000/-
₹	₹	₹	₹

₹	₹	₹	₹

6.6.Equipment proposed to be procured

Please provide justification in Annexure on the use of equipment in project. Provide supporting Quotation

Budget for Permanent Equipment – DST Grant

Description of Equipment	Foreign/ Indigenous	Unit Landed Cost	Number	CIF, Custom Duty of Items etc.)	Total(in ₹ lakhs)	Whether the equipment is already available in the institute or not (if yes justify)
		₹			₹ 13,31,160/-	
		₹			₹	
		₹			₹	

6.7.List of equipment available with participating agencies, relevant to the project

Description of Equipment	Foreign/ Indigenous	Agency where it is located

Section-7. Annexure: Justification for Itemized Budget

Please provide justification against each sub-heading below, along with supporting Quotation.

7.1.Consumables

Zirconium, Painting devices etc.,

The plasma spraying method involves misting molten or heat-softened material onto a surface to create a coating. Zirconia powder is introduced into plasma flames at an extremely high temperature, where it is quickly heated and accelerated to a high velocity. The heated substance makes contact with the substrate surface and promptly cools to form a coating. An electrode served as a heat supply in the plasma spraying process, which maintained an electrical arc within the nozzle. The stream of inert gases leaving the chamber is heated to a very high temperature by this arc.

7.2.Contingency & Travel

Printing, testing and analysis etc.,

7.3.Other Costs

Power, generator, water, and miscellaneous etc.,

7.4.Permanent Equipment

4 Stroke 4 Cylinder Petrol & Diesel engine Test Rig

MPFI 63bhp@ 5500rpm

83Nm@3300rpm

Water cooled engine with digital sensors

Section-8 Bio-data of Investigators

8.1.Principal Investigator (1):

8.1.1. Name, Designation, Agency: Dr.I.S.N.V.R.PRASANTH

8.1.2. Gender & Date of Birth:

MALE, 10-12-1977

8.1.3. Qualifications:

M.Tech, Ph.D

8.1.4. Employment Experience (Last 10 years) (Academic/Industry/R&D):

17 Years

8.1.5. Publications (Last 5 years): 20

8.1.6. Patents:

04

8.1.7. Research Thesis Guided:

8.1.8. Entrepreneurial Activities:

8.1.9. Technology Transferred:

8.2. Co-Investigator (s):

8.2.1. Name, Designation, Agency:

Dr.A.Raveendra

8.2.2. Gender & Date of Birth:

Male, 17-10-1970

8.2.3. Qualifications:

M.Tech, Ph.D

8.2.4. Employment Experience (Last 10 years):

20 Years

8.2.5. Publications (Last 5 years):

30

8.2.6. Patents:

04

8.2.7. Research Thesis Guided:

8.2.8. Entrepreneurial Activities:

8.2.9. Technology Transferred:

CURRICULAM VITAE

Dr. I. S. N.V. R.PRASANTH Phone No: 9963244299
Email id: prasanth5109@gmail.com
prasanth5109@yahoo.com

I. CAREER OBJECTIVE:

To work in an innovative, challenging and encouraging environment, where my efforts, acquired skills and education will be utilized towards continuous growth and advancement.

II. ACADEMIC QUALIFICATION:

- Awarded Ph.D degree in Mechanical Engineering in October, 2020 from JNTUH, Kukatpally, Hyderabad. Topic: ‘‘An Investigation on Machining of Reinforced Glass Composite Materials and Optimization of Cutting Parameters’’ under the guidance of Dr.D.V.Ravishankar, Principal, TKRCET, Meerpet, Hyderabad and Dr.Manzoor Hussain, Professor & Registrar, JNTUH, Hyderabad.
- Total Experience: Teaching **16 years** and Industry **2.9 Years.**

III. EDUCATIONAL QUALIFICATIONS:

S.NO	Degree	Specialization/Branch	Board/University	Year of passed	Percentage
1	Ph.D	Mechanical Engineering	JNTU, Hyderabad	2020	
2	M.Tech	Mechanical Engineering (IE & M)	J.B.I.E.T, Hyderabad, JNTUH	2010	71%
3	B. Tech	Mechanical Engineering	JNTU College of Engineering Hyderabad.	2005	61.13%
4	Diploma in Automobile Engineering (D.A.E)	Automobile Engineering	V.K.R. & V.N.B. Polytechnic, Gudivada. SBTET, Hyderabad	1996	64.90%
5	S.S.C	S.S.C	ZPPSS, Nellipaka, Bhadrachalam.	1993	59.17%

IV. TEACHING EXPERIENCE: (15.9 Years)

S.NO	Designation	Date of Joining/Date of Relieving	Institution/college	Duration
1	Associate Professor	December 2020 to till date	Malla Reddy Engineering College (Autonomous)	Till date
2	Associate Professor	July 2018 to November 2020	Guru Nanak Institute of Technology, Hyderabad.	2.4 Years
3	Associate Professor	January 2016 to May 2018	St. Mary's Integrated campus (St.Mary's group of institutions), Hyderabad.	2.4 Years
4	Assistant Professor	July 2013 to December 2015	Bharat Institute of Engineering and Technology, Hyderabad.	2.5 Years
5	Associate Professor	October 2008 to June2013	Dhruva Institute of Engineering and Technology (New Netaji Institute of Technology), Hyderabad.	4.8 Years
6	Assistant Professor	August 2005 to September 2008	Hits College of Engineering & Technology, Hyderabad.	3.1 Years

V. AUTOMOBILE INDUSTRY EXPERIENCE: 2.9 Years (Servicing unit-Cars):

S.NO	Designation	Date of Joining/Date of Relieving	Company	Duration
1	Service Advisor	February 1997 to November 1999	Varun Motors Pvt.Ltd., Maruti, Begumpet, Hyderabad	2.9 Years

VI. SUBJECTS TAUGHT:

- Automobile Engineering
- Engineering Drawing
- Production Technology
- Machine tools
- Metallurgy and Material science

- Mechanics of Solids
- Fluid Mechanics and Hydraulic Machinery
- Engineering Mechanics
- Refrigeration & Air conditioning
- Production Planning & Control
- Industrial Management.

VII. LABORATORIES HANDLED:

- Engineering Work shop
- Mechanics of Solids
- Fluid Mechanics & Hydraulic Machinery
- Machine Tools
- Metrology
- Production Technology
- Heat Transfer
- Production Drawing Practice (PDP)
- Thermal Engineering Lab

VIII. LABORATORIES ESTABLISHED:

- Strength of Materials
- Fluid Mechanics & Hydraulic Machinery
- Machine Tools
- Metrology
- Production Technology

IX. PROFESSIONAL CREDENTIALS: (Position of Responsibilities)

- Department Academic coordinator
- AICTE/JNTUH, NIRF works coordinator
- NAAC, NBA department coordinator
- IQAC Program coordinator
- R&D coordinator

X. PAPERS PUBLISHED IN INTERNATIONAL JOURNALS:

1) I.S.N.V.R.Prasanth, D.V.Ravishankar, M.Manzoor Hussain, Chandra Mouli Badiganti. ‘‘Influence of Milling Process Parameters and Significance of Tools to Improve the Surface Quality of GFRP Composites’’. **Machining Science and Technology.** Vol.26,No.1,(2022)120-136. DOI:https://doi.org/10.1080/10910344.2021 .199880 **(Taylor & Francis Ltd-SCI) -Free.** ISSN.1091-0344.

2) I.S.N.V.R.Prasanth, D.V.Ravishankar, Manzoor Hussain, Vinod Sharma, Sunil Pathak Chandra and Mouli Badiganti. ‘‘Investigations on Performance characteristics of GFRP Composites in Milling’’. **International Journal of Advanced Manufacturing Technology**, Volum99, Issue 5–8, pp.1351–1360(2018). DOI:10.1007/s00170-018-2544-2 **Springer-SCI) -Free.** ISSN.0268-3768.

3) I.S.N.V.R.Prasanth, D.V.Ravishankar, M.Manzoor Hussain. ‘‘Comparative Evaluation on Surface Quality of GFRP Composites by Different End mill Tools’’. International Journal of Machining and Machinability of Materials, Vol. 19, No. 5, 2017, pp.383-504. DOI: 10.1504/IJMMM.2017.087622 (**InderScience- SCOPUS-WOS**) **-Free**. ISSN.1748-5711.

4) I.S.N.V.R.Prasanth, D.V.Ravishankar, M.Manzoor Hussain. ‘‘Analysis of Milling Process Parameters and Their Influence on GFRP Composites’’. International Journal of Engineering TRANSACTIONS A: Basics, Vol. 30, No. 7, (July 2017), pp.1074-1080. Doi: 10.5829/ije.2017.30.07a.17 (**SCOPUS-WOS**) **-Free**. ISSN.1728-1431.

5) I.S.N.V.R.Prasanth, D.V.Ravishankar, M.ManzoorHussain, D.Ramanareddy ‘‘Performances of different mill cutters in machining of GFRP Composite Laminates”. Materials Today: Proceedings 5, Volume 4, Issue 2, Part A, 2017, Pages 2800-2805 **(Elsevier- SCOPUS).** E-ISSN.2214-7853.

6) I.S.N.V.R.Prasanth, D.V. Ravishankar, M.Manzoor Hussain, ‘‘Critical Analysis in Milling of GFRP Composites by Various End Mill Tools’’. (ICAFM_2017) Materials Today: Proceedings 5 (2018), pp.14607–14617 **(Elsevier- SCOPUS).** E-ISSN.2214-7853.

7) I.S.N.V.R.Prasanth, S.Nikitha, R.Pulsingh, M.Sampath, Shaik Bazee and Chandra Mouli Badiganti. ‘‘Influence of Milling Process Parameters on Machined Surface Quality of Carbon Fibre Reinforced Polymer (CFRP) Composites Using Taguchi Analysis and Grey Relational Analysis’’. **International Journal of Integrated Engineering**. VOL.13 NO. 6 (2021) 76-88 (**SCOPUS) -Free**. ISSN: 2229-838X.

8) Chandra Mouli Badiganti, K Kishor Kumar, Shiva Leelapali, I.S.N.V.R.Prasanth. ‘‘Effect of Temperature on Free Vibration of Functionally Graded Plate with Cut out’’. **International Journal of Integrated Engineering**. VOL.13 NO. 1 (2021) 28-38 (**SCOPUS) –Free**. ISSN: 2229-838X.

9) I. S. N. V. R. Prasanth, D.Ranjith Kumar. ‘‘Comparison and Simulation of Residual Stresses in Castings’’. The international journal of analytical and experimental model analysis. Volume XIV, Issue II, February 2022, Pp.1100-1107. **UGC Care (SCIE)** ISSN:0886-9367.

10) I. S. N. V. R. Prasanth, Y.Nishanth. ‘‘Experimental Design and static, dynamic and thermal analysis of Bufor Gun’s Mazeel Brake’’. The international journal of analytical and experimental model analysis. Volume XIV, Issue II, February 2022, Pp.1310-1322. **UGC Care (SCIE).** ISSN:0886-9367.

11) I. S. N. V. R. Prasanth, P.Jevanandam, Selavaraju P, Sateesh K, Sujatha P, M.Selvaraju, ‘‘Study of friction and wear behavior of Graphite reinforced AA7075 Nanocomposites by Machine learning’’. Journal of nano materials **(Hindawi-SCI) (Paper Accepted)**.

12) I.S.N.V.R.Prasanth, D.V. Ravishankar, M.Manzoor Hussain ‘‘An optimization of Machining Parameters on Cutting force and Surface Finish in Milling of Cs-GFRP”. IJEIT, Volume 4, Issue 7, Pp. 98-103. January 2015. ISSN: 2277- 3754.

13) I.S.N.V.R.Prasanth, D.V. Ravishankar, M.Manzoor Hussain, ‘‘Milling of Glass Fiber-Reinforced Plastics and Influence of Cutting Process Parameters on Cutting Forces”. GJRE Volume XV Issue V version I Year F, Pp.1-6, 2015 Online ISSN: 2249-4596 & Print ISSN: 0975-5861 (US) SN.

14) I.S.N.V.R.Prasanth, D.V. Ravishankar, M.Manzoor Hussain, D.Ramanareddy ‘‘Effect of process parameters on machinability of GFRP composite laminates by end milling”, IJLTET; volume 6 issue 4, Pp. 508-512. March2016, ISSN: 2278-621X.

15) I.S.N.V.R.Prasanth, D.V.Ravishankar, M.Manzoor Hussain, D.Ramanareddy ‘‘Investigation on machinability of GFRP composites by end milling using Taguchi’s optimization technique’’ IJIET, volume 6 issue 4, Pp. 106-112. April 2016 ISSN: 2319-1058.

16) I.S.N.V.R.Prasanth, D.V.Ravishankar, M.Manzoor Hussain, ‘‘Experimental investigation on comparison of the surface quality on various GFRP composites during end milling by control process parameters”. IOSR-JMCE e ISSN: 2278-1684, ISSN: 2320-334X, Volume13, Issue 3 Ver. 1(May-June 2016), PP 27-33. DOI: 10.9790/1684-1303012733.

17) I.S.N.V.R.Prasanth, D.V.Ravishankar, M.Manzoor Hussain, ‘‘Machinability Characterization in Milling of GFRP Composites by Taguchi’s Technique’’. JCPS, Volume 10, Issue 2, Pp.1034-1040. April-June-2017. ISSN: 0974-2115.

18) I.S.N.V.R.Prasanth, Jarapala.Murali Naik Suresh.Aadepu, ‘‘Design of intake manifold of IC engines with improved volumetric efficiency’’. International Journal & Magazine of Engineering, Technology, Management and Research (IJMETMR), Vol-1, Issue-6, Pp.26-33. June-2014. ISSN: 2348-4845

19) I.S.N.V.R.Prasanth, Jarapala.Murali Naik Suresh.Aadepu, ‘‘Experimental Analysis of I.C. Engine Components and Improvisation of the Radiator Design’’. International Journal & Magazine of Engineering, Technology, Management and Research (IJMETMR), Vol-2, Issue-2, Pp.60-66. Feb-2015. ISSN: 2348-4845.

20) I. S. N. V. R Prashanth, B. Manohar, K. Prudhvi Raj, P. Rohith. ‘‘Experimental Investigation on TIG Welded Aluminium Alloy-6082 Weldment using Non-Destructive Evaluation’’. International Journal of Trend in Scientific Research and Development (IJTSRD) Volume: 3 | Issue: 3 | Mar-Apr 2019. Pp.1047-1050. Available Online: www.ijtsrd.com e-ISSN: 2456 – 6470.

21) I. S. N. V. R. Prashanth, K. Lavanya, Meherkeziah, P. Navya. Investigation on Mechanical Properties of TIG Welded Joint and its Efficiency. International Journal of Trend in Scientific Research and Development (IJTSRD) Volume: 3 | Issue: 3 | Mar-Apr 2019. Pp.1194-1196. Available Online: www.ijtsrd.com e-ISSN: 2456 – 6470.

22) I. S. N. V. R. Prashanth, V. Nikitha, B. Aravind, N. Mahesh. ‘‘Estimation of Cooling Load Calculations for a Commercial Complex’’. International Journal of Trend in Scientific Research and Development (IJTSRD) Volume: 3 | Issue: 3 | Mar-Apr 2019. Pp.1029-1032. Available Online: www.ijtsrd.com e-ISSN: 2456 – 6470.

23) I. S. N. V. R. Prashanth, K.Avinash Reddy, B.Shiva Krishna, K.Manikanta. ‘‘Weldment Defects study over Mild Steeel Through NDT’’. International Journal of Scientific Research in Engineering and Management (IJSREM). Volume: 4 | Issue: 2 | February 2020.Pp 1-7. e-ISSN: 2582 – 3930. **UGC Care.**

24) I. S. N. V. R. Prashanth, S. Nikitha, R.Pulsingh, M.Sampath, Shaik Bazee. ‘‘Comprehensive Review on Machining of Carbon Fibre Reinforced Polymer (CFRP) Composites’’. International Journal of creative Research thoughts (IJCRT) Volume: 8| Issue: 2 | February 2020.Pp 1604-1612.ISSN:2320-2882. **UGC Care.**

25) I. S. N. V. R. Prashanth, Y.Nishanth. ‘‘Experimental Design and static, dynamic and thermal analysis of Bufor Gun’s Mazeel Brake’’. The international journal of analytical and experimental model analysis. Volume XIV, Issue II, February 2022, Pp.1310-1322. ISSN: 0886-9367.

26) I. S. N. V. R. Prashanth, A.Raveendra, Boosa Gopichand, ‘‘An Investigation study on surface integrity of various FRP composites with end mill tools’’. Internal journal of Analytical chemistry (**Hindawi-SCI**) **(Paper under Review)**.

27) I. S. N. V. R. Prashanth, Selavaraju P, Sateesh K, Sujatha, ‘‘Utilization of RMC waste in concrete production and its strength prediction using ANN’’. Environmental Quality Management (WILEY ONLINE LIBRARY-**SCOPUS**) **(Paper under Review)**.

XI. PAPER PRESENTATION IN NATIONAL AND INTERNATIONAL CONFERENCES:

1) I.S.N.V.R.Prasanth, D.V. Ravishankar, M.Manzoor Hussain, "Investigation in Influence of Milling Process Parameters on Surface quality of GFRP Composites". 1st International Conference on Innovations in Mechanical Engineering (ICIME-2018). From 5th to 6th January 2018 at Guru Nanak Institutions, Hyderabad.

2) I.S.N.V.R.Prasanth, D.V. Ravishankar, M.Manzoor Hussain, ‘‘Critical Analysis in Milling of GFRP Composites by Various End Mill Tools’’. (ICAFM_2017) Materials Today: Proceedings 5 (2018) 14607–14617. From 3rd to 5th May 2017 at Adhi college of Engineering & Technology, Kanchipuram, Tamilnadu.

3) I.S.N.V.R.Prasanth, D.V. Ravishankar, M.Manzoor Hussain, ‘‘Investigation on machinability of GFRP composites by end milling using Taguchi’s optimization technique’’. National Conference on Recent trends in Mechanical Engineering (NCRTME) on 28th to 29th April, 2016 at JNTUH, Hyderabad.

4) I.S.N.V.R.Prasanth, D.V.Ravishankar, M.Manzoor Hussain ‘‘Optimization of Surface Roughness and effect of cutting forces on GFRP by End milling using RSM”. International conference on Technological Innovations in Mechanical Engineering (TIME-2016). From 10th to 11th Feb, 2016 at CBIT, Gandipet, Hyderabad.

5) I.S.N.V.R.Prasanth, D.V.Ravishankar, M.ManzoorHussain, D.Ramanareddy ‘‘Performances of different mill cutters in machining of GFRP Composite Laminates”.5th International Conference of Materials Processing and Characterization (ICMPC 2016) Materials Today: Proceedings 5, Volume 4, Issue 2, Part A, 2017, Pages 2800-805. From 12th to 13th March 2016 at Gokaraju Rangaraju Institute of Engineering and Technology (GRIET), Hyderabad.

6) I.S.N.V.R.Prasanth, D.V.Ravishankar, M.Manzoor Hussain, ‘‘To prepare and compare the mechanical characteristics on various glass fiber reinforced laminates”. 2nd National conference on developments, Advances & Trends in Engineering Science [NC-DATES2K16] on 8th & 9th Jan-2016 at CMR Engineering College, Medchal, Hyderabad.

7) I.S.N.V.R.Prasanth, K.Sairam goud. ‘‘To prepare and compare the tensile properties on angle ply orientation on Bi-directional glass polyester composite laminates” National Conference on fast emerging trends in engineering and technology (NESCOFET) on 20th March, 2015 at Bharat Institute of Engineering & Technology (BIET), Hyderabad.

8) I.S.N.V.R.Prasanth, D.V.Ravishankar, M.Manzoor Hussain., ‘‘An optimization of Machining Parameters on Cutting force and Surface Finish in Milling of Cs-GFRP”. International conference on Advanaced Materials and Manufacturing Technologies (AMMT-2014) on 18th to 20th December 2014 at JNTUH, Hyderabad.

XII. JOURNAL CITATIONS:

	Google Scholar	**Research gate**	**Web of Science**	**Scopus**
Paper citations	71	20	23	19
Papers h-index	05	02	03	02
Papers i10-index	03	01	01	01

XIII. REVIEWED ARTICLES:

So far reviewed 16 articles from
1) The International journal of Advanced Manufacturing Technology
2) International journal of precision Engineering
3) Journal of Reinforced plastics and Composites
4) International journal on interactive design and Manufacturing
5) Production and Manufacturing Research and 10 from other journals.

XIV. PROJECTS GUIDED:

1. Under Graduate Level: 32
2. Post Graduate Level : 08

XV. PATENTS FILED:

1) I.S.N.V.R.Prasanth, B.Chandramouli. IUC-DIVICE: INTELLIGENT DEVICE FOR UNLOCKING CAR DOOR (KEY INSIDE THE CAR). Application Number 201941054101. Date of filing 27/12/2019. Application published on 03/01/2020. (IPI).

2) Dr.S.Rajasekaran, I.S.N.V.R.Prasanth. SSD-PLANTER: SPRAYING SEEDS DISPENSED FROM A PLANTER. Application Number 201941051600. Date of filing 12/12/2019. Application published on 27/12/2019. (IPI).

XVI. BOOK CHAPTERS PUBLISHED:

1) Vinod Kumar Sharma, Sunil Pathak, **I.S.N.V.R. Prasanth**, D.V. Ravishankar, M. Manzoor Hussain, Chandra Mouli Badiganti, and Nagaraju Bejgam. Influence of milling process parameters on the surface quality of GFRP composites in Glass Fibre – Reinforced Polymer Composites. Walter DE GRUYTER. Chapter 5, Pp: 69-84. DOI: https://doi.org/10.1515/9783110610147-005 **(BCIndexed).**

XVII. WORKSHOPS, FDP'S AND SEMINARS PARTICIPATED:

1) AICTE Training And Learning (ATAL) Academy Online Elementary FDP on "3D Printing & Design" from 14/12/2021 to 18/12/2021 at Christian College of Engineering & Technology, Bhilai.

2) AICTE Training And Learning (ATAL) Academy Online Elementary FDP on "Innovations in Manufacturing of Novel Materials and Composites" from 23/11/2021 to 27/11/2021 at Christian College of Engineering and Technology, Hyderabad.

3) AICTE Training And Learning (ATAL) Academy Online Elementary FDP on "Augmented Reality (Ar) And Virtual Reality (Vr) In Engineering Applications" from 2021-7-5 to 2021-7-9 at Anurag Group of Institutions.

4) Three days faculty development program on ‘‘Recent Developments in Manufacturing Technology’’ from 20-12-2021 to 22-12-2021 at JNTUH Kukatpally, Hyderabad.

5) One week faculty development program on ‘‘Advances in thermal engineering’’ from 21-06-2021 to 26-06-2021 at Sreyas Institute of Engineering & Technology, Hyderabad..

6) A Two day National Work shop on ‘‘Advances in Mechanical Engineering’’ on 28th and 29th, February 2020 at Mahaveer Institute of Science and Technology, Hyderabad.

7) AICTE sponsored two week Faculty Development Program on ‘‘Rapid Casting Technologies’’ from 27-11-2017 to 09-12-2017 at Guru Nanak Institute of Technology, Hyderabad.

8) AICTE sponsored two days National Seminar on “Machinery Vibration Analysis (MVA-2017) on 5th & 6th October 2017 at CBIT, Gandipet, Hyderabad.

9) A Two week short term Training Program on ‘Advanced Applications of Finite Element Techniques’’ from 02-07 January, 2016 at Methodist College of Engineering and Technology, Hyderabad.

10) Two day National workshop on ‘‘Fast Emerging Trends in Engineering and Technology’’ on 20th March 2015 at Bharat Institute of Engineering and Technology, Ibrahimpatnam, Hyderabad.

11) Two day workshop on Composite materials and Manufacturing processes on 12th & 13th November, 2014 at T.K.R College of Engineering and Technology, Meerpet, Hyderabad.

12) Two week ISTE Workshop on Fluid Mechanics from 20th to 30th May, 2014 Conducted by IIT Kharagpur at Bharat Institute of Engineering and Technology, Ibrahimpatnam, Hyderabad.

13) Two- Day workshop on Design of Experiments, Taguchi Optimization and Response surface Methodology on 6-7 Dec-2013 at JNTUH, Kukatpally, Hyderabad.

14) Two week ISTE Workshop on Engineering Mechanics from 26th November to 6th December-2013 conducted by IIT BOMBAY.

15) Three –Day National workshop on Advanced Materials and Machining (AMM) on 31st October to 2nd November 2013 at NIT-Warangal.

16) Two day Faculty development program on Finite Element Method on 28th & 29th June 2013 at Guru Nanak Institutions Technical Campus, Hyderabad.

17) National workshop on Automation and Robotics on 02-03 March -2012 at Guru Nanak Institutions Technical Campus, Hyderabad.

XVIII. NPTEL/ WEBINARS/ WORKSHOPS/COURSERA/ ONLINE QUIZ ATTENDED:

1) Online certification course attending by **Swayam NPTEL**, entitled "Production Technology: Theory and Practice" during the period of Jul-Oct 2021.

2) Online certification course attending by **Swayam NPTEL**, entitled "Production Technology: Theory and Practice" during the period of Jan-Apr 2019. And around 50 certificates have obtained from the above said online courses.

3) Online certification course attending by **Swayam NPTEL**, entitled ''Cloud computing" during the period of Jul-Oct 2022.

XIX. REFERENCES:

1. Dr.D.V.Ravishankar, Ph No: 9666573666, Professor& Principal, TKRCET, Meerpet, Hyderabad.
2. Dr.M. Manzoor Hussain, Ph No: 8008103843, Professor& Registrar, JNTUH, Kukatpally.
3. Dr. V. Kamakshi Prasad, Ph No: 9392472216, Professor in Computer Science Engineering, JNTUH, Kukatpally.

XX. PERSONAL PROFILE:

Full Name Indurti.S.N.V.R.Prasanth
Father's name I.Sai.Appaji Rao
Date of birth : 10-12-1977
Marital status : Married (Two children)
Nationality : Indian
Address: Plot No: 711(WP), Phase-III, Road no-4,
Vinayaka Hills, Almasguda, Hyderabad-58

DECLARATION

I hereby declare that the above furnished information is true to the best of my knowledge**.**

Place: Hyderabad
Date:

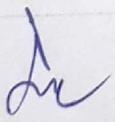
(Dr. I.S.N.V.R.PRASANTH)

Section-2. Forwarding Letters

2.1.CERTIFICATE FROM THE INVESTIGATOR(S)

Project Title: Improvement in IC engine performance with thermal barrier coating

1. I/We agree to abide by the terms and conditions of the R&D grant.
2. I/We did not submit the project proposal elsewhere for financial support.
3. I/We have explored and ensured that equipment and basic facilities (enumerated in the proposal) will actually be available as and when required for the purpose of the projects. I/We shall not request financial support under this project, for procurement of these items.
4. I/We undertake that space time on permanent equipment (listed in the proposal) will be made available to other users.
5. I/We hereby submitting the Project Proposal complete in all respect, along with (a) Endorsement from the Head of the Organization (on letter head), and (b) Undertakings from the Collaborating Industries/Agencies.
6. I/We shall ensure that the project will be executed as per the General Financial Rules of (GFR) 2017 and the project fund will be kept only in a Zero Balance Subsidiary (ZBS) account of the Host Institute in Union Bank of India. I/We shall also ensure that the above said account will be registered in the Public Funds Management System (PFMS) and the EAT module has been successfully implemented before the submission of the proposal.
7. I/We shall acknowledge DST and the TDT division in all the Papers, Publications and Patents generated out of the proposed research work in every possible platform.

Name & Designation: Dr.I.S.N.V.R.PRASANTH Associate Professor, Department of Mechanical Engineering	Date: 30-06-2023
Signature:  Stamp/ Seal:	Place: Hyderabad

2.4 Conflict of Interest

DEPARTMENT OF SCIENCE AND TECHNOLOGY

POLICY ON CONFLICT OF INTEREST
FOR REVIEWER & COMMITTEE MEMBER or APPLICANT or DST OFFICERASSOCIATED/ DEALING WITH THE SCHEME/ PROGRAM OF DST

Issues of Conflicts of Interest and ethics in scientific research and research management have assumed greater prominence, given the larger share of Government funding in the country's R & D scenario. The following policy pertaining to general aspects of Conflicts of Interest and code of ethics, are objective measures that is intended to protect the integrity of the decision making processes and minimize biasness. The policy aims to sustain transparency, increase accountability in funding mechanisms and provide assurance to the general public that processes followed in award of grants are fair and non-discriminatory. The Policy aims to avoid all forms of bias by following a system that is fair, transparent and free from all influence/ unprejudiced dealings, prior to, during and subsequent to the currency of the programme to be entered into with a view to enable public to abstain from bribing or any corrupt practice in order to secure the award by providing assurance to them that their competitors will also refrain from bribing and other corrupt practice and the decision makers will commit to prevent corruption, in any form, by their officials by following transparent procedures. This will also ensure a global acceptance of the decision making process adopted by DST.

Definition of Conflict of Interest:

Conflict of Interest means "any interest which could significantly prejudice an individual's objectivity in the decision making process, thereby creating an unfair competitive advantage for the individual or to the organization which he/she represents". The Conflict of Interest also encompasses situations where an individual, in contravention to the accepted norms and ethics, could exploit his/her obligatory duties for personal benefits.

1. **Coverage of the Policy**:

a) The provisions of the policy shall be followed by persons applying for and receiving funding from DST, Reviewers of the proposal and Members of Expert Committees and Programme Advisory Committees. The provisions of the policy will also be applicable on all individuals including Officers of DST connected directly or indirectly or through intermediaries and Committees involved in evaluation of proposals and subsequent decision making process.

b) This policy aims to minimize aspects that may constitute actual Conflict of Interests, apparent Conflict of Interests and potential Conflict of Interests in the funding mechanisms that are presently being operated by DST. The policy also aims to cover, although not limited to, Conflict of interests that are Financial (gains from the outcomes of the proposal or award), Personal (association of relative / Family members) and Institutional (Colleagues, Collaborators, Employer, persons associated in a professional career of an individual such as Ph.D. supervisor etc.)

2. **Specifications as to what constitutes Conflict of Interest**.

Any of the following specifications (non-exhaustive list) imply Conflict of Interest if,

(i) Due to any reason by which the Reviewer/Committee Member cannot deliver fair and objective assessment of the proposal.

(ii) The applicant is a directly relative# or family member (including but not limited to spouse, child, sibling, parent) or personal friend of the individual involved in the decision making process or

alternatively, if any relative of an Officer directly involved in any decision making process / has influenced interest/ stake in the applicant's form etc.

(iii) The applicant for the grant/award is an employee or employer of an individual involved in the process as a Reviewer or Committee Member; or if the applicant to the grant/awardhas had an employer-employee relationship in the past three years with that individual.

(iv) The applicant to the grant/award belongs to the same Department as that of the Reviewer/Committee Member.

(v) The Reviewer/Committee Member is a Head of an Organization from where the applicant is employed.

(vi) The Reviewer /Committee Member is or was, associated in the professional career of the applicant (such as Ph.D. supervisor, Mentor, present Collaborator etc.)

(vii) The Reviewer/Committee Member is involved in the preparation of the research proposal submitted by the applicant.

(viii) The applicant has joint research publications with the Reviewer/Committee Member in the last three years.

(ix) The applicant/Reviewer/Committee Member, in contravention to the accepted norms and ethics followed in scientific research has a direct/indirect financial interest in the outcomes of the proposal.

(x) The Reviewer/Committee Member stands to gain personally should the submitted proposal be accepted or rejected.

The Term "Relative" for this purpose would be referred in section 6 of Companies Act , 1956.

3. Regulation:

The DST shall strive to avoid conflict of interest in its funding mechanisms to the maximum extent possible. Self-regulatory mode is however recommended for stake holders involved in scientific research and research management, on issues pertaining to Conflict of Interest and scientific ethics. Any disclosure pertaining to the same must be made voluntarily by the applicant/Reviewer/Committee Member.

4. Confidentiality:

The Reviewers and the Members of the Committee shall safeguard the confidentiality of all discussions and decisions taken during the process and shall refrain from discussing the same with any applicant or a third party, unless the Committee recommends otherwise and records for doing so.

5. Code of Conduct

5.1 To be followed by Reviewers/Committee Members:

(a) All reviewers shall submit a conflict of interest statement, declaring the presence or absence of any form of conflict of interest.

(b) The reviewers shall refrain from evaluating the proposals if the conflict of interest is established or if it is apparent.

(c) All discussions and decisions pertaining to conflict of interest shall be recorded in the minutes of the meeting.

(d) The Chairman of the Committee shall decide on all aspects pertaining to conflict of interests.

(e) The Chairman of the Committee shall request that all members disclose if they have any conflict of interest in the items of the agenda scheduled for discussion.

(f) The Committee Members shall refrain from participating in the decision making process and leave the room with respect to the specific item where the conflict of interest is established or is apparent.

(g) If the Chairman himself/herself has conflict of interest, the Committee may choose a Chairman from among the remaining members, and the decision shall be made in consultation with Member Secretary of the Committee.

(h) It is expected that a Committee member including the Chair-person will not seek funding from a Committee in which he/she is a member. If any member applies for grant, such proposals will be evaluated separately outside the Committee in which he/she is a member.

5.2 To be followed by the Applicant to the Grant/Award:

(a) The applicant must refrain from suggesting referees with potential Conflict of Interest that may arise due to the factors mentioned in the specifications described above in Point No. 2.

(b) The applicant may mention the names of individuals to whom the submitted proposal should not be sent for refereeing, clearly indicating the reasons for the same.

5.3 To be followed by the Officers dealing with Programs in DST:

While it is mandatory for the program officers to maintain confidentiality as detailed in point no. 6 above, they should declare, in advance, if they are dealing with grant applications of a relative or family member (including but not limited to spouse, child, sibling, parent) or thesis/ post-doctoral mentor or stands to benefit financially if the applicant proposal is funded. In such cases, DST will allot the grant applications to the other program officer.

6. Sanction for violation

6.1 For a) Reviewers / Committee Members and b) Applicant

Any breach of the code of conduct will invite action as decided by the Committee.

6.2 For Officers dealing with Program in DST

Any breach of the code of conduct will invite action under present provision of CCS (conduct Rules),1964.

7. Final Appellate authority:

Secretary, DST shall be the appellate authority in issues pertaining to conflict of interest and issues concerning the decision making process. The decision of Secretary, DST in these issues shall be final and binding.

8. Declaration

I have read the above "Policy on Conflict of Interest" of the DST applicable to the Reviewer/ Committee Member/ Applicant/ DST Scheme or Program Officer # and agree to abide by provisions thereof.

I hereby declare that I have no conflict of interest of any form pertaining to the proposed grant *

I hereby declare that I have conflict of interest of any form pertaining to the proposed grant*

* & # (Tick whichever is applicable)

Name of the candidate

(Strike out whichever is not applicable)

30/6/23

(Signature with date)

Dr ISNVR Prasanth

2.2.Endorsement from Head of Organization

Project Title: "Improvement in IC engine performance with thermal barrier coating"

Cost: 33,38,840/-

Duration: 3 years

1. Affirmed that the Organization welcomes the participation of Dr./Mr./Ms. I.S.N.V.R.Prasanthas the PI and Dr./Mr./Ms. Dr.A.Raveendra as the Co-PI for the Project and that in the unforeseen and legitimate event of discontinuation by the PI, the Co-PI will assume full responsibility for completion of the Project. Information to this effect, endorsed by me, will be promptly sent to DST
2. Affirmed that the equipment and basic as well as other administrative facilities as per the terms and conditions of the award of the Project will be made available to the Investigator(s) throughout the duration of the Project. All the equipment purchased under the projects will remain the administrative custody of the DST unless any order regarding the same issue by the DST.
3. The Organization shall ensure that as per the rule of GFR 2017, purchase of the equipments may done through the Government e-Marketplace (GEM), to the extent available there as the project involves government funding.
4. The organization shall ensure that under any circumstances, parking of Government Fund will not be done. The Fund will be utilized only for the purpose it was granted.
5. The organization/ institute shall ensure to use Expenditure Advance & Transfer (EAT) module of PFMS.
6. The Organization shall provide timely the Audited Statement of Expenditure and the Utilization Certificate of the Funds under the Grant as required by DST in the prescribed format and all interests and other earnings against released Grant shall be remitted to Consolidated Fund of India (through Non-Tax Receipt Portal (NTRP), i.e. www.bharatkosh.gov.in), immediately after finalization of accounts, as it shall not be adjusted towards future release of Grant.
7. The organization will abide by all the terms and conditions mentioned in the sanction order.

(Head of Organization)

Seal/Stamp

Date:

Place:

4 Stroke 4 Cylinder Petrol Engine Test Rig (Computerised) for College Laboratory

₹ 6.50 Lakh Get Latest Price

Type	Engine Test Rig
Usage/Application	College Laboratory
Test Component	Engine Test
Fuel Type	Petrol
Number Of Cylinders	4

The setup consists of four cylinder, four stroke petrol engine connected to dynamometer for loading. It is provided with necessary equipment and instruments for combustion pressure and crank-angle measurements....

View Complete Details

Reliant Lab

Sadar Bazar, Ambala, Haryana

4.5/5 ★★★★½ (47)

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Usage/Application	Laboratory
Brand	TECH-ED
Bore Size	84mm
Cooling Type	Water Cooled

We are offering Multi Cylinder Diesel Engine Test Rig to our clients.The detailed Technical Data Sheets will be Provided against your Valuable Enquiry

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Tech - Ed Equipment Company

Nagarbhavi, Bengaluru, Karnataka

4/5 ★★★★★ (9)

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