PDEU

PANDIT DEENDAYAL ENERGY UNIVERSITY

Formerly Pandit Deendayal Petroleum University (PDPU)

SOT

SCHOOL OF TECHNOLOGY

NEWSLETTER

August

2021

SCHOOL OF TECHNOLOGY

DEPARTMENT OF MECHANICAL ENGINEERING

FACULTY ZONE

- Advances in Mechanical Engineering
- Publications - Journals
- Conference Papers
- Administrative Assignments
- Recognition

FACULTY ZONE

- Professional Activities
- Webinar Organized
- Webinar Delivered
- Visitors
- DC Conducted
- Faculty left for better prospects
- PhD Defense

STAFF ZONE

- Training or Installation of Major Equipment

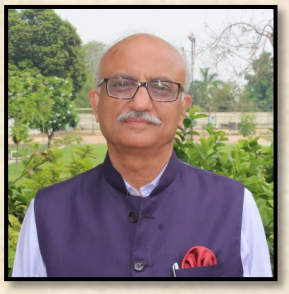
STUDENT ZONE

- Publications-Journals
- Conference Papers

Editorial Team

Dr. Pankaj Sahlot
Faculty Coordinator

Mrs. Pooja Nimavat
Staff Coordinator



DIRECTOR'S DESK...

Prof. Sunil Khanna

Dear Colleagues and Students:

Industry 4.0 (the fourth Industrial Revolution) encapsulates the future development trends to achieve more intelligent manufacturing. As we @ PDEU (formerly PDPU) embark on this journey towards Industry 4.0, I am Happy to Introduce the next issue of the Newsletter which not only share with all its readers the latest news and developments in the Department of Mechanical Engineering but would also be sensitizing all of us on the latest trends and developments in the Fourth Industrial Revolution.

The limitless power of technology to do good and the conviction of my faculty colleagues and students that the golden age is ahead of us - and not behind us – brings about the best in all of us which is reflected in their achievements.

Compliments to the editorial team for their passion for perfection and unbound creativity which makes me always look forward to the next edition of the Newsletter.

HEAD OF THE DEPARTMENT'S DESK ...

Prof. Vishvesh Badheka

It gives me immense pleasure to share Newsletter of the Mechanical Engineering Department, August 2021. Mechanical Engineering Department is the most happening Department of the School of Technology. Newsletter gives an overview of the activities carried out by students, staff and faculties during the month. You may please share your feedback, comments & suggestions to the coordinators.

ADVANCES IN MECHANICAL ENGINEERING

ADVANCES IN ROBOTICS

- Dr. Harshal Oza

Manufacturing in India is facing numerous challenges with increasing demands on productivity and quality. This is in part due to the international competition which is increasingly providing similar or lower price point for commodities. Covid19 outbreak surely exacerbated the situation for several sectors of manufacturing where dependence on existing infrastructure or methods called for a serious consideration for finding alternatives.

It is well-known that automation improves productivity and quality when the economies of scale allow for the cost of automation. In several ways, Robotics provides automation that is flexible and future proof for a reasonable portion of life cycle of a plant. The return on investment (RoI) from Robotics installations are also known to bring the cost of quality down. However, the most important ingredient required in making Industrial Robotics successful is the integration of various technologies that work with the installed robots.

This is where the research and development in the area of Robotics become important. Industry problems usually require timely and reliable resolution within a given budget. Robotics installations are usually costly with significant RoI time. While it is very attractive for small and medium manufacturing units to opt for Robotics due to obvious advantages, a careful integration effort needs to take place to ensure success of robotics solutions. Robots of today come with predictable failure rates and high availability. Hence, robustness is never an issue. However, to make the robot communicate and function along with other subsystems is where the challenge usually lies while making a valid business case for the manufacturer.

One of the most active areas of research which are relevant to Industrial Robotics belong to the area of machine vision driving the decisions for robots. Machine vision technology is far from being saturated. There are advances in traditional 2D camera hardware with and without colour identification. The latest technology in 3D vision uses point cloud using laser sensors. Technology

ADVANCES IN ROBOTICS

- Dr. Harshal Oza

in multi-spectral cameras are known but in terms of coupling them with Robotics for industrial applications, they are barely scratching the surface of the available technology. Hence, a lot of opportunities are available when one looks at advents in sensor technology which continues to be developed by a push from autonomous car and space industries.

All these sensors can be used in various industries in implementing gauging, quality inspection, defect identification and monitoring. These applications, when coupled with Robotics, change the level of abstraction of technology for the machines and plants where they are employed. Firstly, machine vision systems digitize the information and hence can store the same. Actions taken by robots can also be stored and analyzed for future improvements. Secondly, these measurements and actions can be altered in real-time, something Industry 4.0 philosophy strives to achieve.

The other areas getting the attention of Robotics manufacturers at the moment is Collaborative robots and autonomous mobile robots. The maturity of any technology can be estimated by the availability of standards. Both, collaborative robots and autonomous robots enjoy attention of all major standards organizations (ASME, IEEE, IEC) as they continually develop standards for both these technologies.

In the coming decade, abstraction of technology stack for autonomous driving is the thing to watch out for. While autonomous robots are a reality in various warehouses around the world, Robotics in general will keep providing the answer to the ever increasing demands of productivity and quality of service.

FACULTY PUBLICATIONS

JOURNALS

Department of Mechanical Engineering published the following Journal Papers during the month of August 2021:

⇒ ***Vora Jay, Vivek K. Patel,*** Seshasai Srinivasan, ***Rakesh Chaudhari***, Danil Yurievich Pimenov, Khaled Giasin, and Shubham Sharma, "Optimization of Activated Tungsten Inert Gas Welding Process Parameters Using Heat Transfer Search Algorithm: With Experimental Validation Using Case Studies." Metals 11, no. 6 : 981 (2021).

CONFERENCE PAPERS

Dr. M. B. Kiran published the following Conference Papers in Proceedings of the Second South American International Conference on Industrial Engineering and Operations Management, held APRIL 5-8, Sao Paulo, BRAZIL-ISSN 2169-8767 (U.S. Library of Congress) (Scopus):

⇒ Industry 4.0 significance and its Applications,

⇒ Significance of Intruder Detection Techniques in the context of Industry 4.0

⇒ Supply Chain Design and Performance Enhancement

FACULTY PUBLICATIONS

CONFERENCE PAPERS

Dr. M. B Kiran, Dr. Rakesh Chaudhari, Dr. Kishan Fuse, Dr. Abhishek Kumar and Dr. Jay Vora presented the following papers during the 3rd International Conference on Recent Advances In Mechanical Infrastructure (ICRAM - 2021) organized by Department of Mechanical and Aero-Space Engineering at IITRAM, Ahmedabad during 6-8 August 2021:

⇒ ***M.B Kiran,*** "Enhancing Productivity of a Manufacturing Company Using Value Stream Mapping -A Case study"

⇒ ***M.B Kiran,*** "Classical Lean Manufacturing Philosophy– A Review"

⇒ ***M.B Kiran,*** "A Novel technique for the surface texture inspection of Electrical Discharge Machined surfaces using vision system"

⇒ ***M.B Kiran,*** "Design and Development of a Novel Technique for the Maintenance of a Gas Turbine–A Case Study.

⇒ ***Rakesh Chaudhari***, Hem Shah, Izaro Ayesta, LN López de Lacalle, ***Jaykumar Vora,*** " Experimental investigations and optimization of WEDM parameters using Taguchi analysis of pure titanium"

⇒ ***Rakesh Chaudhari,*** Het Patel, Manav Sheth, Nisarg Prajapati, ***Kishan Fuse, Kumar Abhishek, Jaykumar Vora***, " Effect of different tool electrodes (wire) of WEDM process of Inconel 718"

⇒ ***Rakesh Chaudhari,*** Manav Sheth, Het Patel, ***Kishan Fuse***, Izaro Ayesta, LN López de Lacalle, ***Jaykumar Vora***, "Multi-response optimization of alumina powder mixed WEDM process using Taguchi-TOPSIS approach of Nitinol SMA"

⇒ ***Rakesh Chaudhari,*** Vrund Shah, Sakshum Khanna, ***Kumar Abhishek, Jaykumar Vora,*** " A review on key technologies of Industry 4.0 in manufacturing sectors"

⇒ ***Jaykumar Vora,*** Nisarg Prajapati, Smit Patel, Shlok Sheth, Aditya Patel, Sakshum Khanna, Izaro Ayesta, LN López de Lacalle, ***Rakesh Chaudhari***, "Multi-response optimization and effect of alumina mixed with dielectric fluid on WEDM process of Ti6Al4V"

⇒ ***Jaykumar Vora***, Chintan Patel, ***Abhishek Kumar, Rakesh Chaudhari***," Influence of machining parameters of Fiber laser cutting on Al6061-T6"

⇒ ***Jaykumar Vora,*** Aryan Jain, Manav Sheth, Kunj Gajjar, ***Kumar Abhishek, Rakesh Chaudhari*** ," A review on machining aspects of Shape memory alloys"

⇒ ***Jaykumar Vora***, Vrund Shah, Smit Patel, ***Rakesh Chaudhari***," A review on cloud manufacturing technologies of Industry 4.0"

FACULTY

ADMINISTRATIVE ASSIGNMENTS

Dr. Vishvesh Badheka took up the following administrative assignments during the month of August 2021:

⇒ Attended HOD meeting with School Director held on 3rd August 2021.

⇒ Attended AM2 conference, Career Development Cell, NBA, NAAC and related meetings.

⇒ Participated in Independence Day Celebration held on 15th August 2021.

⇒ Attended Department IQAC meeting held on 17th August 2021.

FACULTY

ADMINISTRATIVE ASSIGNMENTS

⇒ NBA mock round visit to workshop held 24th August 2021.

⇒ Discussed progress of the project of students pursing CP project with Bosch Rexroth (India) Private Limited, Sanand Ahmedabad with the respective supervisors on 26th August 2021.

⇒ Coordinated Meeting with MESTAFF on Self-Appraisal Criteria held on 27th August 2021.

Prof. S S Kachhwaha coordinated the PhD Admission Interview for Department of Mechanical Engineering held on 18th August 2021.

FACULTY

ADMINISTRATIVE ASSIGNMENTS

Dr. Vinay Vakharia, Dr. Jay Vora and Dr. Vivek K Patel coordinated the M. Tech Orientation for their respective disciplines : Thermal Engineering, Design and Manufacturing Technology during 5th - 16th August 2021.

DESIGN

Name of Activity	Date
Introduction to Design Group, Faculties, Research areas, activities etc. by Dr Vinay Vakharia	05/08/2021
Introduction to MR fluids and career opportunities after completion of M. Tech by Dr. Manjeet Keshav	06/08/2021
Introduction with Additive Manufacturing by Dr. Pavan Gurrala	9/08/2021
Advances in Robotics and Automation by Dr. Harshal Oza	10/08/2021
Simulations: Some food for thought by Dr. Nirav Patel	11/08/2021
Modern Day Automotive Technologies by Dr. Krunal Mehta	12/08/2021
How to become a Design engineer by Dr. Nagababu G	13/08/2021
Interaction with ALUMNI and formal discussion by Dr Vinay Vakharia	16/08/2021

THERMAL ENGINEERING

Name of Activity	Date
Introduction of Students, Introduction to faculty members, Introduction to course structure by Students, All thermal faculties	05/08/2021
Introduction to research work in Water desalination through online mode by Dr. Anurag Mudgal / Mr. Alpesh Rajput	06/08/2021
Laboratory introduction by Mr. Umang Soni	9/08/2021
Celebration of world biofuel day by Prof. S.S. Kachhwaha	10/08/2021
Introduction to research work in CFD through online mode by Dr. Ravi Kant	11/08/2021
Introduction to OpenFOAM by Dr. Anirudh Kulkarni	12/08/2021
Introduction to research work in HVAC and Solar through online mode by Dr. Vivek K. Patel/Dr. Jatin Patel	13/08/2021
Alumni meet and feedback session by Dr. Vivek K. Patel Dr. Jatin Patel	16/08/2021

MANUFACTURING TECHNOLOGY

Name of Activity	Date
Introduction to the manufacturing domain and individual research activities by respective faculties. (Followed by allotting an activity for the students)	05/08/2021
Course Curriculum Introduction	05/08/2021
Introduction to the laboratories related manufacturing	06/08/2021
Session on Tribology Aspects– Dr. Krunal Mehta	09/08/2021
Session on Advanced welding techniques – Prof. Vishvesh Badheka	10/08/2021
Session on Additive Manufacturing – Dr. Pankaj Sahlot	11/08/2021
Session on Non-conventional Machining – Dr. Rakesh Chaudhari	12/08/2021
Session on Nano & Micro Manufacturing aspects – Dr. Ramesh Guduru	13/08/2021
Review of activity given to candidates followed by feedback session	16/08/2021
Session on Alumni Interaction	16/08/2021

FACULTY

ADMINISTRATIVE ASSIGNMENTS

Dr. M. B. Kiran and Dr. Krunal Mehta organized a Placement Meeting (Online) with all Final year B. Tech. students of Mechanical Engineering dated 3rd August 2021:

The agenda of the meeting was

(i) to give insights about requirements of Industry

(ii) requirements of higher studies

(iii) to help students in deciding about to go for placement or to go for higher studies.

(iv) To motivate students to participate in the placement process of IT companies.

Students were informed that even after getting selected in companies such as TCS, they still can participate in the placement process of Core companies. 23 students attended this meeting with student placement coordinators: Mr. Rudra and Ms. Dhenuka.

Dr. M. B. Kiran organized IQAC meeting on 11th August 2021 with IQAC Committee members Dr. Nagababu Garlapati, Dr. Pankaj Sahlot, Dr. Pavan Gurrala, Dr. Rakesh Chaudhari to discuss on maintaining of IQAC files related to criteria 1-7 of NAAC at Department Level.

RECOGNITION

Dr. Rakesh Chaudhari was Session Chair in 3rd International Conference on Recent Advances in Mechanical Infrastructure (ICRAM-2021) at IITRAM, Ahmedabad during 7th August 2021.

FACULTY

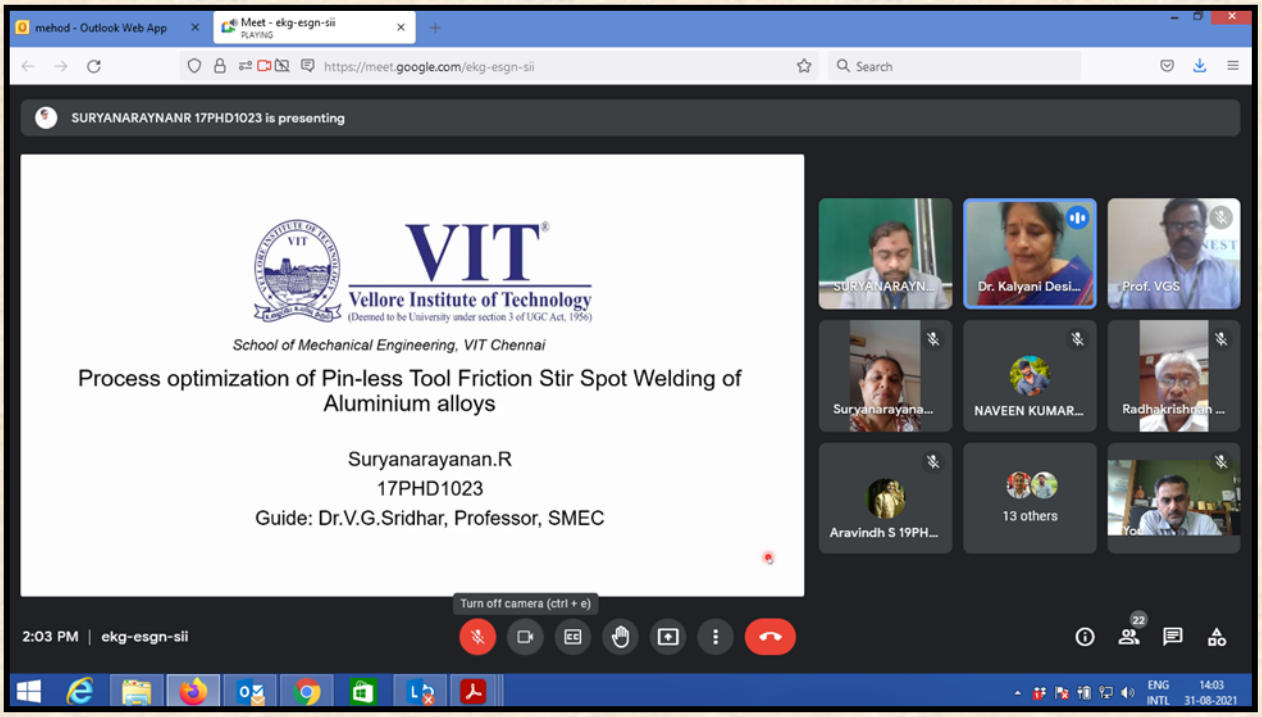
PROFESSIONAL ACTIVITIES

Dr. Vishvesh Badheka carried out the following Professional Activities during the month of August 2021:

⇒ Subject expert for the Research Proposal Presentation in Metallurgy Engineering under Gujarat Technological University (GTU) on 6th August 2021.

⇒ IIW Baroda Branch, Management Committee Meeting held on 14th August 2021.

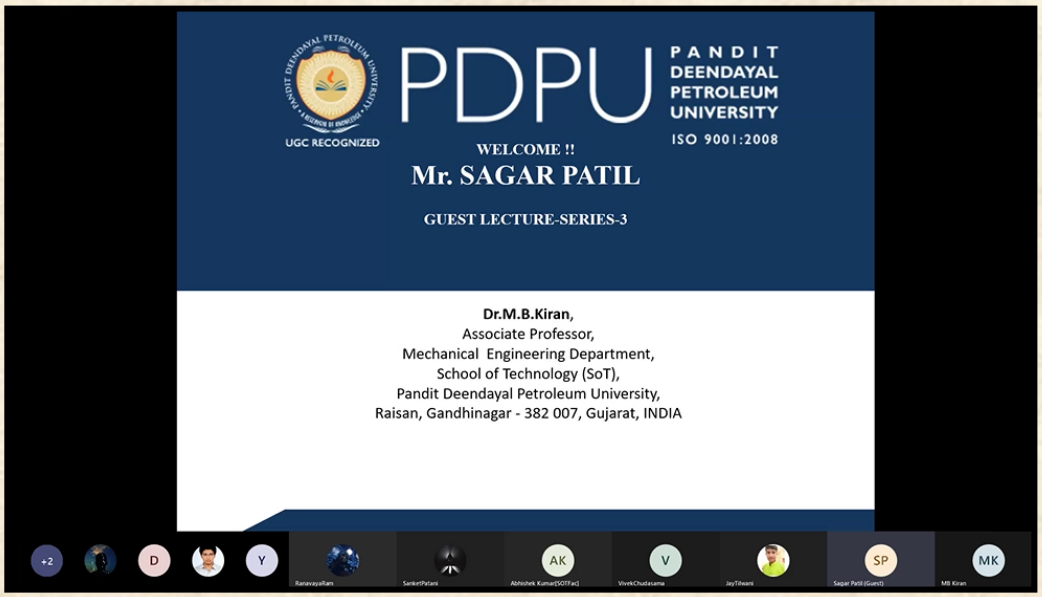
⇒ Evaluated the PhD thesis titled "Process optimization of Pin-less Tool Friction Stir Spot Welding of Aluminium Alloys" of the School of Mechanical Engineering, VIT Chennai followed by the oral examination of the research conducted Viva on 31st August 2021.



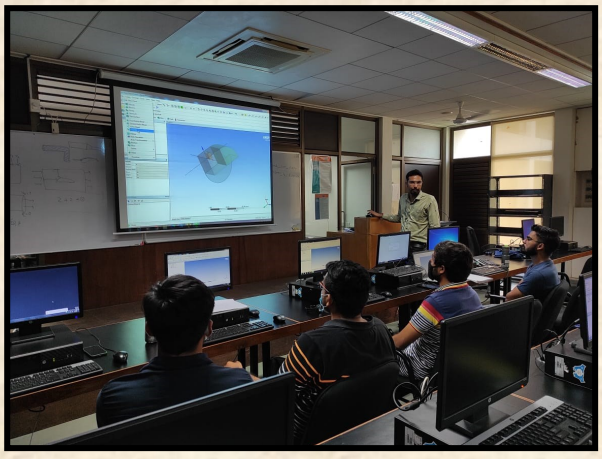
FACULTY

EVENTS /WEBINARS ORGANISED

Dr. M. B. Kiran organized a Guest Lecture titled "Journey to become a Data Scientist in the context of Industry 4.0" delivered by Mr. Sagar Patil, Data Scientist working in finance domain held on 21st August 2021. The Guest Lecture was attended by final year B. Tech .Mechanical Engineering students as well as M. Tech students. The lecture was very informative, as the speaker gave clear directions for becoming a data scientist.



Dr. Ravi Kant and Dr Anirudh Kulkarni jointly with Mr. Pratik Patel (Director & Founder of Balief Corporation) organized a Four Day CFD Training Program via ANSYS and OpenFOAM during 31st August to 3rd September 2021 attended by 5 M. Tech Thermal Engineering students.



FACULTY

EVENTS /WEBINARS ORGANISED

Prof. Surendra Singh Kachhwaha coordinated 2nd Online Scientific Forum Series on the occasion to celebrate World Biofuel Day with a theme titled "Renewable and Sustainable Fuel" organized by the Centre for Biofuel and Bioenergy Studies (CBBS), Pandit Deendayal Energy University in collaboration with Centre for Biofuel and BioChemical Research, University Technologi Petronas, Malaysia on 10th August 2021.

FACULTY

WEBINARS DELIVERED

Dr. Vishvesh Badheka delivered the following Invited Talks during AICTE-ATAL sponsored five days faculty development program titled "Advancement In Material Processing Technologies during 9th -13th August 2021 at Tapi Diploma Engineering College, Surat:

⇒ Friction Stir Processing for surface composite and super plasticity.

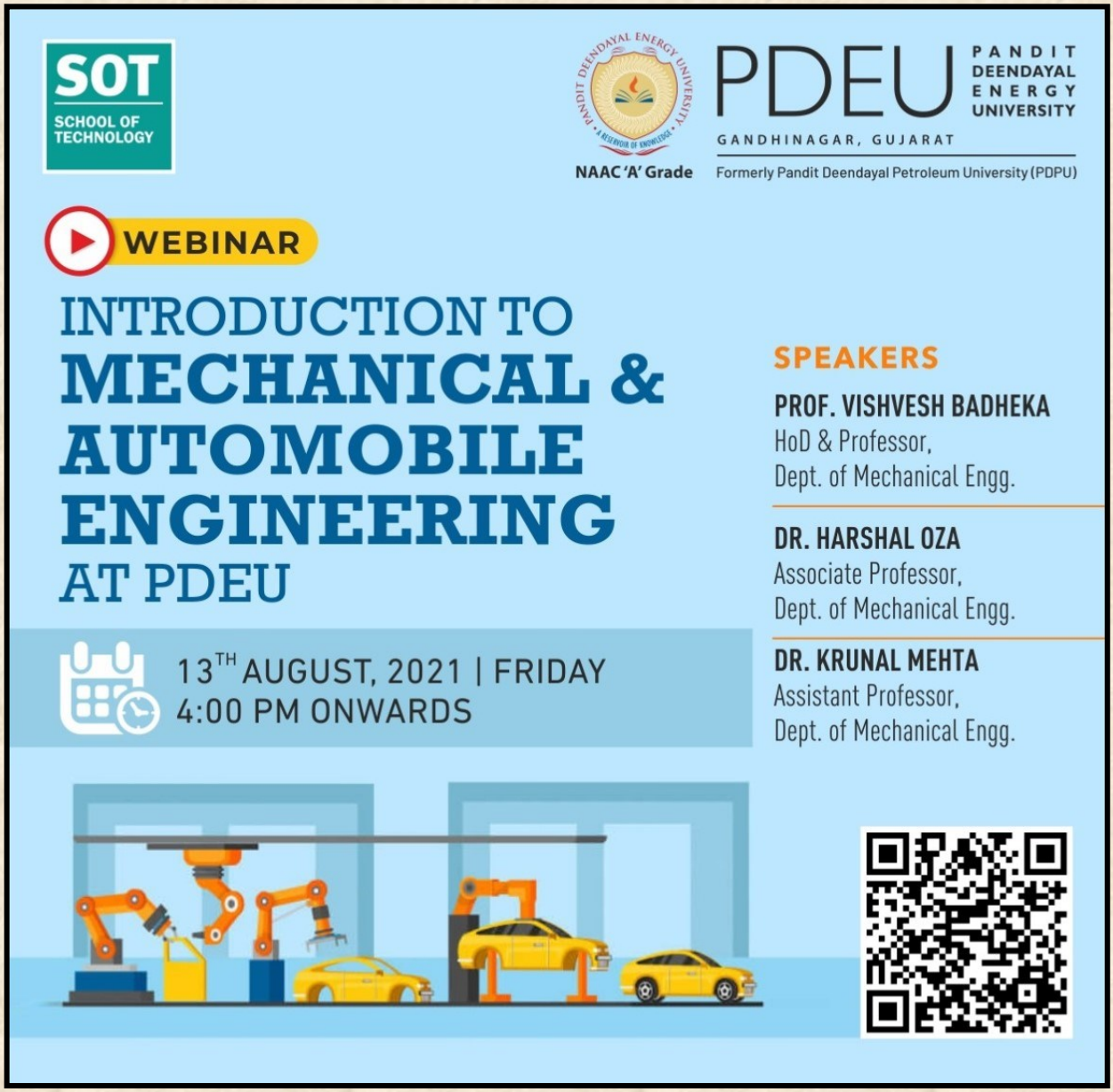
⇒ Welding For additive Manufacturing

Prof. Surendra Singh Kachhwaha delivered an online invited talk on "Application of Cavitation Techniques: A break-through in Bioenergy Production" to celebrate World Biofuel Day organized by Gujarat State Office, Indian Oil Corporation Limited (IOCL), Ahmedabad on 12th August 2021.

FACULTY

WEBINARS DELIVERED

⇒ ***Prof. Vishvesh Badheka, Dr. Harshal Oza and Dr. Krunal Mehta*** delivered the Webinar titled "Introduction to Mechanical & Automobile Engineering at PDEU (B. Tech Admissions)" on 13th August 2021.



FACULTY

VISITORS AT PDEU

Dr. Vishvesh Badheka coordinated the following visits at Welding Research Lab during the month August 2021:

⇒ Dr H G Rana, Faculty of LRDP Gandhinagar and Mr. Ashish Desai, Government Engineering College (GEC), Palanpur visited Welding Research Lab facility followed by Technical Interaction on19th August 2021.

⇒ Mr Uttamprkash Patel, M. Tech Student of Parul University and Mr. Ankit Chaudhary of Ahmedabad Institute of Technology visited and performed FSW experiments at Welding Research Lab on 24-25th August 2021.

⇒ Mr Ashutosh Gohel and Mr Arth Panchal of Ganpat University visited Welding Research Lab followed by discussion on M. Tech dissertation on 27th August 2021.

FACULTY

VISITORS AT PDEU

Dr. Vishvesh Badheka coordinated the following visits at Welding Research Lab during the month August 2021:

⇒ Mr Pradeep Nair, Vice President - Intech Additive Solution, Bangalore visited Welding Research Lab and Workshop facility on 5th August 2021.

⇒ Mr Kedar B, Faculty of Amiraj College of Engineering, Ahmedabad visited Welding Research Lab facility followed by Technical Interaction on 6th August 2021.

FACULTY

DC CONDUCTED

DC Review	Date	PhD Scholar	External Expert	Guide/Supervisor
1st	03rd August 2021	Pandya Milap Vijaykumar (20RME003)	Dr. Harshit K. Dave	Dr Nirav Patel Dr Kush Mehta
4th	09th August 2021	Deepika M Harwani (18RME001)	Dr. Komal G. Dave	Dr. Vishvesh Badheka Dr. Vivek V. Patel
5th	10th August 2021	Gaurav Aggarwal (15RME005)	Dr. R. N. Patel	Dr. S.S. Kachhawaha
1st	11th August 2021	Uttakantha Dixit (20RME006)	Dr. Rakesh Mote	Dr. Ramesh Guduru
1st	23rd August 2021	Deepjyoti Basak (20RME005)	Dr. N. M. Bhatt	Dr. Garlapati Nagababu Dr. Jaydeep Patel

FACULTY LEFT FOR BETTER PROSPECTS

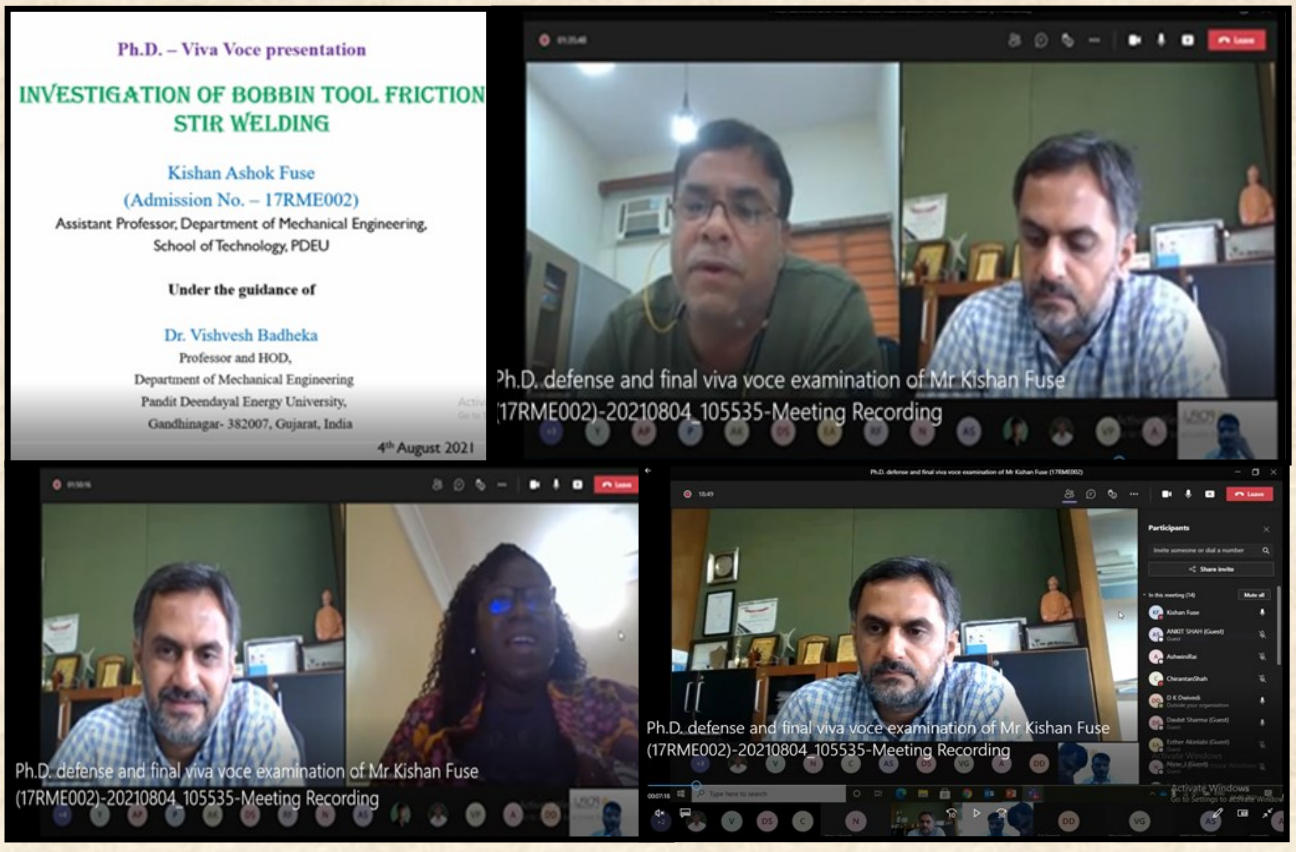
Name of the Faculty	Date of Joining	Date of Relieving	Current Affiliation
Dr. Harshal Oza	20th July 2020	16th August 2021	Venture

Dr. Harshal Oza, Associate Professor relieved from the Department of Mechanical Engineering in the month of August 2021. He expressed he had a great experience with Department as well as PDEU and shared his views on the work of excellent colleagues and top class academics at the school. There were opportunities to contribute to the teaching and research activities. He mentioned PDEU continues to achieve new heights and remains an attractive center of excellence for all stakeholders.

FACULTY

PHD DEFENSE

Ph.D. title:	Investigation of Bobbin Tool Friction Stir Welding
Ph.D. candidate:	Kishan Ashok Fuse
Supervisor:	Dr. Vishvesh J Badheka
National Examiner:	Prof. Dheerendra Kumar Dwivedi Professor, Mechanical and Industrial Engineering Department, I.I.T., Roorkee, INDIA
International Examiner:	Prof. Esther Titilayo Akinlabi Director, Pan African University for Life and Earth Sciences Institute Ibadan Nigeria
Date of defense:	4th August 2021



STAFF

TRAINING OR INSTALLATION OF MAJOR EQUIPMENT

The following training were organized under the guidance of ***Dr. Vishvesh Badheka*** attended by Workshop Staff : ***Mr. Ramkrushna Panchal, Mr. Jayesh Panchal, Mr Ashok Chavda*** and M. Tech students:

⇒ Welding Simulator (Soldamatic IE 4.0) training by Mr. Harshal Patil, Seabery on 5th August 2021.

⇒ Ultrasonic Welding and Micro FSW Machine by Mr Vishal Dave & Mr Dhariya Shah of (MTMM20 batch) imparted training on 26th and 31st August 2021 respectively.

STUDENTS PUBLICATIONS

JOURNAL

Dipak Ankoliya (20RME001) under the guidance of Dr. Anurag Mudgal: published the following Journal during the month of August 2021 :

Dipak Ankoliya, Anurag Mudgal, Manish Kumar Sinha, Philip Davies, Edxon Licon, Rubén Rodríguez Alegre, Vivek Patel, and Jatin Patel. "Design and optimization of electrodialysis process parameters for brackish water treatment." Journal of Cleaner Production, 319 (2021): 128686.
https://doi.org/10.1016/j.jclepro.2021.128686

CONFERENCE PAPERS

Pratyush Srivastava (17BME116) under the guidance of Dr. Pankaj Sahlot participated in the following International Conferences during the month of August 2021:

⇒ ***Pratyush Srivastava, Pankaj Sahlot,*** "Additive Manufacturing in Industry 4.0: A Review", International Conference on Progressive Research in Industrial and Mechanical Engineering (PRIME - 2021) during 5th-7th August, 2021 organized by Department of Mechanical Engineering, National Institute of Technology, Patna.

The following students under the guidance of the respective faculty member presented the following papers during the 3rd International Conference on Recent Advances In Mechanical Infrastructure (ICRAM - 2021) organized by Department of Mechanical and Aero-Space Engineering at IITRAM, Ahmedabad during 6-8 August 2021:

⇒ ***Karn Kavathia***, ***Vishvesh Badheka***, "Friction Stir Welding for Automotive and Electric Vehicle"

⇒ ***Trushil A. Patel***, ***Vishvesh Badheka***, "Rail Welding Technology: Processes and Welding Quality"

⇒ ***Pratyush Srivastava, Pankaj Sahlot,*** "Design and development of the wheelchair components using the Topology Optimization method",