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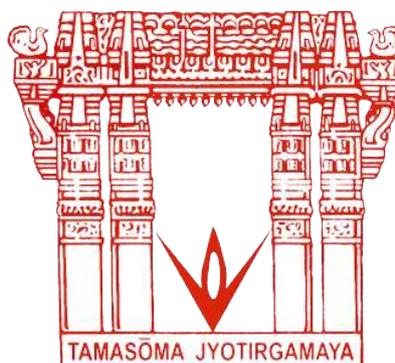
AICTE Sponsored

INTERNATIONAL E-CONFERENCE

on

**SUSTAINABLE DEVELOPMENT IN MECHANICAL ENGINEERING
(SDME 2020)**

October 30-31, 2020



Organized by

Department of Mechanical Engineering

**VALLURUPALLI NAGESWARA RAO VIGNANA JYOTHI
INSTITUTE OF ENGINEERING AND TECHNOLOGY**

Pragathi Nagar, Nizampet (S.O), Hyderabad 500090, Telangana, India



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Editors :

Dr. Shivraj Narayan Yeole
Dr. G. Srinivasa Gupta

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Department of Mechanical Engineering

VALLURUPALLI NAGESWARA RAO VIGNANA JYOTHI
INSTITUTE OF ENGINEERING AND TECHNOLOGY

Pragathi Nagar, Nizampet (S.O), Hyderabad 500090, Telangana, India

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MESSAGE FROM PRINCIPAL



It gives me immense pleasure to know that during the Silver Jubilee year of the Institute, the Department of Mechanical Engineering is organizing two days AICTE sponsored “International E-conference on Sustainable Development in Mechanical Engineering (SDME 2020) during October 30-31, 2020.

The theme of the conference is on sustainable development in Mechanical Engineering and is apt in the current scenario. Sustainability is significant in improving the quality of human life by developing innovative products and designs through optimum utilization of the resources and with a responsibility to care for the environment.

I congratulate the organizing team of the conference for providing a platform to the researchers through this conference. I thank the researchers for contributing their articles for presentation in the conference.

I wish the conference a great success.

Dr. C. D. NAIDU

Principal
VNRVJiet

MESSAGE FROM DIRECTOR FOR ADVANCEMENT AND DEAN, ADMINISTRATION



I am pleased to write a message for the two days AICTE sponsored “International Econference on Sustainable Development in Mechanical Engineering (SDME 2020) being organized online by the Department of Mechanical Engineering at VNRVJIET during October 30-31, 2020. I fully understand the importance of sustainability in today’s world where the natural resources are depleting so fast and its relevance in the field of Mechanical Engineering. I congratulate the department of Mechanical Engineering for aptly deciding the theme of conference on sustainability in Mechanical Engineering.

My heartfelt wishes to the organizing team for providing a platform to the researchers and academicians to share their novel ideas and latest trends in the field of Mechanical Engineering through this conference.

I am sure that the conference will be a grand scientific event.

Dr. B.CHENNA KESAVA RAO

Director for Advancement and Dean Administration
VNRVJIET

MESSAGE FROM DIRECTOR, R & D



I am delighted to know that the department of Mechanical Engineering is organizing two days AICTE sponsored “International E-conference on Sustainable Development in Mechanical Engineering (SDME 2020) during October 30-31, 2020.

Sustainability has been the key feature in product development. In order to improve sustainability of products, it is essential to improve the design of engineering systems. The merit of the design is evaluated by how much it improves the sustainability of product in its life cycle. The impact of the developed product must be felt in terms of green technology. For this to happen, the approach of mechanical engineers must change from basic research to applied research. I believe that this conference will provide an opportunity to all the presenters and participants to share their research findings in the field of sustainability in mechanical engineering.

I extend my warm greetings to all those associated with the conference and wish the event a grand success.

Dr. A. SUBHANANDA RAO

Director, R&D

VNRVJET

MESSAGE FROM CONVENOR



It is a matter of great pleasure to assert on the occasion of silver jubilee year that the international conference is being organised by the department of Mechanical Engineering, VNR Vignana Jyothi Institute of Engineering and Technology on the theme 'Sustainable Development in Mechanical Engineering (SDME-2020)'. In the era of disruptive technological and industrial revolution, Mechanical Engineering and allied areas play a significant role in transforming traditional mode of learning into the level industry 4.0.

In this connection this conference is to make an attempt to focus the attention of all professionals at global level to interact and share their knowledge and expertise in the state of the art technologies on sustainable mechanical engineering domains like digital manufacturing, automation and robotics, advanced mechanics, automotive vehicles, aerospace applications to seek possible solutions for raising living standards of countries across the globe and their sustainable development and also to identify key areas for further research.

I take this opportunity to express my heartfelt appreciations and gratitude to all the participants, authors, delegates, expert resource persons, conference chairs and I congratulate the organizers for their efforts which have culminated in SDME-2020 and I wish the event all success.

Dr. G. SRINIVASA GUPTA

Convenor - SDME2020 &
Head of Department of Mechanical Engineering
VNRVJIET

MESSAGE FROM ORGANIZING SECRETARY



The Department of Mechanical Engineering is organizing two days AICTE sponsored “International E-conference on Sustainable Development in Mechanical Engineering (SDME 2020)” during October 30-31, 2020. It is a matter of honor and pleasure for me to be associated with the event during the Silver Jubilee celebration year of the Institute.

I am happy to share that the conference has received good response from researchers, academicians and PG students from all over the country.

On behalf of the department and the organizing team, I welcome all the participants, research scholars and delegates to this conference and hope that the conference will be professionally learning experience for all.

Dr. SHIVRAJ NARAYAN YEOLE

Organizing Secretary - SDME2020 &
Professor of Mechanical Engineering
VNRVJIET

◆ **About VNRVJIET**

Vallurupalli Nageswara Rao Vignana Jyothi Institute of Engineering and Technology [VNRVJIET], an autonomous institute sponsored by Vignana Jyothi Society, was established in the year 1995 in the state of Telangana. Institution is affiliated to Jawaharlal Nehru Technological University Hyderabad (JNTUH) and is granted the status of Autonomous from the academic year 2012 by University Grants Commission (UGC) New Delhi. The institution is conferred with the honor of “College with Potential for Excellence” (CPE) by UGC in August 2016. Institute has received accreditation from National Assessment and Accreditation Council (NAAC) with Grade A++ with a CGPA of 3.73 on 4 point scale in 2018. National Board of Accreditation (NBA) has re-accredited B.Tech. - UG – CE program for 5 years in 2016 and UG – CSE, ECE, EEE, EIE, IT, ME programmes for 3 years in 2019. Institute has secured 127th rank in engineering category and in the rank band of 151-200 in overall category of NIRF India 2020 rankings. Institute has been recognized as 'AICTE Research Centre' by the AICTE. Institute received I-Gauge 'Diamond' rating from QS. The institute has 9 departments and offers 26 academic programs both at UG and PG level. The institution with a vision of serving the society through value-based education has been making a mark in the educational map of this region. The institute offers academic programs with innovative curriculum, advanced research in cutting-edge technologies and societal engagement through outreach activities. The Institute is celebrating its 'Silver Jubilee' in the year 2020.

◆ **Department of Mechanical Engineering**

The Department of Mechanical Engineering was established in 1995 with an intake of 60 in B.Tech. Mechanical Engineering programme, which was increased to 120 in 2010. In addition to this programme, it offers 2 M. Tech. programmes in Advanced Manufacturing Systems and CAD/CAM with an intake of 18 each and a Diploma in Mechanical Engineering (II shift) with an intake of 120. Department is recognized as 'Research Center' by the JNTU Hyderabad. The department has a team of 47 highly experienced faculty and staff, out of them 18 are doctorates, involved in dedicated research, innovation and training. It has fully equipped workshop and up-to-date laboratories like Machine Tools, Thermal Engineering, Heat Transfer, Metallurgy and Instrumentation etc. The department also has sophisticated CNC, CAD, CAM labs with high configuration workstations and licensed softwares like AUTOCAD, ADAMS, ANSYS, CATIA, FLEXSIM, AUTOMOD, MATLAB, EDGE CAM, MINITAB, MASTERCAM, AUTOMATION STUDIO etc. The department also has a Center of Excellence in Joining Technologies. Department has an exclusive facility for emerging technology on 3D Printing – consisting of 02 Makerbot FDM Printers and 01 Artec Scanner. Department has received grants from various funding agencies for carrying out research projects. As on date, 09 projects have been completed and 03 are ongoing.

**AICTE sponsored International E-Conference on
Sustainable Development in
Mechanical Engineering
(SDME 2020)**

October 30-31, 2020

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ABOUT SDME 2020 CONFERENCE

In fast paced world of emerging technologies, sustainability will be critical to the success of any process or product or in general a business. Sustainable development is very much essential in the contemporary scenario due to increasing environmental concerns, demand for energy, global warming and end of life safe disposal of products. These issues are also addressed and adopted as 17 Sustainable Development Goals (SDG) by the United Nations. Mechanical Engineering professionals possess a vital role to enable sustainable development in product or process design. Lot of research is being carried out all over the world emphasizing the importance of sustainability in the field of Mechanical Engineering. In order to have an insight into these developments, a platform through this conference is provided.

The primary objective of International Conference on Sustainable Development in Mechanical Engineering (SDME 2020) is to bring together the experts from academic institutions, industries and research organizations from various countries across the globe to facilitate close interaction. The participants of SDME2020 will get opportunity to share their views and ideas through deliberations and discussions pertaining to latest developments and trends focussing on sustainability developments in the field of Mechanical Engineering.

Topics/Tracks

The conference aims to be a platform for reporting both fundamental and applied issues of mechanical engineering field leading to sustainability. The overall themes of the conference are classified into the following tracks, but are not limited to:

➤ **Sustainable Thermal & Fluidics :**

- ✓ Thermal Engineering
- ✓ Fluid Mechanics
- ✓ Heat Transfer

➤ **Sustainable Design :**

- ✓ Applied Mechanics
- ✓ Acoustics & Vibration
- ✓ Fatigue & Fracture Mechanics
- ✓ CAD/CAM - Analysis & Optimization

➤ **Sustainable Materials & Technologies :**

- ✓ Composites & Advanced Materials
- ✓ Biomechanics & Biomaterials

➤ **Sustainable Energy :**

- ✓ Renewable Energy Sources

➤ **Sustainable Manufacturing Systems :**

- ✓ Advanced Manufacturing – Additive, Subtractive, Formative & Joining
- ✓ Green Manufacturing Systems

➤ **Sustainability in Industrial Engineering :**

- ✓ Supply Chain Management
- ✓ Industrial Design & Ergonomic Design
- ✓ Industrial and Production Engineering

➤ **Sustainability & Industry 4.0 - Mechanical Engineering :**

- ✓ Artificial Intelligence
- ✓ Internet of Things
- ✓ Machine Vision
- ✓ Robotics, Automation & Mechatronics
- ✓ Data Science & Predictive Analytics
- ✓ Autonomous Vehicles
- ✓ Automotive Technology
- ✓ Aerospace Applications

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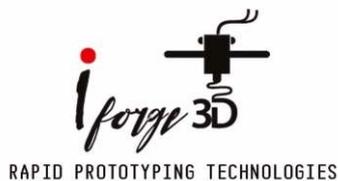


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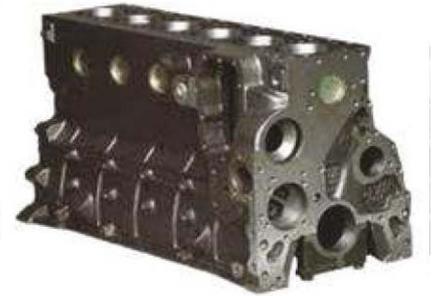
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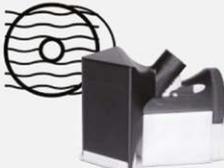
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Very early we understood the future and wanted to seize the opportunity and provide leadership and make an impact in the field of computer technology used in Engineering. In the following we have made clear what specifically drives us.

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The certification provided to our students is accepted and valued worldwide and is a true testimony of the student's skill. Our certificates also have a seal of authenticity which cannot be duplicated and are available to be viewed on our website.

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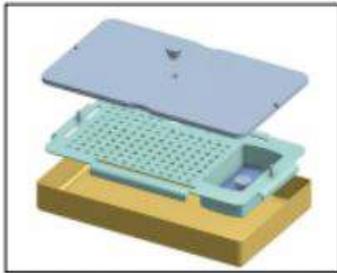
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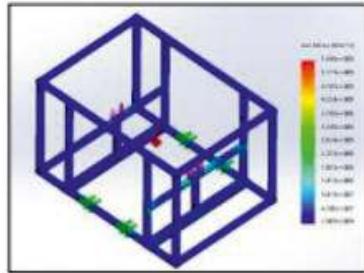
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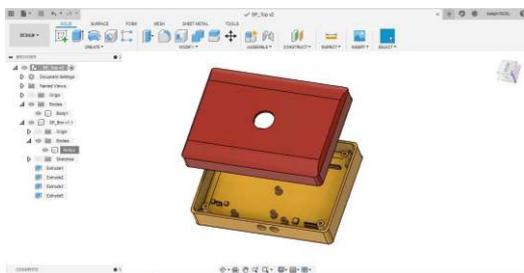


Prototyping



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We take up the Design challenges to solve the Engineering problems. Starting with Brainstorming sessions ,hand sketching to CAD modelling by applying Finite Element Analysis (FEA concepts), we work concurrently involving the designers, manufacturers and customers in the problem solving. We have dedicated team of designers for Design of Patient specific medical Implants.



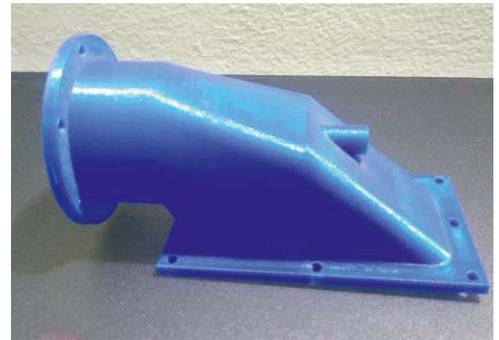
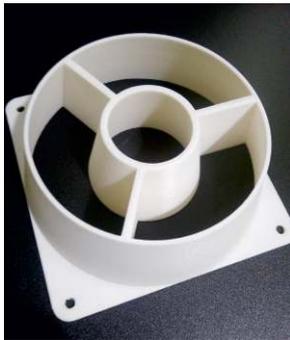
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FUSED DEPOSITION MODELING (FDM) : We have FDM machines of various build volumes and capabilities. FDM Technology can go about building quick prototypes with strength and speed at very economical price in a range of thermoplastic materials.

Materials Availability :

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Polylactic Acid (PLA)
PETG
Flexible PLA/TPU.

Tolerances : +/- 0.2mm



iForge 3D offered Technologies and Services.

STEREOLITHOGRAPHY APPARATUS (SLA) : SLA is mostly used rapid prototyping technology when there is a requirement of high details and impeccable surface quality.

Materials Availability :

Clear Resin

Tolerances : +/- 0.1mm



iForge 3D offered Technologies and Services.

SELECTIVE LASER SINTERING (SLS) : SLS is most widely used prototyping technique for functional parts and components due to its ability to create complex geometries very easily.

Materials Availability :

PA2200.

Tolerances : +/- 0.2mm



iForge 3D offered Technologies and Services.

DIRECT METAL LASER SINTERING (DMLS) : It is a industrial 3D Printing process that builds fully functional metal prototypes in a range of metals like steel,aluminium, titanium.This technology reduces costs and lead times.

Materials Availability :

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Tolerances : +/- 0.2mm



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About Shigemi Scientific Solutions Pvt. Ltd. Founded in 2016, Shigemi is a company focused on delivering custom engineering solutions and academic skill development that positively impacts our clients. Our founder, Mr Shivaji Ganesh brings with him over 35 years of combined experience working with various multi-national engineering companies like Cyient, Value-Labs, Boeing, Isuzu, Airbus, Nissan and Honda.

Our company's name “Shigemi” is of Japanese origin meaning “Flourishing and Luxuriant Beauty” which is apt as we help enterprises and engineers transform, flourish and thrive in a dynamic world through strategic consulting, innovation and by forging path-breaking relationships.

About Shigemi Academics We have designed a set of unique certification courses in collaboration with the industry experts for engineering students for in-demand subjects like Additive Manufacturing, Noise and Vibration Control (NVC), Bird Strike Analysis, Crash Analysis and CATIA. These courses are delivered in association with the engineering colleges at their respective campuses for the convenience of both the students and the industry experts involved. We offer high-quality GATE & PSU coaching for Mechanical and Aeronautical Aspirants with a strong basis on the qualitative fundamentals of the subject enabling the student to both crack the examination as well as to gain an in-depth knowledge of the subjects.

For Engineering Aspirants, we offer C-Language Fundamental coaching with practical hands on training. We have the required in-house tech infrastructure to be able to thoroughly impart the fundamentals of “C” programming to every student. Lastly, we also deliver inspirational and motivational talks to engineering students with the sole goal of inspiring and motivating them to succeed in their careers.

About our Scientific Solutions Services. "Shigemi Scientific Solutions Pvt. Ltd." provides end to end solutions. Starting from conceptual product design i.e. a simple 2D drawing to a 3D MBD (Model Based Definition) to design validation and Finite Element analyses of multiple assembly level." We have dedicated team of 25 scientists with cumulative experience of 700+ years in challenging domains of Automobiles, Aerospace Products (Aero structures Aero-Engines, Defence), Rail Transportation, Heavy Equipment and machinery , Power, Oil & Natural Gas and other similar engineering domains. We are expert in Linear Static, Non Linear, Dynamic (Vibration-Harmonic & transient response), Thermal, Computational Fluid Dynamics, Crash, NVH (Noise Vibration and harshness) and Bird Strike to production drawings/blueprints and manufacturing support. We are specialist in Catia, Pro E, Unigraphics, Auto CAD, Ansys, LS Dyna, Hyperworks, Nastran-Patran, and Abacus. Worked with major clients like BOIENG, AIRBUS, TRIUMPH VOUGHT AEROSTRUCTURES, MITSUBISHI JET, HONDA R&D AERO ENGINES, ISUZU, NISSAN, CAE Canada, ALTITUDE New Zealand.... Indian customers like ISRO, DRDL, DRDO, MTE INDUSTRIES.



About Us:

VSD Enterprises, established in the winter of 2017, with an aim to provide best in class and state of the art Additive manufacturing & reverse engineering solutions to the market.

VSD started to grow with its partnerships with 3D Systems as a sub-reseller to offer solutions in SLA, SLS, MJP, CJP, DMP (Metal) technologies serving the vast and fast paced market of southern India.

With its headquarters in Hyderabad, VSD 3D has now made its name as a trusted brand in providing various additive manufacturing technologies to the fields of Education, Automotive, Aerospace & Defence, Dental & medical organizations involved in new product development and manufacturing using the additive technology.

VSD 3D founded by industry professionals with a vision to strive as the best solution provider in the arena of additive manufacturing and growing day by day with customers and consultants and curating a niche for itself as a solution provider. Having one of the best technicians and consultants on board they have been able to be nurture its clients with the best sales and services offerings.

They presently have one of the largest install bases in the twin states of Andhra Pradesh & Telangana for the Metal Additive Technology. Coming years, they strive to expand their horizon to the entire nation and be one of the best consultants and evangelists of the technology.

We are presently serving customers such as Tata Autocomp Systems, Tata GY Batteries Limited, University College of Engineering-Osmania University, National Institute of Technology Warangal, ARCI-International Advanced Research Center for Powder Metallurgy and New Materials, Defense Metallurgical Research Laboratory, Bhaskar Medical College & Hospital, Yashoda Hospitals, Care Hospitals, The 3D Studios, Knack Dental Lab, Dentelligent Dental lab, Electronics Corporation of India Limited – ECIL, Nobel Automotive to name a few.



Contact us: [VSD Enterprises, 1-3-28, Flat no 311, Imperial Court Apts., Street no 4, Kakatiya Nagar, Habsiguda, Hyderabad, Telangana- 500007](mailto:yogendra@vsd3d.com)
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INVOK Engineering Solutions is a Leading Value Added for Technology Products in India. Through our association with technology companies over the past 5 years, we have gained a vast experience in Industry segments like Animation, Architectural Engineering & Construction, Design, Manufacturing, Product Design areas.

Like other educational and training industry at Invok Engineering Solutions you will be offered varieties programs but the instructors make the difference and make stand out from others. We have a variety of skilled and Experienced trainers whose approach is different which you can see anywhere. we contribute a lot to the knowledge of its trainees and we try our level hard to contribute the best to increase our trainee's ability so that they stand out from others and whatever they contribute to the corporate world automatically becomes productive. We try our level best to deliver our services to every corner of the world by the help of customized education. Our motto is to deliver the best services to you and that is why we have taken the customized approach because we do not want you to compromise with your education.

The level of competition is rising daily and because of which the pressure as well. The feeling of competition is so high that even in the market place where you have to buy or sell goods; you have to face lots to competition. When it comes to education, children are getting pressurized on daily basis because they find it difficult to meet the demands of school and after schooling they face lots of competition in their college life. Whole life goes in competing with each other but the point where the competition goes to its peak is the placement time. Every student has different caliber but the placement process has few concept based on which they are chosen. When a student gets placed he has dual feeling one of happiness and other of fear; happy because from now onwards he is a professional and he is capable enough to handle his own expenditures and fearful because he is not aware of the environment he will get there and how he should react towards them. we provide the entire necessary computer training which helps the newbies and also the experienced trainers so that they can achieve better recognition in this competitive world.

INVOK Engineering Solutions initiative to help Students from the Higher Education get trained and certified on technology products being used by the industry making them Industry ready during the graduation process itself in the fields of Mechanical CAD/CAM/CAE, CNC, 3D Printing, IT software ie., C & DS, Java, Python, AI, ML etc.



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PREFACE OF SDME 2020 PROCEEDINGS

AICTE sponsored 2-day International E-conference on Sustainable Development in Mechanical Engineering(SDME 2020) is organized by the department of Mechanical Engineering during October 30-31, 2020 at Vallurupalli Nageswara Rao Vignana Jyothi Institute of Engineering and Technology Hyderabad, Telangana, India.

This edition of the e-conference is indeed a special one as it is being conducted as part of the Silver Jubilee Celebrations of the Institute but also being conducted online due to the prevailing COVID-19 pandemic across the globe. The e-conference is based on the theme of Sustainable Development in Mechanical Engineering. Sustainable development is the idea that human societies must live and meet their needs without compromising the ability of future generations to meet their own needs. With the natural resources depleting so fast and the kind of CO_x emissions and pollution levels rising alarmingly, it has become the need of hour to go for developing products and solutions that are sustainable in true sense. It is expected that the developed innovative product and solutions help in reduction of waste, emissions and pollution thereby leading to sustainability. Technology associated with Mechanical Engineering need to be aimed at providing solutions to these issues. Recent trends and research on developing sustainable solutions in mechanical engineering are still under exploration. How do we make more people, especially the student community better aware of these? And how the researchers and academicians become more knowledgeable of the future success factors so that they can deliver sustainable and innovative products? With these questions in mind, the department of mechanical engineering, planned to organize this 2-day International E-conference with an intention of providing a platform to the researchers and academicians to demonstrate sustainable solutions proposed by them through their research.

We are glad that the international conference has been sponsored by the AICTE New Delhi. Also the theme of conference on sustainability has been well appreciated by the industry. This is evident from the list of industries that came ahead for sponsoring the event. namely M/s. Lokesh Machine Tools Hyderabad, Makerbot India, Canter CAAD Hyderabad, Iforge3D Hyderabad, Shigemi Scientific Solutions Private Limited Hyderabad, Invok Engineering Solutions Hyderabad and VSD Enterprises Hyderabad.

Right from the launch of the conference, SDME 2020 received very good response across the country. Around 180 abstracts were received out of which 120 were asked to submit full papers after scrutiny. After through peer review of these papers, 48 papers were selected for oral presentation out of which 43 presentations were made virtually along with 04 keynote lectures. These papers were presented in a total of 8 sessions in online mode through Google Meet platform. These were divided into four presentation tracks namely Sustainable Design, Sustainable Thermal and Fluidic, Sustainable Materials and Technologies and Sustainable Manufacturing Systems. 04 invited keynote lectures were delivered by distinguished personalities from India and abroad. Dr. Manoj Gupta, renowned academician and researcher from the National University of Singapore, Singapore, Dr. L. Sivaramakrishna from Osmania University Hyderabad, Dr. M. Ravi Sankar, Professor from IIT Tirupathi and Dr. Netaji Kesana, Sr. Scientist from Institute of Energy Norway were the invited keynote

speakers. The keynote lectures and the paper presentations provided insights into the sustainability aspects of Mechanical Engineering and create interest among the new researchers. A total of 150 delegates including paper presenters attended the e-conference.

Efforts taken by the peer reviewers greatly contributed to enhancing the quality of papers presented in the conference. I thank the national and international advisory board members, technical session chairs and co-chairs, organizing committee members, student volunteers and administrative staff who contributed to the success of the conference. Also, I thank all the authors who submitted and presented papers for making this conference a success. I am thankful to the Management of VNRVIET for motivating and supporting financially for organizing the conference.

I hope that all the participants had a fruitful time in learning about the latest trends in Mechanical Engineering with emphasis on Sustainability.

Dr. Shivraj Narayan Yeole
Organizing Secretary - SDME 2020



AICTE Sponsored
Two Days International E-conference on
SUSTAINABLE DEVELOPMENT IN MECHANICAL ENGINEERING
(SDME 2020)



October 30-31, 2020

DEPARTMENT OF MECHANICAL ENGINEERING
VNR VIGNANA JYOTHI INSTITUTE OF ENGINEERING & TECHNOLOGY
INAUGURAL FUNCTION

October 30, 2020

- | | | |
|------------|---|---|
| 10.00 a.m. | : | Introduction and Welcome to the dignitaries |
| 10.05 a.m. | : | Prayer |
| 10.10 a.m. | : | Welcome address by
Dr. Shivraj Narayan Yeole, Organizing Secretary,
SDME 2020 & Professor/ME VNRVJIET |
| 10.15 a.m. | : | Address by
Dr. G. Srinivasa Gupta, Convenor,
SDME 2020 & HOD/ME, VNRVJIET |
| 10.20 a.m. | : | Address by
Dr. C. D. Naidu, Principal, VNRVJIET |
| 10.25 a.m. | : | Address by
Dr. D. Nageswara Rao, President, Vignana Jyothi |
| 10.30 a.m. | : | Address by
Sri. K. Harishchandra Prasad, General Secretary, Vignana Jyothi |
| 10.35 a.m. | : | Address by
Dr. B. Chennakesava Rao,
Director for Advancement & Dean Administration, VNRVJIET |
| 10.40 a.m. | : | Address by
Dr. A. Subhananda Rao, Director R&D, VNRVJIET |
| 10.50 a.m. | : | Address by the Chief Guest
Dr. K. P. S. Murthy, Outstanding Scientist & Director,
High Energy Materials Research Laboratory (HEMRL), Pune |
| 11.00 a.m. | : | Address by the Guest of Honour
Dr. Manoj Gupta, Associate Professor, Materials,
National University of Singapore, Singapore |
| 11.10 a.m. | : | Address by the Guest of Honour
Col. Venkat, Director (Faculty Development), AICTE New Delhi |
| 11.20 a.m. | : | Vote of thanks
Sri. K. Jaya Prakash, Assistant Professor, ME, VNRVJIET |



Google Meet Link : <https://meet.google.com/skw-aigf-zdo>



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October 30-31, 2020

DEPARTMENT OF MECHANICAL ENGINEERING
VNR VIGNANA JYOTHI INSTITUTE OF ENGINEERING & TECHNOLOGY

VALEDICTORY FUNCTION

October 31, 2020

- 02.30 p.m. : Introduction and Welcome to the dignitaries
- 02.35 p.m. : Welcome address by
Dr. G. Srinivasa Gupta,
Convenor, SDME 2020 & HOD/ME, VNRVJIET
- 02.40 p.m. : Address by
Dr. B. Chennakesava Rao,
Director for Advancement & Dean Administration, VNRVJIET
- 02.45 p.m. : Address by
Dr. C.D. Naidu
Principal, VNRVJIET
- 02.50 p.m. : Feedback from Participants
- 02.55 p.m. : Address by the Chief Guest
Dr. M. Manzoor Hussain, Registrar,
Jawaharlal Nehru Technological University (JNTU), Hyderabad
- 03.05 p.m. : Vote of thanks
Dr. Shivraj Narayan Yeole, Organizing Secretary,
SDME 2020& Professor/ME, VNRVJIET



Google Meet Link : <https://meet.google.com/mfd-ugbs-ctk>



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SUSTAINABLE DEVELOPMENT IN MECHANICAL ENGINEERING
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October 30-31, 2020

DEPARTMENT OF MECHANICAL ENGINEERING
VNR VIGNANA JYOTHI INSTITUTE OF ENGINEERING & TECHNOLOGY
PROGRAM SCHEDULE

Day & Date	Time (IST)	Event	Google Meet Link
Friday October 30th 2020	09.00 a.m. to 10.00 a.m.	Registrations	
	10.00 a.m. to 11.30 a.m.	INAUGURAL FUNCTION	
	11.35 a.m. to 12.30 p.m.	Key Note Lecture-1 Dr. Manoj Gupta Associate Professor, Materials Group National University of Singapore, Singapore	https://meet.google.com/skw-aigf-zdo
	12.35 p.m. to 01.30 p.m.	Key Note Lecture -2 Dr. L. Sivaramakrishna Associate Professor, Mechanical Engineering University College of Engineering Osmania University. Hyderabad, India	
	01.30 p.m. to 02.00 p.m.	INAUGURAL FUNCTION	
	02.00 p.m. to 03.15 p.m.	Session-1 Presentation Track-I: Sustainable Design	https://meet.google.com/arp-eytk-frc
	02.00 p.m. to 03.15 p.m.	Session-2 Presentation Track-II: Sustainable Thermal & Fluidics	https://meet.google.com/pqb-nkzi-ryc
	03.30 p.m. to 04.45 p.m.	Session-3 Presentation Track-III: Sustainable Manufacturing Systems	https://meet.google.com/kwf-zhtu-gvq
	03.30 p.m. to 04.45 p.m.	Session-4 Presentation Track-IV: Sustainable Materials & Technologies	https://meet.google.com/adw-mqrp-oqe
Saturday October 31st 2020	09.30 a.m. to 10.25 a.m.	Key Note Lecture-3 Dr. Netaji Ravikiran Kesana Senior Scientist Institute for Energy Technology, Norway	https://meet.google.com/tqb-zgxx-cax
	10.30 a.m. to 11.25 a.m.	Key Note Lecture-4 Dr. M. Ravi Sankar Associate Professor, Mechanical Engineering Indian Institute of Technology Tirupati	
	11.30 a.m. to 12.45 p.m.	Session-5 Presentation Track-II: Sustainable Thermal & Fluidics	https://meet.google.com/bhu-rgwv-hnd
	11.30 a.m. to 12.45 p.m.	Session-6 Presentation Track-III: Sustainable Manufacturing Systems	https://meet.google.com/pow-hezv-wkw
	12.45 p.m. to 02.00 p.m.	Session-7 Presentation Track-I: Sustainable Design	https://meet.google.com/hqu-tqfk-jue
	12.45 p.m. to 02.00 p.m.	Session-8 Presentation Track-IV: Sustainable Materials & Technologies	https://meet.google.com/paf-utzw-vde
	02.00 p.m. to 02.30 p.m.	LUNCH BREAK	
	02.30 p.m. onwards	FEEDBACK & VALEDICTORY FUNCTION	https://meet.google.com/mfd-ugbs-ctk



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KEYNOTE LECTURES

Day & Date	Event		Session Time and Google Meet Link
Friday October 30th 2020	Key Note Lecture-1: (11.35 a.m. to 12.30 p.m.) Sustainable Magnesium and its Technology for Engineering and Biomedical Sectors Dr. MANOJ GUPTA Associate Professor, Materials Group National University of Singapore, Singapore		11.35 a.m. to 01.30 p.m. (IST) https://meet.google.com/skw-aigf-zdo
	Key Note Lecture-2: (12.35 p.m. to 01.30 p.m.) Case studies on Innovative Applications of 3D Printing Dr. L. SIVARAMAKRISHNA Associate Professor, Mechanical Engineering University College of Engineering Osmania University, Hyderabad, India		
Saturday October 31st 2020	Key Note Lecture-3: (09.30 a.m. to 10.25 a.m.) Introduction to the Production and Processing Facilities (Design Studies, Challenges, and Modern Approaches) Dr. NETAJI RAVIKIRAN KESANA Senior Scientist Institute for Energy Technology, Norway		09.30 a.m. to 11.25 a.m. (IST) https://meet.google.com/tqb-zgxx-cax
	Key Note Lecture-4: (10.30 a.m. to 11.25 a.m.) Nano-Finishing of Biomedical Implants using Polymer Rheological Abrasive Fluids Dr. M. RAVI SANKAR Associate Professor, Mechanical Engineering Indian Institute of Technology, Tirupati, India		

**ABSTRACTS
OF THE
PRESENTED PAPERS**



AICTE Sponsored
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SUSTAINABLE DEVELOPMENT IN MECHANICAL ENGINEERING
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PRESENTATION SCHEDULE

Event		Name of the Presenter	Date & Time (IST)	Panel Members
SESSION-1	PRESENTATION TRACK-I: SUSTAINABLE DESIGN			
SDME2020/139	AUTOMATED TESTING FOR QUALITY INSPECTION OF FOOD GRAINS	S. Nithya Poornima	October 30th, 2020 02.00 p.m. to 03.15 p.m.	Dr. L. Sivaramakrishna (Chair) UCE, Osmania University Hyderabad
SDME2020/171	DEVELOPMENT OF LOW COST REFLECTIVE PANEL SOLAR COOKER	Dr. Pankaj Kumar Gupta		
SDME2020/178	DESIGN AND EXPERIMENTAL ANALYSIS OF ELECTRO MAGNETIC BRAKING SYSTEM	A. N. Brahmeswara Rao		
SDME2020/196	DESIGN AND SIMULATION OF AUTOMATED PAD PRINTING MACHINE USING AUTOMATION STUDIO	T. S. S. Saikumar		
				Dr. N. Kiran Kumar (Co-chair) VNRVJIET Hyderabad

AUTOMATED TESTING FOR QUALITY INSPECTION OF FOOD GRAINS

S. NITHYA POORNIMA 1, Dr. V. SHANTHA 2

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2 Professor, Dept. of Mechanical Engineering, Sir M. Visveswaraiiah Institute of Technology, International Airport Road, Hunasamaranahalli, Yelahanka, Krishnadeveraya Nagar, Bengaluru, Karnataka 562157. shanthanagraj@rediffmail.com

ABSTRACT:

The visual inspection and odour check of Food Grains was the at most need of the farmer to inspect the quality of the food Grains in order to prevent them from deterioration. Sensor measurements will provide need of efficient and faster method to inspect the quality of the grains. This process is an attempt towards developing an automated testing setup for quality inspection of food grains. Frame works for conveyer belt was designed such that it will be able to withstand the loads acting on it. Suitable belt thickness is calculated for belt system and is fabricated, which is connected to motors to facilitate the movement of food grain containers on it. Sensors for measurements of odour, temperature and humidity were attached at the appropriate position and a microcontroller is programmed in order to control the entire system. An arm is actuated to push the spoilt grain sample so as to reject the sample.

KEYWORDS: Automated quality inspection, sensor measurement, food grains, visual inspection

DEVELOPMENT OF LOW COST REFLECTIVE PANEL SOLAR COOKER

PANKAJ K. GUPTA, ABHISHEK MISAL, SANJAY AGRAWAL

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3 School of Engineering and Technology, IGNOU, New Delhi, India, sanjay.agrawal@ignou.ac.in

ABSTRACT:

The paper presents the development and testing of low cost reflective panel type solar cooker. The construction of the base panel type cooker utilizes low cost materials. Two designs of the panel type cooker are tested vis-à-vis conventional box type cooker. Temperatures are measured in the solar cooker at various points and are compared with the box type solar cooker. The test results for the developed panel type cooker exhibit lower temperatures in the cooking pots as compared to that attained in the box type cooker. Nonetheless, with fewer modifications the panel type cooker can prove to be viable and low cost competitor to the available box type cookers.

KEYWORDS: Solar cooker, low cost cooker, box type cooker, panel type cooker, reflecting surface.

DESIGN AND EXPERIMENTAL ANALYSIS OF ELECTRO MAGNETIC BRAKING SYSTEM

GEMBALI SRINIVASA GUPTA, A.N. BRAHMESWARA RAO, H. NARESH
Mechanical Engineering, VNR Vignana Jyothi Institute of Engineering and Technology, Vignana
Jyothi Nagar, Pragatinagar, Nizampet (S.O.), Hyderabad-500090, INDIA.
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ABSTRACT:

A conventional braking system uses the disc or drum for application of brakes. Application of pressure force through brake shoe on drum caused the vehicle to slow down and stop. During the action of brake Kinetic energy developed by vehicle is converted in to heat energy due to friction between brake shoe and drum. Therefore brake is an essential element to stop the vehicle by conversion of energy. Continuous application of brake results wear and tear on braking pads, in turn reduces its effectiveness. braking is to convert. In this work, a concept on magnetic braking system has been introduced, basis for which is Lenz's law. An aluminium disc is used to fit into the wheel of a bicycle and the influence of different parameter on braking torque have been analysed analytically as well as experimentally in this proposal.

KEYWORDS: Braking system, magnetic braking, Lenz's law, friction, energy

DESIGN AND SIMULATION OF AUTOMATED PAD PRINTING MACHINE USING AUTOMATION STUDIO

**TENUGOLLA SOMASUNDAR SIVA SAIKUMAR 1, BHANU MURTHY SOPPARI 2,
Dr. CHENNAKESAVA RAO BANDARU 3**

1 P.G Student, M. Tech (AMS), Department of Mechanical Engineering, VNR Vignana Jyothi Institute of Engineering and Technology, Bachupally, Hyderabad, 500 090, saishivasai@gmail.com
2 Assistant Professor, Department of Mechanical Engineering, VNR Vignana Jyothi Institute of Engineering and Technology, Bachupally, Hyderabad, 500 090,
3 Professor, Department of Mechanical Engineering, VNR Vignana Jyothi Institute of Engineering and Technology, Bachupally, Hyderabad, 500 090,

ABSTRACT:

Indeed, the prospect of creating a realistic virtual model (3D model) and using this model in virtual simulations to test the system's functionality in potential real-world scenarios plays a key role in the advancement of digitalization. Pad printing is a technique that transfers a 2d image onto a 3d object. To print on complex products produced in the industries such as automotive, medical, electrical objects, sport equipment's and toys, can be possible by pad printing machine. PLC and pneumatic actuators as a main role in this project, where Pneumatic components are used for mechanical movements and PLC is used to operate the pneumatic components. Interfacing the mechatronic system with Automation studio (AS) and controlling the system using IO box which creates a link between the Automation studio and the mechatronic system.

KEYWORDS: PLC, Automation studio (AS), pad printing, pneumatic actuators, Industry 4.0



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PRESENTATION SCHEDULE

Event	Name of the Presenter	Date & Time (IST)	Panel Members
SESSION-2	PRESENTATION TRACK-II: SUSTAINABLE THERMAL & FLUIDICS		<p style="text-align: center;">Dr. Balla Srinivasa Prasad (Chair) GIT, GITAM (Deemed to be University) Visakhapatnam</p> <p style="text-align: center;">Dr. K. Balashowry (Co-chair) VNRVJIET Hyderabad</p>
SDME2020/107	PERFORMANCE AND ANALYSIS OF BATTERY THERMAL MANAGEMENT SYSTEM USED IN ELECTRIC VEHICLES (EVS)	Sanket Sunil Mukane	
SDME2020/108	Nox REDUCTION IN CALCINER USING AIR STAGING AND RAW MEAL SPLIT TECHNOLOGY	Kinekar Shubham Gajanan	
SDME2020/113	COMPREHENSIVE STUDIES ON ALCOHOL USING PORT FUEL INJECTION FACILITATED WITH SPARK PLUG ENGINE	Sai Kiran Reddy Katepalli, Jadi Raghu Varma	
SDME2020/115	ANALYSIS OF SWIRLING AND CHOKING IN DIFFUSER USING CFD ANALYSIS	Ganpati Chandrakant Arjune	
SDME2020/117	ANALYSIS OF VARIOUS TEST CONDITIONS BASED ON SHADOW ANALYSIS ON PV MODULE USING MATLAB/SIMULINK	Poonam Sarawgi	
SDME2020/188	STUDY ON THE PERFORMANCE AND EMISSIONS OF DIESEL ENGINE BY FISH METHYL ESTER AND DEE	Dr. M. Vijay Kumar	
		October 30th, 2020 02.00 p.m. to 03.15 p.m.	

PERFORMANCE AND ANALYSIS OF BATTERY THERMAL MANAGEMENT SYSTEM USED IN ELECTRIC VEHICLES (EVs)

SANKET MUKANE 1, PRAVIN MANE 2, ADARSH GADDAM 1

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ABSTRACT:

The depletion of non-renewable energy resources is compelling us to search and innovate for more reliable options. The reduction in the use of petroleum in the automobiles can significantly affect the use of non-renewable energy resources. In the long run, electric vehicles are the best alternatives to the conventional IC engine automobiles. In electric vehicles, lithium-ion batteries are most commonly used as an energy. During discharging, excessive heat generation inside the battery will lead to thermal runaway. To operate efficiently, these batteries should be maintained within the desired temperature range of 25°C to 40°C. Among the various cooling methods, in this study air cooling is adopted. The battery pack is discharged at various constant C ratings. The effect of airflow rate on the battery surface temperature is studied with experimentation. The heat transfer coefficient is calculated by considering the average surface temperature of the battery as the wall surface temperature. The CFD analysis is done by considering the steady-state condition and boundary conditions are taken with experimental observations. Experimental results are compared with CFD results with appropriate approximations.

KEYWORDS: Li-ion battery pack, thermal runaway, forced air cooling, Li-ion cell arrangements, computational fluid dynamics (CFD)

Nox REDUCTION IN CALCINER USING AIR STAGING AND RAW MEAL SPLIT TECHNOLOGY

**SHUBHAM G. KINEKAR 1, SHITAL S. MONE 1, PRAVIN A. MANE 2,
VIVEK VITANKAR 3**

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ABSTRACT:

The manufacture of cement is highly energy-intensive and emission intensive due to the large heat needed for plant. Nitrous Oxide (N₂O) is one of the major greenhouse gas emitted into the atmosphere through it. The purpose of this work is to reduce NOX emissions inside calciner by using air staging and raw meal split technology. Tertiary air staging enables the fuel to be combusted in two different areas.

Three cases are simulated using three different flow rate of tertiary air inside calciner using CFD software. The raw meal also split and passed into two zones. In order to gain confidence in the model used, non-premixed coal combustion is modeled and validated using the experimental data presented in the literature. Based on the results predicted, the calciner performance is analysed in depth. When the quantity of air through upper tertiary air inlet is increasing NO_x formation decreasing. By comparing three cases it is found that case 70%-30% air-flow through the upper inlet and lower inlet respectively 362 ppm NO_x produced, which is less than the other two cases.

KEYWORDS: Air staging, raw meal split technology, NO_x modelling, FLUENT

COMPREHENSIVE STUDIES ON ALCOHOL USING PORT FUEL INJECTION FACILITATED WITH SPARK PLUG ENGINE

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ABSTRACT:

The spark ignition engines are universally used for automobile applications as a result of their consistent performance and economy. Regarding SI engine utilization in such applications global issues are concerned like NO_x, HC, CO. Alternative fuels are the fuels of present and future. More and more vehicles are switching to alternative fuels worldwide. Usage of different fuels also reduces emissions which has further pushed demand for eco-friendly fuels. during this direction interest is concentrated on reducing formation of NO_x & PM. Exhaust Gas Recirculation (EGR) may be a technique to attenuate NO_x and smoke emission. the foremost reliable alternative possibility to deal with critical emissions is to use oxygenated fuels like ethanol, butanol and ether etc. which are renewable. experimental investigations are performed out on one cylinder four stroke petrol engine producing an influence output of 5.2 kw. In this experiment ethanol blends are used alongside conventional gasoline. The blends used are 75% Ethanol 25% petrol, 50% Ethanol 50% petrol, 75% petrol 25% Ethanol alongside this performance parameters like ignition timing, Brake thermal efficiency and Emissions like HC, CO, NO_x are monitored.

ANALYSIS OF SWIRLING AND CHOKING IN DIFFUSER USING CFD ANALYSIS

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ABSTRACT:

Effect of swirl on static pressure evolution, total pressure, velocity component recirculation zones and wall shear stress such parameters in conical diffuser flow is studied. Higher pressure recovery is attained with swirl addition at the exit of the diffuser without addition tailpipe. Generally, swirling may not prevent boundary layer separation due to an intermediary recirculation zone appears hence tailpipe is suitable to allow a large-scale mixing for enhancing pressure recovery process. The present study involves the CFD analysis to predict swirl effect in the diffuser which is use in subsonic wind tunnel. 1/8th part of diffuser uses for CFD analysis. Also, it has 50swirl angle, area ratio 2 and length 1.5 m. Reynolds Average Navier Stoke's [RANS] and Shear Stress Transport [SST] use to solve closing problem and turbulence modeling respectively. For solving these numerical simulations, CFX5 Ansys based solver use. Governing equation may solved by finite volume method using Software. Turbulence effect is taken into account employing the k-ε model with an enhanced wall treatment. Mass flow (0.3445) i.e. 25m/s velocity take as initial boundary condition for steady, incompressible as well as density based flow. Reynolds number kept constant as 30*105. Result show that swirl velocity component develops into a Rankine-vortex type or a Forced-vortex type. Input swirl intensity provides minimum energy loss and leading pressure recovery to an optimum level. Total pressure, static pressure and Mach number verses mass flow graphic result shows swirl uniformity at exit of diffuser.

KEYWORDS: CFD simulation, swirling, choking

ANALYSIS OF VARIOUS TEST CONDITIONS BASED ON SHADOW ANALYSIS ON PV MODULE USING MATLAB/ SIMULINK

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ABSTRACT:

The main aim of this paper is to perform simulation-based study on a Photovoltaic module model using with bypass diode and without bypass diode under partial shading condition. In a solar photovoltaic array, the shadow is the most predominant aspect (inter-row configurations, buildings and trees, poles, fences and wires, are commonly found [8]). The PV characteristic are obtained under such condition of partial shading are more complex with multiple peaks and has a huge impact on the capability of delivering energy, PV module output. The soul idea behind the analysis is to investigate the partial shading effects on a PV array: simulation using MATLAB/Simulink. Comparison under partial shading and uniform irradiation and the characteristics plots of PV array are being plotted. Different PV models will be simulated (standard test conditions, using bypass diodes under STC, effect of unequal solar irradiance) to understand various changes to the PV output which will be plotted using I-V and P-V curve.

KEYWORDS: PV characteristic, bypass diodes, string voltages, renewable energy, MATLAB/Simulink

STUDY ON THE PERFORMANCE AND EMISSIONS OF DIESEL ENGINE BY FISH METHYL ESTER AND DEE ADDITIVE IN A DIESEL ENGINE FUEL

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ABSTRACT:

In this article the experimental research was performed to find the effects of Fish Methyl Ester (FME) blend and Di-Ethyl Ether (DEE) blends in a Diesel fuel. The preference of these FME and DEE additive were taken into the deliberation to reduce the level of the emission and increasing the engine performance. The research was carried out on a 4 stroke computerized single cylinder diesel engine with standard constant variables. For different fuels, the experiments were conducted at different brake powers. For each load the performance and emissions data were recorded. The output of the engine performance and emissions were analyzed. As compared to the other fuels and baseline fuel, the performance of the engine was observed to be improved for the FME20+DEE10% fuel. It was also noticed that, from the results of emissions such as HC, CO and smoke opacity were reduce with mixture of DEE additive and FME20 blend. But the NO_x has increased with addition of DEE additive. According to the results, it is suggested to use FME20+DEE10% mixed fuel in diesel engines to improve performance and reduce emissions.

KEYWORDS: Diesel engine, fish methyl ester, di-ethyl ether, performance, emissions.



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PRESENTATION SCHEDULE

Event	Name of the Presenter	Date & Time (IST)	Panel Members
SESSION-3	PRESENTATION TRACK-III: SUSTAINABLE MANUFACTURING SYSTEMS		
SDME2020/184	Evaluation Of Environmental Impact Of Additive And Subtractive Manufacturing Processes For Sustainable Manufacturing Dr. L. Sivaramakrishna		Dr. L. Bhaskar Rao (Chair) Vellore Institute of Technology, Chennai Dr. K. Ajay Kumar (Co-chair) VNRVJIET Hyderabad
SDME2020/127	Optimization Of Parameters And Fabrication Of Micro Channel Heat Sink Using Micro Scanning Edm And Grey Relational Analysis Kaja Sai Suhruth Teja		
SDME2020/136	Performance Evaluation Of Lean Manufacturing On Clutch Housing Assembly Line Prashant N. Shende	October 30th, 2020 03.30 p.m. to 04.45 p.m.	
SDME2020/155	Effect Of Friction Stir Welding Parameters On Tool Geometry And Metallurgical Properties Of Aa 6082-t6 Weldments At Different Weld Zones K. Vijaya Krishna Varma		
SDME2020/174	Making Of Religious Components Using Reverse Engineering Technology Kasala Rakesh		
SDME2020/125	Automatic Phyto-remediating Plant Care Unit Using Ro Purifier Rejected Water T. Ajay		

EVALUATION OF ENVIRONMENTAL IMPACT OF ADDITIVE AND SUBTRACTIVE MANUFACTURING PROCESSES FOR SUSTAINABLE MANUFACTURING

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ABSTRACT:

Sustainable manufacturing relates to the manufacturing of a product by ensuring minimal impact on the environment. It also refers to the minimum consumption of resources during the manufacturing process which can be replenished without causing resource scarcity for the future generations. Hence the need to study the details of impact of the manufacturing process on the environment is important. In this paper an attempt is made to evaluate the environmental impact of Additive and Subtractive Manufacturing Processes for sustainable manufacturing. For comparison it is proposed to manufacture two components used in aerospace applications namely bevel gear and PCB support. The two components are manufactured using Additive and Subtractive processes. Fused Deposition Modelling process is chosen for Additive Manufacturing and CNC machining is considered for subtractive manufacturing. Environmental impact is studied for both the components considering the material and Energy consumed in the manufacture of these components by both the manufacturing methods. The effect of environmental parameters like Human Health, Eco Systems and Resources were studied and compared when the same component is produced by Conventional method and by Additive Manufacturing method. SIMAPRO Software is used for Life Cycle Assessment.

KEYWORDS: Sustainable manufacturing, fused deposition modelling, subtractive manufacturing, life cycle assessment

OPTIMIZATION OF PARAMETERS AND FABRICATION OF MICRO CHANNEL HEAT SINKS USING MICRO SCANNING EDM AND GREY RELATIONAL ANALYSIS

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ABSTRACT:

Micro-Channel Heat Sink is an effective and efficient device that can circumvent excess heat from the batteries of an electrical car. Coolants with less resistances are used as carriers of heat from the batteries through the channels. In this research, a novel approach of fabricating micro channels on copper using Micro-Scanning Electrical Discharge Machining (MSEDM) through a multi-

functional transistor and capacitance based micro machine is done. The total thickness of the heat sink is 1.2mm with 0.5mm of channel depth and channel width. A full factorial design of experiments with the input parameters of Voltage (V), Capacitance (pf) and (μ) are considered to get 32 experiments in total. Grey Relational Analysis (GRA) is used to optimize the response parameters MRR, TWR and Channel dilation. The multiple responses are converted into one single Grey Relational Grade and the optimum parameters are selected. Results show that the capacitance is the most influential parameter followed by voltage and then . Also, a parameter combination of $T_{on}=90 \mu s$, Voltage =130 volts and Capacitance = 100000pf reduces the Channel dilation, MRR and TWR.

KEYWORDS: Micro channel heat sink (MCHS), Micro scanning electrical discharge machining (MSEDM), grey relational analysis (GRA)

PERFORMANCE EVALUATION OF LEAN MANUFACTURING ON CLUTCH HOUSING ASSEMBLY LINE

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ABSTRACT:

World is shrinking rapidly with the advancement of technology. The expectation of society is ever increasing. The survival and economic growth of any country depends upon its productivity. This paper presents a case study on assembly line manufacturing unit. The various problems, found in assembly line were dealt with. The cycle time for the assembly lines, a prime area of concern was analysed; a lean system was developed for Clutch Housing in assembly line. Various Tools were used to solve the problems. The methodology used is discussed in detail. The entire Housing assembly process is mapped with value stream mapping. Excessive transportation was eliminated resulting in reduction in total cycle time and cost.

KEYWORDS: Lean manufacturing, value stream mapping, overall effective efficiency.

EFFECT OF FRICTION STIR WELDING PARAMETERS ON TOOL GEOMETRY AND METALLURGICAL PROPERTIES OF AA 6082-T6 WELDMENTS AT DIFFERENT WELD ZONES

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ABSTRACT:

The main agenda of the present research work is to evaluate the influence of FSW parameters and tool geometry on metallurgical properties during FSW of AA 6082-T6 aluminium alloy. Friction stir welding was performed on AA 6082-T6 using four different geometrical tool pin profiles namely Asymmetrical-Skew, Triangular concave threaded tool, Three flat threaded tool (TFT) and Tri-Flute concave threaded tool at three rotational speed's (1000 rpm, 1200 rpm, 1400 rpm) and single traverse speed 25 mm/min. Microstructure of various regions on the weldments like Nugget Zone (NZ), Advancing side thermo-mechanically affected zone (AS-TMAZ), Advancing side heat affected zone (AS-HAZ), Advancing side boundary zone (AS-BZ), Retreating side thermo-mechanically affected zone (RS-TMAZ), Retreating side heat affected zone (RS-HAZ), Retreating side boundary zone (RS-BZ) were analysed using Labex FE PRO 900 metallurgical microscope. Defects like voids, cavities, zigzag lines and chunks were observed on most of the weldments. Occurrence of martensite and defects like voids, cavities, zigzag lines and chunks were observed at 1400 rpm near Nugget Zone (NZ), Advancing side thermo-mechanically affected zone (AS-TMAZ), Advancing side heat affected zone (AS-HAZ), Retreating side thermo-mechanically affected zone (RS-TMAZ), Retreating side heat affected zone (RS-HAZ).

KEYWORDS: Weld parameters, microstructure, weld zones, defects.

MAKING OF RELIGIOUS COMPONENTS USING REVERSE ENGINEERING TECHNOLOGY

**Dr. B SATYANARAYANA 1, KASALA RAKESH 2, KODE JAYA PRAKASH 3,
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ABSTRACT:

Additive Manufacturing is a process of making the three dimensional solid objects from a digital file. 3D printing has developed enough to perform crucial roles in our day to day life. So far, the religious components are produced manually through highly practiced skilled persons which involves lot of cost and time. Now, it is possible to make ancient religious components like Idols, Gopura Kalasams using Additive Manufacturing Technology. The digital 3D models of existing ancient religious components can be recreated through Reverse Engineering process using 3D scanner and 3D printer. Hence, this work aims at providing the data to the organizations that produce ancient complex religious components through 3D printing technology

KEYWORDS: Religious component, reverse engineering, 3D printing

AUTOMATIC PHYTO-REMIEDIATING PLANT CARE UNIT USING RO PURIFIER REJECTED WATER

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ABSTRACT:

A major concern in the home water purifying systems is the wastage of water. A normal Reverse Osmosis (R.O) water purifier rejects approximately 75% of the input water. The rejected water contains high level of dissolved impurities which cannot be used for daily uses. The reason being this water having high Total Dissolved Salts (TDS). Contrary to popular belief, this water cannot be used for irrigation purposes for all plants without removing the contaminants. In the present project, the main aim is to find a way for using the above-said high TDS water in a sustainable way. So, the rejected water is sent into a water harvesting pit in which plants are grown. These plants are phyto-remediating plants.

Phyto-remediation is the process of using various types of plants to remove, transfer, stabilize, and/or destroy contaminants in the soil and groundwater. For this purpose, a complete plant care unit is prepared with a system of sensors, actuator and a controller to maintain the growth requirements of the plant based on the necessity. This Automatic Plant Care (APC) unit consists of water rejected from RO purifier, receiver tank, water pump, water harvesting pit, Digital Humidity and Temperature (DHT) sensor, Light Dependent Resistor (LDR), Node Micro Controller Unit (Node MCU) controller or Arduino board and Perf board.

KEYWORDS: Phyto-remediation, R.O purifier, plant care unit, humidity sensor, light dependent sensor



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PRESENTATION SCHEDULE

Event	Name of the Presenter	Date & Time (IST)	Panel Members
SESSION-4	PRESENTATION TRACK-IV: SUSTAINABLE MATERIALS & TECHNOLOGIES		
SDME2020/103	Experimental Study On Vibration Control Using Shape Memory Alloy Based Vibration Absorber	Mane Pravin U.	Dr. Balla Srinivasa Prasad (Chair) GIT, GITAM (Deemed to be University) Visakhapatnam Dr. S. Shyam Sunder Rao (Co-chair) VNRVJIET Hyderabad
SDME2020/148	Effect Of Moisture Absorption On The Mechanical Properties Of Jute/glass Hybrid Sandwich Composites	Ch. Rajeswari	
SDME2020/154	Analysis Of Cellulose Based Nanocomposites & Potential Applications	Mugdha Dongre	
SDME2020/169	Aluminium Metal Foams: A Review	Nitish Kumar Singh	
SDME2020/179	Synthesis And Mechanical Characterization Of Magnesium Reinforced With Sic Composites	T. Malyadri	
		October 30th, 2020 03.30 p.m. to 04.45 p.m.	

EXPERIMENTAL STUDY ON VIBRATION CONTROL USING SHAPE MEMORY ALLOY BASED VIBRATION ABSORBER

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ABSTRACT:

The main purpose of this study is to analyze the dynamic performance of Adaptive tuned vibration absorber (ATVA). For analysis, a baseline model consists of a base excited single degree of freedom system coupled with an ATVA mode prepared. Shape memory alloy (SMA) which has a variable frequency with respect to temperature, is used for adaptive tuning after its material characterization. Tests are performed to determine the peak Transmissibility by varying the temperature of SMA wire i.e. stiffness. The results showed that the peak Transmissibility of ATVA is nearly 46% lower than low temperature. Results further showed that increase in stiffness reduces the vibration levels at higher temperature, also the frequency span increases.

KEYWORDS: Shape memory alloy, ATVA, peak transmissibility, stiffness, resonance

EFFECT OF MOISTURE ABSORPTION ON THE MECHANICAL PROPERTIES OF JUTE/GLASS HYBRID SANDWICH COMPOSITES

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ABSTRACT:

The use of composites has been increasing day by day due to their specific properties such as high strength to weight ratios, high modulus to weight ratio, corrosion resistance, and wear resistance. The objective of this work is to evaluate the moisture absorption effect on the mechanical properties of hybrid sandwich composite structures formed by epoxy resin, reinforced by woven fabrics of glass and jute fibres, with a central layer of polyethylene foam. The structures used for the current study is fabricated by hand layup technique. The water absorption characteristics of the fibres are obtained by immersing the composite samples in normal water at room temperature at different intervals of time. The different sandwich composite structures are prepared and are compared with pure jute fibre composite. The testing of specimens is carried out as per ASTM standards. The tensile, flexural and impact tests on dry and wet hybrid and non-hybrid sandwich composite samples are examined. The study shows that the mechanical properties of the jute/glass fibres are improved by using foam. However, as a result of water penetrating the fibre/matrix interface, longer water- immersion times reduced the tensile, flexural and impact strength of the composites.

KEYWORDS: Hybrid composite, sandwich composite, moisture absorption.

ANALYSIS OF CELLULOSE BASED NANOCOMPOSITES & POTENTIAL APPLICATIONS

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ABSTRACT:

Cellulose based nanocomposites have achieved a lot more attraction in recent years owing to its renewability, good mechanical strength and durability. The cellulose based nanocomposite development process typically involves extraction of cellulose from source materials such as wood, agricultural residue etc., isolation of nanocellulose from the cellulose and reinforcement of nanocellulose in polymers. This review outlines the various chemo-mechanical methods used for extraction of cellulose and for isolation nanocellulose. Also, the different methods used for fabrication of cellulose nanocomposites are discussed in details. Finally, the potential applications of nanocellulose composites different industries such as food and packaging, structural, bio- medical and electronics are also presented.

KEYWORDS: Cellulose nanocomposites, characterization techniques, cellulose nanofibres, Potential applications

ALUMINUM METAL FOAMS: A REVIEW

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ABSTRACT:

Aluminium is broadly utilized in Aerospace and Automobile industry due to its light weight and due to this property; it is an attractive research field. Aluminum alloy is very important engineering material and Aluminium metal matrix composites (AMMCs) are created by two or more materials (where one material is metal) for improving the material properties mainly the compressive strength. Aluminum metal foam (AMF) are also a new area for researcher it is generally used in Automobile because of its good crushing strength and light weight. In this review paper, the different possible methods for Aluminum metal foam production are reviewed so that the AMF can be manufacture in low price and with high crushing strength. Al metal foam is mainly use due to its lower weight, better compression strength, and better energy absorption quality. It is very difficult to create aluminum metal foam due to instantaneous formation of solid, liquid, and gas phases at different temperatures.

KEYWORDS: Aluminium metal matrix composites (AMMCs), aluminum metal foam (AMF), production method.

SYNTHESIS AND MECHANICAL CHARACTERIZATION OF MAGNESIUM REINFORCED WITH SiC COMPOSITES

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ABSTRACT:

Magnesium is the lightest metal used as the source for constructional alloys. Today Magnesium based metal matrix composites are widely used in aerospace, structural, oceanic and automobile applications for its light weight, low density, good high temperature mechanical properties and good to excellent corrosion resistance. The metal matrix composite is to put in the attractive attributes of metals and ceramics to the base metal. The paper presents the synthesis and mechanical characterization of Magnesium reinforced silica carbide powder with variations in volume percentages of SiC. The magnesium SiC are developed by reinforcing of 4 amounts of SiC volume (i.e 3, 6, 9 and 12 volume %). Monolithic magnesium and its SiC composites are synthesized by stir casting process. The tensile strength of the specimens are performed according to the ASTM standards. The microstructural verifications are carried out using X-ray diffractions. Hardness values and SEM micrographs are compared for various compositions of SiC. The specimen with AZ91D/12% vol SiC compositions show the greater tensile and hardness.

KEYWORDS: Magnesium, SiC (Silicon Carbide), composite, stir casting, hardness, SEM.



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PRESENTATION SCHEDULE

Event	Name of the Presenter	Date & Time (IST)	Panel Members
SESSION-5	PRESENTATION TRACK-II: SUSTAINABLE THERMAL & FLUIDICS		Dr. Ch. Niranjan Reddy (Chair) TechnipFMC, Norway Dr. E. Venkata Ramana (Co-chair) VNRVJIET Hyderabad
SDME2020/123	Impact Of Tamarindus Indica Biodiesel Blends On Performance And Exhaust Emissions Characteristics Of Light Duty Compression Ignition Engine	Dr. Jayashri N. Nair	
SDME2020/161	A Solar Dryer For Drying Green Chili With A Forced Convection For More Moisture Removing Rate	Sanjay Salve	
SDME2020/168	Numerical Investigation Of Zinc Tailings Slurry Flow Field In A Horizontal Pipeline	R. K. Rathore	
SDME2020/170	Numerical Prediction Of Near-wall Flow Field Of Dense Slurry Flow In Pipe Bends	Dr. Pankaj Kumar Gupta	
SDME2020/186	Effect Of Injection Opening Pressure On Performance Of Direct Injected Diesel Engine Fuelled With Bio-diesel Blend	Manjunatha ND	
SDME2020/192	Analysis Of Crack On The Labyrinth Part Of The Gas Turbine	Nida Ahamed	
		October 31st, 2020 11.30 a.m. to 12.45 p.m.	

IMPACT OF TAMARINDUS INDICA BIODIESEL BLENDS ON PERFORMANCE AND EXHAUST EMISSIONS CHARACTERISTICS OF LIGHT DUTY COMPRESSION IGNITION ENGINE

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ABSTRACT:

Tamarind (*Tamarindus Indica*) is an integral part of South Indian cuisine. Its pulp is used to add sourness to south Indian curries. However tamarind seeds which are having a considerable amount of lipid in it are thrown away. Our main objective is to produce Tamarind biodiesel (TB) from tamarind seed oil and investigate its effect on performance and exhaust emissions of CI engine. Oil was extracted from Tamarind seeds and was converted to biodiesel by transesterification process with NaOH as catalyst. Tests were performed using TB5, TB10, TB15 blends with 1500 rpm rated speed and compression ratio of 18. The performance test results revealed that BTE of B15 was greater in comparison to other blends as well as diesel. However BSFC for TB blends were greater compared to neat diesel. Considerable reductions in exhaust emissions were observed with TB blends. TB10 showed apical reduction of 27% in CO and 15% reduction in smoke. TB5 showed 25% HC reduction followed by TB10 with 19.25% reductions. TB15 showed 19.36% of highest NO_x reduction followed by TB10 with 10.7% NO_x reduction. TB10 proved to give optimum test results for performance and emissions. From the results it can be concluded that TB can be considered as a viable option for biodiesels.

KEYWORDS: Tamarind biodiesel, transesterification, performances, emissions

A SOLAR DRYER FOR DRYING GREEN CHILI IN A FORCED CONVECTION FOR INCREASING THE MOISTURE REMOVING RATE

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ABSTRACT:

The abundant and unpredictable use of fossil fuel accelerate the continuous search in that field of an alternative source. Most of the researchers are attracted to the solar power, that is one of the renewable and sustainable energy sources. Based on the current scenario, in future the energy requirement will be tremendously high. The effective use of solar energy can be reduced the problem of huge energy demand in all agricultural, industrial, domestic and power production sectors. In agricultural sector, one of the areas is drying technology. The drying technique is one of the applications of the solar energy.

Drying is the process of removing moisture from the agricultural produce. From our ancestor to modern humanbeing, various improvement occurs in the solar drying system. The indirect solar drying with integrated flat plate collector is most popular, simple in design, cost effective, maintenance free and easy to operate vegetable drying system. The flow of air movement, thermal leak proof cabinet structure, flat plate collector's (FPC) absorber plate design, optimum thickness of selective coating materials, etc. directly affect the efficiency and moisture removing rate of the solar drying system. Here, the 15 kg green chili has been taken for drying in solar drying system. The dryer is integrated with phase change materials (PCM) in drying trays, flat plate collector's absorbing plate coated with activated charcoal and black board paint, the variable air mass flow rate of the blower. It has been found that, at 0.008 kg/s air mass flow rate the outlet temperature of the FPC is 96 °C and efficiency is 33 %. The drying time was 16 h as compared with open sun drying time 28 h for the 15 kg chili. It was compared with indirect solar dryer without thermal energy storage and found that the time required for drying chili with thermal energy storage is 4 h less than the without thermal energy storage solar dryer.

KEYWORDS: Agriculture produce, solar dryer, efficiency of FPC, phase change material(PCM) in trays, selective coating

NUMERICAL INVESTIGATION OF ZINC TAILINGS SLURRY FLOW FIELD IN A HORIZONTAL PIPELINE

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ABSTRACT:

This paper reports the findings of numerical investigation of dense particulate slurry flow field in a slurry pipeline with an objective of examining erosive wear. Parametric study with velocities 2 m/s, 2.75 m/s and 3.5 m/s, and volumetric concentration of 4% and 26% were carried out on a pipeline of nominal inside diameter 105 mm. The range of volumetric concentration was chosen to ascertain the flow field characteristics for low to high particle loading. All the simulations have been computationally performed using ANSYS-FLUENT. The dense particulate slurry is modelled using Eulerian-Eulerian approach while finite volume method (FVM) is employed as the numerical method. Mesh refinement study and validation with experimental results for pressure drop have been reported. Solids concentration and velocity profiles show dependence on flow velocity and inlet average concentration. The distribution of solids concentration and its dependence on the bulk flow velocity qualitatively indicates the regions of relatively higher erosion wear.

KEYWORDS: Dense slurry flow, slurry pipeline, numerical, wall shear stress, flow field.

NUMERICAL PREDICTION OF NEAR-WALL FLOW FIELD OF DENSE SLURRY FLOW IN PIPE BENDS

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ABSTRACT:

Dense particulate slurry flow field through 90° circular pipe bends is numerically investigated in the present work. The dense slurry is modelled using Eulerian-Eulerian approach treating the phases as co-existing continua that exchange mass, momentum and energy with each other. Finite volume technique as implemented in ANSYS-FLUENT has been employed to numerically compute the flow field. Mono-size slurry with particle size of 16µm and 50 µm is simulated at different flow Reynolds number at two solids efflux concentration (by volume) of 10% and 22%. Results have been validated partially with grid independence tests and with available experimental data. Within the range of operating parameters considered, it is found that with increase in flow velocity, and with increase in efflux concentration, the local solids concentration increases near the extrados of the bend, while local solids velocity shows higher values near the intrados region.

KEYWORDS: Pipe bend, dense slurry, local solids concentration, Eulerian-Eulerian approach

EFFECT OF INJECTION OPENING PRESSURE ON PERFORMANCE OF DIRECT INJECTED DIESEL ENGINE FUELLED WITH BIO-DIESEL BLEND

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ABSTRACT:

In this research paper an effort is made to determine the impact of injection pressure on performance, emission and combustion characteristic of the engine. The performance characteristics, Brake Thermal Efficiency, Brake Specific fuel consumption, Exhaust Gas Temperature and emission characters like carbon monoxide, Carbon Dioxide, Unburnt Hydrocarbons and Nitrous Oxide. The combustion parameter like net heat release rate, cumulative heat release rate and Cylinder pressure rise are analysed. The 180 bar, 200 bar and 220 bar are the various injection opening pressure. The diesel-biodiesel blends are prepared with various proportions. The engine was tested with various blended fuels such as Diesel (D), Biodiesel (BD), BD20, BD30 and BD40.

KEYWORDS: Diesel, biodiesel, injection opening pressure

ANALYSIS OF CRACK ON THE LABYRINTH PART OF THE GAS TURBINE ENGINE

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ABSTRACT:

The main objective of this study is to analyze the crack developed in the Labyrinth seal of a gas turbine engine and to determine the number of cycles required for the crack to grow to various lengths. Here, ANSYS Mechanical APDL is the tool to carry out the crack analysis. The crack is modelled and analyzed according to the principles of Linear Elastic Fracture Mechanics (LEFM) theory by Griffith and Paris law because of the negligible plasticity found at the crack tip. Here, the model is analyzed with and without the crack for the temperature and stress profile. The stress intensity factor is obtained using the ANSYS software. The information is derived from the graph of crack propagation rate as a function of stress intensity factor of Haynes 25 material which was used to analytically determine the number of cycles the labyrinth seal could sustain. The maximum and minimum temperatures were 1132°C and 250°C over a span of 10mm length, which was the region of interest. The maximum thermal stress generated was around 1430MPa at crack tip region for full crack model. The stress intensity factor was obtained was found to be 18.7MPa $\sqrt{\text{mm}}$. The crack propagation rate was calculated analytically over a range of 2 - 4 mm with an increment of 0.5 mm. The number of cycles required for the crack to propagate over the successive 0.5 mm intervals was 97, 82, 71 and 63 cycles respectively.

KEYWORDS: Crack, crack propagation rate, stress intensity factor, linear elastic fracture mechanics



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PRESENTATION SCHEDULE

Event	Name of the Presenter	Date & Time (IST)	Panel Members
SESSION-6	PRESENTATION TRACK-III: SUSTAINABLE MANUFACTURING SYSTEMS		
SDME2020/109	Improving Maintenance Productivity Through Proper Planning: Wrench Time Analysis In An Engineering Workshop Of An Integrated Steel Plant Arka Chatterjee		Dr. M. Ravi Sankar (Chair) Indian Institute of Technology, Tirupati
SDME2020/183	Functional Testing And Evaluation Of Additively Manufactured Hand Drill Body Prototype S. Koteswari		
SDME2020/189	Additive Manufacturing Of A Human Mandible And Finite Element Analysis Of Dental Implant For Prosthodontic Applications Regalla Rakesh Reddy	October 31st, 2020 11.30 a.m. to 12.45 p.m.	
SDME2020/190	Analysis Of Vibration Assisted Dry End Milling Using 3d Fe Simulation - An Investigational Approach L. Vamsi Krishna Reddy		
SDME2020/194	Machining Capability Of A 2-dof Parallel Kinematic Machine Tool And Conventional CNC Milling Machine Dr. D. Sanjay Krishnarao		

IMPROVING MAINTENANCE PRODUCTIVITY THROUGH PROPER PLANNING: WRENCH TIME ANALYSIS IN AN ENGINEERING WORKSHOP OF AN INTEGRATED STEEL PLANT

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ABSTRACT:

Maintenance in an asset intensive organization like SAIL significantly affects the organizational efficiency along with other crucial areas like safety, reliability, environmental aspects etc. In order to harness the full potential of maintenance, 'value based maintenance strategy' needs to be followed. In the present study, wrench time has been proposed as a Key Performance Indicator (KPI) to measure maintenance productivity. Wrench time analysis of maintenance personnel has been carried out in Central Engineering Maintenance (CEM) and it is observed that there is ample scope for improvement of wrench time and thereby maintenance productivity. This can be achieved through dedicated maintenance planning, scheduling and systematic study of other performance indicators based on data generated from ERP (Enterprise resource planning (ERP) software. This paper is aimed at highlighting the cost benefit achieved from improved wrench time and nuances of systematic maintenance planning.

KEYWORDS: Maintenance productivity, wrench time, key performance indicator

FUNCTIONAL TESTING AND EVALUATION OF ADDITIVELY MANUFACTURED HAND DRILL BODY PROTOTYPE

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ABSTRACT:

With the rapid growing popularity of Additive Manufacturing (AM) processes throughout the globe, researchers, enthusiasts and industries are using it in the manufacturing of complex shapes and parts. In Fused Deposition Modelling (FDM) process, apart from Acrylonitrile Butadiene Styrene (ABS), Polylactic Acid (PLA) is one of the most favoured materials for the manufacturing of various prototypes. However, the usage of FDM printed parts in practical applications is still not so popular due to several reasons. This paper presents a successful testament showcasing implementation of a 3D printed component made of PLA material in a practical application. To demonstrate this, body casing of a GSB 13RE professional hand drill has been successfully 3D printed using PLA material in FDM process. Thereafter, the 3D printed hand drill body casing has been evaluated through assembly and

functional testing. It is observed that the body casing perfectly encases the parts of original hand drill as well as performs drilling of holes satisfactorily without any problems. Functional tests have been performed on the assembled model to check for its durability.

KEYWORDS: Polylactic acid, additive manufacturing, hand drill casing, drop test.

ADDITIVE MANUFACTURING OF A HUMAN MANDIBLE AND FINITE ELEMENT ANALYSIS OF DENTAL IMPLANT FOR PROSTHODONTIC APPLICATIONS

**1 REGALLA RAKESH REDDY, 2 KODE JAYA PRAKASH, 3 SAYINA KOTESWARI,
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ABSTRACT:

Additive Manufacturing of a human mandible physical model is developed from the patient having missing teeth at first molar position using FDM (Fused Deposition Modelling) technique. These physical models are helpful for the surgeons to perform pre-operative procedure to improve the success rates of the surgery. Genesis AKTIV implant is Modelled using CATIA V5 software by considering DICOM Data in NNT viewer software. Finite element analysis is performed on implant with occlusal force and torque. For this initially DICOM data of mandible is extracted from CT Scan and converted to STL format using InVesalius medical modelling software. Modelling of fixture, abutment and screw are developed with IMPLANT GENESIS AKTIV implant standards using CAD software. Depending on the NNT Viewer results suitable parameters are chosen to develop fixture. STL file attained from medical modelling software is further processed and converted to STEP format for performing analysis. Analysis is performed to check deformation and von mises stress using ANSYS software. Finite element analysis results shown that the von mises stresses does not surpass the yield strength and all the stresses generated are permissible to the mandible.

KEYWORDS: Additive manufacturing, mandible, CT scan, AKTIV implant, CATIA, ANSYS

ANALYSIS OF VIBRATION ASSISTED DRY END MILLING USING 3D FE SIMULATION - AN INVESTIGATIONAL APPROACH

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ABSTRACT:

A three-dimensional finite element simulation model is developed to analyze the vibration-assisted dry end milling of Ti-6Al-4V alloy specimens. Results of finite element simulated forces in cutting and deflections of the cutter are compared experimented results. Cutting forces in the experiment are recorded using a Kistler 9272 force dynamometer and vibration signal data is acquired using a triaxial Kistler (Model_8793) accelerometer. Two milling cutters, both uncoated and coated milling cutters are used for the experimental investigation. In the end, the impact of spindle rotational speed and feed rate on forces in cutting and subsequent tool deflections were also premeditated using the FE simulations. The investigation shows that there is a rise in forces of cutting as the feed is increasing and deflection also increases as the surge in feed rate and rotational speed. The experimental investigation will give the insights to understand the mechanics of the milling operation and thereby this data is cast-off to treasure the optimal machining conditions.

KEYWORDS: 3D finite element simulations, vibrations, forces in cutting, tool stresses, cutting temperature, end milling, tool condition monitoring

MACHINING CAPABILITY OF A 2-DOF PARALLEL KINEMATIC MACHINE TOOL AND CONVENTIONAL CNC MILLING MACHINE

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ABSTRACT:

Machining performance of an optimally designed prototype of a 2 degree of freedom PKM (parallel kinematic machine) is optimized in this work. The effect of machining parameters upon the surface quality of machined components is studied. Pocket milling operations are performed at various feed, speeds, and depth of cut on PKM and conventional CNC milling machine. The surface roughness of the machined component is measured, and the results are compared. Taguchi approach is used to design the experiment and analysis of variance is employed to obtain the optimal cutting conditions. The depth of cut is noticed as the most significant parameter that affect the surface roughness. The first version of the PKM prototype shows machining performance similar to the conventional CNC machine. The study establishes the machining capability of PKM and offers scope for developing dynamically superior substitute over the CNC machine tool.

KEYWORDS: Parallel kinematic machine, computer numerical control, end-milling, surface roughness, Taguchi.



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PRESENTATION SCHEDULE

Event		Name of the Presenter	Date & Time (IST)	Panel Members
SESSION-7	PRESENTATION TRACK-I: SUSTAINABLE DESIGN			
SDME2020/106	Automation Of Sundry Board Machine Used In Paper-cardboard Mills	Yaseer Phyrose	October 31st, 2020 12.45 p.m. to 02.00 p.m.	Dr. A. Suresh (Chair) JNTU Hyderabad
SDME2020/134	Design And Analysis Of Flexure Bearing For Linear Compressor	Mohammad Riyaz		
SDME2020/143	Design Of Unmanned Guided Vehicle For Rescue Missions	T. Malyadri		
SDME2020/173	Design And Development Of A Safety Arming Device For Armed Forces	Hazari Naresh		
SDME2020/187	Numerical Investigation Of Aerodynamic Parameters Across Naca6415 Airfoil	Dr. Rashid Ali		

AUTOMATION OF SUNDRY BOARD MACHINE USED IN PAPER-CARDBOARD MILLS

**YASEER PHYROSE 1, PROF. DIPTI KASHYAP 2, ABHIJEET BULBULE 3,
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ABSTRACT:

The aim of this study is to design a fully automatic Sundry board machine for reduction of congestion in the cardboard making process and increase the quality and quantity of production. For this purpose, the manual cutting and transfer of sheet is replaced by automated mechanism. The mechanisms include the incorporation of the cutting arrangement in the cutting drum itself, deployment of air pressure to separate the sheet edge from the cutting drum, a cross cutting mechanism and a mechatronic system to control these all mechanism. The initial review is done on the semi-automatic machine followed by the requirement definition. The required components are brainstormed and individually developed. A time based relation is designed such that a microcontroller can be programmed later on for the synchronism of all the components. This relation is visually represented and the entire system is now ready for assembling.

KEYWORDS: Sundry board machine, cardboard cutting, automation, paper mill, automation

DESIGN, ANALYSIS AND DEVELOPMENT OF FLEXURE BEARING FOR LINEAR COMPRESSOR

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ABSTRACT:

Bearings are used to allow the relative motion between the two surfaces. A piston is to slide about the cylinder and shaft has to rotate about its casing. Both require the relative motion for least frictional losses to be happened. A flexure bearing is a spring which allows relative motion by bending a load element. Flexure bearings have the advantage over most other bearings that they are simple and thus inexpensive. They are also often compact, lightweight, have very low friction, and are easier to repair without specialized equipment. This paper presents design, analysis and manufacturing of flexure bearing for a linear compressor which increases the efficiency of system by achieving maximum stiffness, less stresses and more fatigue life. For this, modelling is done in NX&CATIA and analysis in ANSYS with physical validation of final results by manufacturing actual prototype.

KEYWORDS: Flexure bearing, UG-NX/CATIA, ANSYS, FEA.

DESIGN OF UNMANNED GUIDED VEHICLE FOR RESCUE MISSIONS

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ABSTRACT:

Now a days with the major advancements in the field of vehicle automation, several dangerous and crucial counter terrorist activities is being handled by the sophisticated machines which are not only effective but also responsible for saving human lives. "Unmanned guided vehicle" is built to reduce human loss in terrorist attacks. The robot has been designed to face these attacks in the country. It is equipped with self-powered, radio operated and controller. A Wi-Fi camera has been installed on it, in order to monitor the enemy activities whenever required. It is capable of entering into the enemy field silently there by sending us all the information regarding the enemy such as the weapons that were hold by them etc. This robot would be armed with an automatic weapon mounted onto a turret and a remote operator would be getting a live video feed from the camera to help him manually control both the above mentioned units of the rover. This spy robot can also be used in motels, shopping areas, jewellery show rooms, etc where there is more chance to terrorist's attacks and robberies. Since human life is always precious, these robots are the replacement of fighters against terrorist in such areas.

KEYWORDS: Unmanned guided vehicle, automatic weapon, CATIA, 3D printing

DESIGN AND DEVELOPMENT OF A SAFETY ARMING DEVICE FOR ARMED FORCES

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ABSTRACT:

Design & development of "Safety & Arming Mechanism" for electronic fuze used in 155mm ammunition. Very few countries such as US & ISRAEL have successfully developed this technology. Presently, Indian ordnance factories have decided to develop this technology through make in India. The S&A device will provoke the explosives to initiate when the munition senses that it has either hit or is in close proximity to the target or in proper time. A safety and arming mechanism where in spinning as well as sliding member is held in an out-of- line position to align the explosive fuze train in Electronic fuze there is reserve battery which will be activated only when the spinning vibrations are created. Then electronic sensor will take pre-programmed time before it starts to work. When the target time is over, a flash will be generated to electronic detonator and then it is transferred to the safety arming device once the explosive train is completed. The need for this study is to design and fabricate this type of Safety and Arming Device in India itself. Thus, the primary objective of the study is to develop a model & fabricate the Safety and Arming Device and analyse the performance characteristics. This fuze having a mechanical delay device and also arms the ordnance section at the proper time through sensing that a predetermined set of conditions. The results obtained after experimental tests of the real model of the

mechanism construction, if that satisfies all functional characteristics as well as the safety performance, thus it confirms the quality of the developed method.

KEYWORDS: Design, arming device, S.A.D, clock mechanism, acceleration, gear

NUMERICAL INVESTIGATION OF AERODYNAMIC PARAMETERS ACROSS NACA6415 AIRFOIL

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ABSTRACT:

In the current study the effects of air velocity and angle of attack on aerodynamic parameters across NACA6415 airfoil are investigated. The air velocity is chosen as 15m/s, 20m/s, 25m/s, 30m/s, and 35m/s. The angle of attack is in the ranges [-10o to 20o]. The flow field is considered as viscous, unsteady, compressible and turbulent. To solve the continuity and momentum equations the CFD solver ANSYS FLUENT is used. Realizable K-epsilon model is used to simulate mean flow characteristics in turbulence conditions. Triangular structural mesh is generated having 28722 elements. It is observed from the time histories of lift, drag and moment coefficients that the transition time is less and the solution is converge within 50 seconds, the solution becomes stable and remains stable at higher time levels. It is found that the coefficient of lift increases with increase in angle of attack, maximum lift coefficient is found to be 1.286 at $V = 25$ m/s and $\alpha = 10^\circ$. The drag coefficient is observed maximum 0.269 at $V = 15$ m/s and $\alpha = 20^\circ$. It is also observed that at air velocity of $V = 15$ m/s, the drag coefficient decreases with increase in angle of attack and reaches to its minimum at $\alpha = 0^\circ$, and increases with increase in angle of attack to a maximum value at $\alpha = 20^\circ$. It is found that the moment coefficient followed the same trend as followed by the lift coefficient. Maximum moment coefficient 2.546 is found to occur at $V = 25$ m/s and $\alpha = 10^\circ$. It is found that the ration of C_l / C_d is increased for $V = 25$ m/s and nearly negligible for $V = 20$ m/s and decreases with increase in angle of attack for $V = 30$ m/s & 35 m/s, respectively. C_l / C_d ratio at $V = 15$ m/s increases with increasing angle of attack reaches to a maximum value and decrease thereafter with increase in angle of attack. Maximum C_l / C_d ratio is found to be 21.666 at $V = 35$ m/s and $\alpha = 0^\circ$.

KEYWORDS: Angle of attack, air velocity, lift coefficient, drag coefficient, moment coefficient



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PRESENTATION SCHEDULE

Event	Name of the Presenter	Date & Time (IST)	Panel Members
SESSION-8	PRESENTATION TRACK-IV: SUSTAINABLE MATERIALS & TECHNOLOGIES		
SDME2020/176	Characterization Of Mechanical Properties In Tailored Made Al (8081)-Zr/Mg/Tio 2 Nano Metal Matrix Composites	K.V.V.N.R. Chandra Mouli	Dr. L. Bhaskar Rao (Chair-1) Vellore Institute of Technology, Chennai
SDME2020/180	Sliding Wear Characteristics Of Aluminium Silicon Alloy With Macro Addition Of Magnesium At Room Temperature	MohamadAziz Athani	
SDME2020/181	Experimental Evaluation Of Impact Energy On Oobleck Material (non-newtonian Fluid)	CH. Ravi Kiran	
SDME2020/191	Frictional And Wear Properties Of Compact Graphite Iron At Various Temperatures	S. Venugopal Rao	Dr. P. Usha Sree (Chair-2) University College of Engineering, Osmania University Hyderabad
SDME2020/195	Influence Of TBC With Diesel And MME Fuels On A LHR Engine	Dr. M. Vijay Kumar	
SDME2020/197	Investigation Of Hardness & Tribology Behavior Of Epoxy And Sio2 Composite: An Experimental Study	K. Bharadwaja	

**October 31st,
2020
12.45 p.m.
to
02.00 p.m.**

**Dr. B.V.R. Kumar
(Co-chair)**
VNRVJIET
Hyderabad

CHARACTERIZATION OF MECHANICAL PROPERTIES IN TAILORED MADE Al (8081)-Zr/Mg/TiO₂ NANO METAL MATRIX COMPOSITES

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ABSTRACT:

Metal matrix composites proving their significance in enhanced mechanical properties gratifying the demands over non-alloy materials created an increased demand in the research evolvments. Revolution for a resilient material in demand of less weight to density ratio can be propagated with hybrid nanocomposite multi-phase material realm. This in turn promises outstanding results based on factors considered. Since in Advancement of hybrid composites through retrospections the tailoring of a nano Metal matrix composition is an idealistic compulsion alter for futuristic extreme less weight density high strength materials. This paper mainly focuses in manufacturing of an Aluminium tailored Nano MMC's (Al (8081)-Zr/Mg/TiO₂) showing supreme enhancement in tribological performance with the nano composition of 9 wt.% and 31wt.% mixture of Zr, Mg, TiO₂ ratio are characterized, thereby attempting the proof of existence in building for extruding boards in NMMC material applications having greater mechanical properties.

KEYWORDS: Aluminium metal matrix composites, metal matrix nanocomposites, mechanical characterization, aluminium hybrid composites, Al-8081

SLIDING WEAR CHARACTERISTICS OF ALUMINIUM SILICON ALLOY WITH MACRO ADDITION OF MAGNESIUM AT ROOM TEMPERATURE

**MOHAMADAZIZ ATHANI 1, M. KRISHNA 2, GOURAV TIWARI 3,
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ABSTRACT:

The study is carried as experimental investigation on hypereutectic Al-Si alloy. The aim is to identify the influence of Magnesium (Mg) on as cast Al-25Mg-2Si-2Cu-4Mn alloy. Here weight loss technique is used for the assessment of wear. Wear test is done on pin on disc wear testing machine. The rotating disc is made up of low carbon alloy steel with hardness value of about 62RC. The Linear Variable Differential Transformer (LVDT) (Figure 1.2) is used to record the wear by loss of length of specimen fixed on machine, the specimen dimensions are noted initially before installing on the testing machine. The wear loss is measured in microns. The weight loss method is adopted for more accurate results. The test explains the effect of on tribological properties of Al-Si alloy in dry sliding wear. Rise in load

increases the coefficient of friction and after reaching a peak value, it starts declining. The test result shows the deviation of speed curves and can be concluded that the load is proportional to friction. The study suggests the importance alloying elements and can be varied as per the materials used for the components. For example connecting rod, suspension system, piston pins etc. Slight modification of alloying elements gives different results, which can be assessed with the help of graphs. The experiment helps in better understanding of wear behaviour of parent metal and alloying metals/non metals. The study makes the selection of materials easy for automotive and mechanical components. Research has been done over the last few years to understand the tendency of the sliding wear contact and the parameters which cause wear in the various components.

KEYWORDS: Dry sliding wear, coefficient of friction, volumetric wear rate, pin on disc machine, as cast aluminium alloy, ingots

EXPERIMENTAL EVALUATION OF IMPACT ENERGY ON OOBLECK MATERIAL (NON-NEWTONIAN FLUID)

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ABSTRACT:

Non-Newtonian fluids especially shear thickening fluids like oobleck behave like a solid when subjected to impact loads and remains as a liquid when the loading is gradual and smooth. Shear thickening fluids are also known as dilatant fluids; they do not have linear shear stress versus shear rate relation. One of the examples of dilatant fluid is oobleck can be easily made by making a 2:1 mixture of corn flour and water. It is a liquid, but when stirred it becomes thicker and more difficult to stir. It has got good shock absorption capacity which could be used in many real-world applications such as inner shoe soles, body, and speed bumpers. An attempt is made to study the behaviour of oobleck under impact loading. By performing drop weight tests and depicting the trends of oobleck thickness versus impact energy and determining the fracture points of oobleck as well as materials wrapped inside it. In future directions, part of the report applications of oobleck is prescribed such as usage in packaging materials, fabrication in a safety gear like kneepad, forearm pad, etc.

KEYWORDS: Non-newtonian fluid, shear thickening fluid, dilatant fluid, oobleck, resistive impact energy, shock absorption capacity.

FRICITION AND DRY SLIDING WEAR PROPERTIES OF COMPACT GRAPHITE IRON AT ROOM TEMPERATURE AND 100°C

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ABSTRACT:

High brake temperature may cause brake failure of an automobile. To overcome the brake failure it is necessary to determine safe speeds. Brake drum temperature is a variable which depends on speed control and emergency braking. The temperature increase in controlling speed phase of an automobile is less than the emergency braking phase. Cast iron is the material highly used as brake drum due it is high thermal properties. Compacted graphite cast iron (CGI) has applications on account of its superior thermal and wear properties in comparison of grey cast iron. Mainly CGI is useful material in automobile sectors. In automobiles it is used in making of engine blocks, brake drums and exhaust manifolds etc. Brake drums are experienced with high temperatures. In the present study, wear tests were carried out to determine wear behavior and frictional properties which are used to analyze the applications of CGI in making of brake drums. In relation to CGI material applications as brake drums wear tests were conducted at room temperature and at 100°C. In the present study Dry sliding test is carried out on pin on disc wear testing machine. CGI material worn surfaces are analyzed with SEM analysis. Wear rate and frictional factors of CGI are affected by microstructure behavior and frictional forces between two materials. From the present experimental study it is observed that high wear experienced at starting and then gradually experienced uniform wear developed. Frictional forces also low and uniform at starting and later on little amount of forces increased.

KEYWORDS: Compact graphite iron, SEM analysis, wear behavior, frictional force

INFLUENCE OF TBC WITH DIESEL AND MME FUELS ON A LHR ENGINE

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ABSTRACT:

The present research work aims to apply Thermal Barrier Coating (TBC) onto the piston crown and valves for improving engine performance and emission characteristics by using diesel and Mahua Methyl Ester (MME) as a fuel. For this purpose, a Direct Injection (DI) diesel engine was converted to a

LHR engine by applying 0.5 mm thickness of $3Al_2O_3-2SiO_2$ (as TBC) onto the piston crown and valves, the MME is used in the LHR (Low Heat Rejection) engine. The fuel injector pressure was maintained at 200 bar for investigation. The result shows that the application of TBC, increases the brake thermal efficiency to 13.65% at 25% load with diesel as compared to conventional DI diesel engine. The significant improvement of specific fuel consumption and the brake thermal efficiency of LHR engine with MME fuel were observed at full load. Using MME and diesel fuels with TBC achieves lower exhaust gas temperature. It was also observed that the smoke density of MME with and without TBC was significantly reduced. It was also found that the carbon monoxide emission was very moderately reduced under all loads by the use of MME fuel with TBC. Furthermore at all loads, MME with TBC were found to significantly reduce hydrocarbon emission.

KEYWORDS: Mahua methy ester biodiesel, diesel fuel, thermal barrier coating, low heat rejection engine

INVESTIGATION OF HARDNESS & TRIBOLOGY BEHAVIOR OF EPOXY AND SiO_2 COMPOSITE: AN EXPERIMENTAL STUDY

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ABSTRACT:

In the ebb and flow research, an exhaustive trial study has been performed to investigate the properties of Epoxy grid mixture composite fortified by SiO_2 . The blending cycle was finished by Homogenizer to accomplish predictable dispersing of the filler particles into the grid. Tribological, Mechanical tests, for example, nail to ring wear test and Barcol hardness test were directed to assess the wear execution and hardness of Epoxy mixture composite. Exploratory examinations were done on a few Specimens of epoxy composite by changing the weight rates of the graphite filler from 1 to 5 at various weight % of SiO_2 and furthermore the outcomes were analyzed among themselves for various weight % tests. The mechanical and Tribological qualities, for example, hardness and wear pace of epoxy mixture composite material can be obviously enchased by the presentation of SiO_2 particles.

KEYWORDS: Epoxy composite, SiO_2 particles, mechanical properties, tribological execution

UPCOMING EVENT

**AICTE TRAINING AND LEARNING
(ATAL) ACADEMY
ONLINE FDP
ON**

3D PRINTING & DESIGN

February 15-19, 2021



Five Days
AICTE Training and Learning (ATAL) Academy
Online Faculty Development Program
on
3D PRINTING AND DESIGN

February 15 - 19, 2021

Coordinator

Dr. Yeole Shivraj Narayan
Professor

Co-Coordinator

Mr. K. Jaya Prakash
Assistant Professor

Mr. T. Malyadri
Assistant Professor



Organized by

Department of Mechanical Engineering

VALLURUPALLI NAGESWARA RAO VIGNANA JYOTHI
INSTITUTE OF ENGINEERING AND TECHNOLOGY

Pragathi Nagar, Nizampet (S.O), Hyderabad 500090, Telangana, India
Ph: 040 – 23042758/59/60 <http://www.vnrvjiet.ac.in>

About VNR VJIET:

Vallurupalli Nageswara Rao Vignana Jyothi Institute of Engineering and Technology [VNRVJIET], an autonomous institute sponsored by Vignana Jyothi Society, was established in the year 1995 in the state of Telangana. Institute is affiliated to Jawaharlal Nehru Technological University Hyderabad (JNTUH) and is granted Autonomous status from the academic year 2012 by University Grants Commission (UGC) New Delhi. The institution is conferred with the honor of “College with Potential for Excellence” (CPE) by UGC in August 2016. Institute has received accreditation from National Assessment and Accreditation Council (NAAC) with Grade A++ with a CGPA of 3.73 on 4 point scale in 2018. National Board of Accreditation (NBA) has re-accredited B.Tech. - UG – CE program for 5 years in 2016 and UG – CSE, ECE, EEE, EIE, IT, ME programmes for 3 years in 2019. Institute has secured 127th rank in engineering category of NIRF India 2020 rankings. Institute has been recognized as 'AICTE Research Centre' by the AICTE. Recently, Institute received I-Gauge 'Diamond' rating from QS. The institute has 9 departments and offers 26 academic programs both at UG and PG level. The institute offers academic programs with innovative curriculum, advanced research in cutting-edge technologies and societal engagement through outreach activities.

About ME Department:

The Department of Mechanical Engineering was established in 1995 with an intake of 60 in B.Tech. Mechanical Engineering programme, which was increased to 120 in 2010. It also offers 2 M.Tech. programmes in Advanced Manufacturing Systems and CAD/CAM with an intake of 18 each. Department is recognized as 'Research Center' by the JNTU Hyderabad. The department has a team of 47 highly experienced faculty and staff, out of them 18 are doctorates. It has fully equipped workshop and up-to-date laboratories like Machine Tools, Thermal Engineering, Heat Transfer, Metallurgy and Instrumentation etc. The department also has sophisticated CNC, CAD, CAM labs with high configuration workstations and licensed softwares like AUTOCAD, CATIA, ANSYS, FLEXSIM, EDGE CAM, MASTERCAM, ADAMS, MATLAB, MINITAB, AUTOMOD, Automation Studio etc. The department also has a Center of Excellence in Joining Technologies. Department has received grants from various funding agencies for carrying out research projects. As on date, 09 projects have been completed and 03 are ongoing. Department has an exclusive facility for emerging technology on 3D Printing – consisting of **02 Makerbot FDM Printers** and **01 Artec Scanner**.

Overview of the FDP:

3D Printing, colloquially known as Additive Manufacturing (AM) technology, has been recognized as one of the emerging technologies globally. It is breaking down all the barriers in design and manufacturing, and making what was previously impossible, possible for anyone with just a basic understanding of the technology. AM has been used as a design and prototyping tool since its inception, but the focus is now shifting to the production of functional parts and products, such as jet engine parts, hearing aids etc. AM technology is used to create a wide variety of items, including jewelry, toys, sculptures, and other artistic products. It holds the potential for disrupting existing and creating new markets, but the technology is in its relative infancy and it may be years or decades before it reaches levels of confidence comparable to what the industry has with the more familiar conventional manufacturing processes and materials. This Faculty Development Program (FDP) is designed to bring together a peer community focused on the latest trends, products, and real-life experience in this dynamic emerging technology space. The FDP will include case studies by leading manufacturers and presentations by eminent academicians, researchers and leading technology providers along with hands-on on 3D printing softwares.

Objectives of the FDP:

1. To apprise the participants with the contemporary technologies in 3D printing and their fundamentals.
2. To provide hands-on learning experience to the participants in design and modeling of objects and obtaining the physical prototype through 3D printing.

3. To create awareness among the participants regarding the applications of 3D printing in various sectors.
4. To inspire the participants to offer a course on 3D printing technology at their respective institutions.

Topics to be covered:

- ◆ Introduction to 3D printing processes, tools/equipments and softwares
- ◆ CAD modelling for 3D printing
- ◆ Pre-processing of CAD data – STL file generation and error rectification
- ◆ Selection of print parameters for 3D printing
- ◆ Introduction to Reverse Engineering - 3D scanning
- ◆ Post-processing: requirement and techniques
- ◆ Inspection and testing of product quality
- ◆ **Case studies on applications of 3D printing** in Medical/Dental, Automotive, Aerospace, Defence, etc.
- ◆ **Demo and Online Practice Session on Design & 3D Printing:**
Using AutoCAD, Netfabb, Makerware, Artec Studio etc.

Resource Persons:

Subject experts from reputed institutions like IITs, NITs, etc., research organizations like DRDO, industry experts, medical professionals and faculty from the host Institute-VNRVJIET who are broadly working in the area of 3D printing and design at research and application level will deliver the lectures and conduct hands-on sessions.

Eligibility:

The program is open to UG students, PG scholars, Ph.D. research scholars and faculty of Engineering and Polytechnic colleges of AICTE approved Institutions, Bureaucrats / Technicians / Participants from Industry, Medical Practitioners and faculty and staff of host institutions.

Registration:

- ◆ There is **No Registration Fee**.
- ◆ Participants are required to register at <https://atalacademy.aicte-india.org> by selecting this FDP.
- ◆ Participants will be selected on First-come First-serve basis. Number of seats are limited (Maximum 200).
- ◆ Selected candidates will be intimated by e-mail.
- ◆ Confirmation of participation has to be made by e-mail.
- ◆ **Digital certificate** will be issued by the **ATAL Academy** to those participants who have attended the program with **minimum 80% attendance** and scored **minimum 60% marks** in the test.

Important Dates:

Last date of application	22-01-2021
Intimation of selection	26-01-2021
Last date of registration	31-01-2021

Address for Communication:

Dr. YEOLE SHIVRAJ NARAYAN
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Five Days
AICTE Training and Learning (ATAL) Academy
Online Faculty Development Program
on
3D PRINTING AND DESIGN

February 15 - 19, 2021

Link:

<https://atalacademy.aicte-india.org/login>

1. Register as a participant → Fill your details
2. Select Workshops → State: **Telangana** → Month: **February** → Thrust Area: **Thrust Areas** → Mode: Online
3. Select Institute → **Vallurupalli Nageswara Rao Vignana Jyothi Institute of Engineering & Technology Hyderabad & 3D Printing and Design** → Click on

+ → Confirm

For more information, please contact:

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Sri K. HARISHCHANDRA PRASAD, General Secretary, Vignana Jyothi

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Coordinator:

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Mr. T. MALYADRI

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All the faculty and staff members of department of Mechanical Engineering.



VNR VIGNANA JYOTHI INSTITUTE OF ENGINEERING & TECHNOLOGY

MILESTONES

2019	<ul style="list-style-type: none">◆ “Diamond” Rating by QS, UGC-Paramarsh & AICTE – Margdarshan Mentor Institute◆ NIRF Rank 109 – Engineering Category; NIRF Overall Rank in band of 151-200◆ NBA – 6 UG Programs re-accredited fourth time for 3 years◆ Ph.D Students Admission (AICTE-NDF Scheme and JNTUH)
2018	<ul style="list-style-type: none">◆ NAAC - A++ Grade (CGPA 3.73/4)◆ Extension of UGC Autonomous for 10 years w.e.f. A.Y. 2018-19 to 2027-28◆ NIRF Rank in band of 101-150◆ JNTUH Recognized Research Centers – CE, EEE, ME, ECE & CSE
2017	<ul style="list-style-type: none">◆ NIRF Rank in band of 101-150
2016	<ul style="list-style-type: none">◆ UGC - CPE Status◆ NBA – 6 UG Programs re-accredited third time for 3 years, UG – Civil Engg. accredited for 5 years◆ VJ Hub
2015	<ul style="list-style-type: none">◆ NBA – 4 PG Programs Provisionally Accredited◆ TEQIP – II Addl. Grant – Recommended by Govt.◆ POGIL - Full Bright Scholar
2014	<ul style="list-style-type: none">◆ FIST (DST)◆ MSME Projects
2013	<ul style="list-style-type: none">◆ NAAC - ‘A’ Grade (CGPA 3.21)◆ NBA – 7 UG Programs Provisionally re-accredited second time
2012	<ul style="list-style-type: none">◆ UGC Autonomous◆ UGC 12(B)
2011	<ul style="list-style-type: none">◆ JNTUH Permanent Affiliation & Autonomous◆ JNTUH Recognized Research Centers - EEE, ECE & CSE
2010	<ul style="list-style-type: none">◆ UGC Recognition Under 2(f)◆ TEQIP II - Grant of world Bank Project Through MHRD◆ Industry Accreditation – TCS, CAPGEMINI.
2009	<ul style="list-style-type: none">◆ ISTE Best Chapter Award of AP Section◆ Best CSI Chapter Award
2008	<ul style="list-style-type: none">◆ NBA Accreditation for 7 - UG Programs
2007	<ul style="list-style-type: none">◆ Inauguration of DSSR PG Research Centre by Prof. D. Acharya, Chairman AICTE◆ Inauguration of Kode Venkatadri Choudary Sports complex by Prof. R. A. Yadav, Vice Chairman AICTE
2006	<ul style="list-style-type: none">◆ Industry Accreditation –INFOSYS
1995	<ul style="list-style-type: none">◆ Establishment of College with an Intake of 220



VALLURUPALLI NAGESWARA RAO VIGNANA JYOTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY

Approved by AICTE, New Delhi, Affiliated to JNTU Hyderabad and UGC Autonomous Institute
ISO 9001:2015 & QS I-Gauge Diamond Rated Institute, Accredited by NAAC with 'A++' Grade
NBA Accreditation for B.Tech. CE, EEE, ME, ECE, CSE, EIE, IT Programmes
NIRF 127th Rank (Overall 151-200 Band), UGC recognized as "College with Potential for Excellence"

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