



PDEU

PANDIT DEENDAYAL ENERGY UNIVERSITY

Formerly Pandit Deendayal Petroleum University (PDPU)

SOT

SCHOOL OF
TECHNOLOGY

NEWSLETTER

September
2021



SCHOOL OF TECHNOLOGY DEPARTMENT OF MECHANICAL ENGINEERING

FACULTY ZONE

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- > Patent
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FACULTY ZONE

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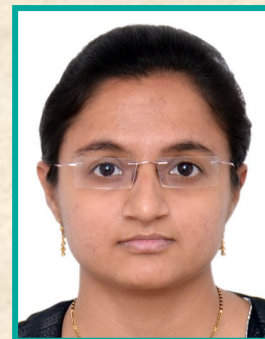
STUDENT ZONE

- > Recognition

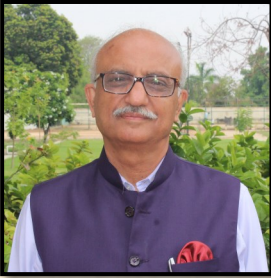
Editorial Team



Dr. Anirudh Kulkarni
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, September 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

RECENT DEVELOPMENTS IN THE AREA OF MACHINE VISION-BASED PRODUCT INSPECTION TECHNIQUES

- Dr. M. B Kiran

Additive manufacturing has gained much attention in recent years. The advent of additive manufacturing has made possible manufacturing of products with complicated shapes, which were not possible using traditional manufacturing techniques. Many researchers have been contributing their research findings related to additive manufacturing. This has resulted in new techniques such as material extrusion, stereolithography, three-dimensional printing, selective laser sintering, etc. Though many researchers have contributed to additive manufacturing technologies, only a few research works have been reported in the area of product inspection of additive manufactured products. Earlier, much of the product inspection was done, only after the component was made. The inspection was done manually and this has resulted in wastage of resources and time. To overcome these issues, researchers have developed techniques that are focused on using the Vision system for product inspection. The typical vision system consists of a charge-coupled device camera (Figure 1), which is used for acquiring images.



Fig.1 A Charge-coupled device camera



ADVANCES IN MECHANICAL ENGINEERING

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A-frame grabber helps in getting a digital image of the 3D printed object. The Digital image is stored on the server. Noise during image acquisition can be reduced or minimized using different kinds of filters. Depending upon the application, researchers have used different filters such as high pass and low pass filters. The selection of filters is largely governed by the application at hand. A vision system is also fitted with an advanced image processing card (Figure 2). This would help in performing the image processing operations quickly. By using a vision system, it is becoming possible for inspecting products for dimensions, accuracy, and finish. Thus, reducing the overall cost of the inspection. Few researchers have used vision systems for the measurement of the effectiveness of the 3D printing process. They have measured the deviation of physical 3D printed objects from the digital 3D model. Thus, researchers have started using the Vision system not only for performing product inspection but also for monitoring the 3D printing process. Industry 4.0, has made it possible, real-time monitoring of additive manufacturing process using a vision system from different geographical locations using cloud infrastructure. Thus, extending the scope of additive manufacturing.



Fig.2 Image processing hardware



FACULTY

PUBLICATIONS

JOURNALS

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

- ⇒ Naishadh P. Patel, *Vishvesh J. Badheka, Jay J. Vora* & Gautam H. Upadhyay, "Experimental investigation on microstructure and mechanical properties of joining stainless steel 316LN to Low Activation Ferritic Martensitic steel (LAFM) using activated flux TIG welding", *Advances in Materials and Processing Technologies* (Published online : 17 September 2021).
Doi: 10.1080/2374068X.2021.1976555
- ⇒ Patel Vatsal, *Patel Rajesh*, Trapasia Nidhi, *Vivek Patel*, "CFD Simulation of Dehumidification of Air in Humidification-Dehumidification based Water Desalination System", *Iranian Journal of Science and Technology - Transactions of Mechanical Engineering*, (2021).
- ⇒ *Rakesh Chaudhari*, Sakshum Khanna, *Jay Vora, Vivek K. Patel*, Sagar Paneliya, Danil Yu Pimenov, Khaled Giasin, and Szymon Wojciechowski, "Experimental investigations and optimization of MWCNTs-mixed WEDM process parameters of nitinol shape memory alloy.", *Journal of Materials Research and Technology*, Elsevier (IF~5.039) (2021)
<https://doi.org/10.1016/j.jmrt.2021.09.038>
- ⇒ *Vora Jay, Rakesh Chaudhari*, Chintan Patel, Danil Yurievich Pimenov, *Vivek K. Patel*, Khaled Giasin, and Shubham Sharma, "Experimental Investigations and Pareto Optimization of Fiber Laser Cutting Process of Ti6Al4V.", *Metals* 11, no. 9:1461 (IF~2.351) (2021)
<https://doi.org/10.3390/met11091461>
- ⇒ Mali V, *Saxena R*, Kumar K, Kalam A, Tripathi B, "Review on battery thermal management systems for energy-efficient electric vehicles", *Renew Sustain Energy Rev*;151:111611. (2021)
<https://doi.org/10.1016/j.rser.2021.111611>.



FACULTY



PUBLICATIONS

PATENT

Aadith Sathian, *Rakesh Chaudhari*, *Jay Vora* has been granted Design Patent titled “Design of ultrasonic vibration-assisted set-up for Conventional EDM process”, Application Number: 347170-002, Journal No is 40/2021.



PROFESSIONAL ACTIVITIES

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

- ⇒ Doctoral Progress Committee (DPC) at Nirma University on 13th September 2021.
- ⇒ Coordinated 23rd Foundation Day of IIW-Baroda branch at Vadodara as a Convenor (Theme: Wire Arc Additive Manufacturing) held on 18th September 2021.
- ⇒ Two Doctoral Progress Committees (DPCs) at Gujarat Technological University (GTU) - L. D. College of Engineering on 27th September 2021.



WEBINARS DELIVERED

Dr. Vishvesh Badheka delivered the following webinar during the month of September 2021:

- ⇒ “Crystal defects and Strengthening mechanisms” for UG Production Engineering students of BVM College of Engineering on 4th September 2021.



FACULTY

ADMINISTRATIVE ASSIGNMENTS

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

- ⇒ AM² Conference related meetings.
- ⇒ HR Faculty Review meeting on 2nd September 2021.
- ⇒ NBA mock round presentation on 8th September 2021.
- ⇒ Visit to IIC along with Dean R & D on 14th September 2021.
- ⇒ M. Tech admission Round II held on 14th September 2021.
- ⇒ Academic Council Meeting on 16th September 2021.
- ⇒ PhD Orientation program for newly admitted students on 20th September 2021.
- ⇒ B. Tech Admission on campus seminar followed by lab visits on 20th September 2021.
- ⇒ Department conducted faculty advisor meeting with UG students on 20-21 September 2021.

Batch	Day	Date	Time
MC18	Monday	20-09-2021	4.00 pm onwards
MC19			5.00 pm onwards
MC20	Tuesday	21-09-2021	4.00 pm onwards
AE20			5.00 pm onwards

- ⇒ Department PhD orientation cum progress meeting held on 24th September 2021.
- ⇒ Department Industry Connect Program on 25th September 2021.
- ⇒ Meeting with Manufacturing, Design and Thermal group held on 27-28-29th September 2021 respectively (Agenda : Updating the PG/UG syllabus for next BoS Meeting, Mid sem review of 3rd Sem. M Tech students, Roadmap preparation for M Tech admission 2022, Course hand-out of the current semester – M Tech)
- ⇒ HOD meeting with School Director held on 3rd September & SOT SWOT analysis meeting held on 28th September 2021.

Dr. M. B Kiran organised a Placement Meeting for the B.Tech students on 03rd September 2021.

Dr. Manjeet Keshav conducted meeting with all design faculties as a PG Coordinator (Design) for finalizing the PEOs and POs for M.Tech Design course dated 28th September 2021.

Dr. Vishvesh Badheka, Dr Vivek K. Patel, Dr Garlapati Nagababu, Dr Jatinkumar Patel, Dr Jaydeep Patel, Dr Jay Vora, Dr Krunal Mehta, Dr Parth Prajapati, Dr Rakesh Chaudhari, Dr Ravi Kant, Dr Rajat Saxena and Dr. Kishan Fuse were a part of the NEET Exam duty during 11th - 12th September 2021.

FACULTY

EVENTS /WEBINARS ORGANISED

Dr. M. B Kiran organized the following events during the month of September 2021 :

One Day Industry Connect Conclave -2021 jointly with Dr. Krunal Mehta on 25th September 2021. The conclave benefitted 55 participants and was attended by Final Year Mechanical Engineering Students. The event was a virtual event attended by the following Industry Leaders:

1. Mr. Ketan Dhruv : Bosch Rexroth, Ahmedabad, Gujarat
2. Mr. Prashant Gandhi : Siddhi Engineers, Ahmedabad, Gujarat
3. Mr. R.D. Chauhan: NTPC Gujarat
4. Mr. Bhaumik : Cadila Health, Gujarat
5. Mr. Dharmesh : Kalpataru {Power, Gujarat
6. Mr. Nital Zaveri : Concept Business Solutions, Vadodara, Gujarat
7. Mr. Vivek : Larsen and Toubro Limited, Gujarat

INDUSTRY CONNECT CONCLAVE 2021
25TH SEPTEMBER 2021

PROF. (DR.) S. S. MANDHARAN
Director General,
POEU

PROF. (DR.) SUNIL KHANNA
Director
SOL, POEU

PROF. (DR.) VISHVESH BADHEKA
Head, Dept. of Mechanical Engg.,
SOL, POEU

EVENT COORDINATORS

DR. M. B. KIRAN

DR. KRUNAL MEHTA

zoom

Industry leaders have addressed our students and shared expectations of Industry from Graduating engineers. This will certainly help our students in moulding Industry ready Engineers (Report Attached).

Department of Mechanical Engineering organized farewell for **Dr. Harshal Oza** on 9th September 2021 and **Mr. Ramkrushna Panchal** on 30th September 2021 as they left for better opportunities.





FACULTY

EVENTS ATTENDED

Dr. M. B. Kiran attended the following events during the month of September 2021:

- ⇒ Virtual International Conference on Product Design, Development, and Deployment (PD³ - 2021) during 11th & 12th September 2021 organized by School of Mechanical Engineering , Vellore Institute of Technology (VIT), Vellore .
 - ◆ Keynote Session by Prof. Ir. Ts. Dr. Mohamed Thariq Bin Haji Hameed Sultan, Director UPM Press & Professor, Department of Aerospace Engineering, Universiti Putra Malaysia on 11th September 2021.
 - ◆ Keynote Session on “Oxidation of Steel : A Microstructural Perspective by Professor, IIT Bombay on 12th September 2021.
 - ◆ Panel discussion on “Opportunities for Product Design, Development, and Deployment In Indian Markets” on 12th September 2021.

- ⇒ 3 days Awareness Cum Internal Auditor Training on ISO 9001:2015" during 14-th -16th September 2021. The event was organized by Central ISO office, PDEU which covered the following topics. 1. ISO9001-2015 certification significance to PDEU 2. ISO 9001-2015 clauses such as Leadership, Context, Planning, Support, Operations, Performance evaluation, Continuous improvement. During the course members were also taught the characteristics of good auditor and how to conduct ISO 9001-2015 audit for an organization.

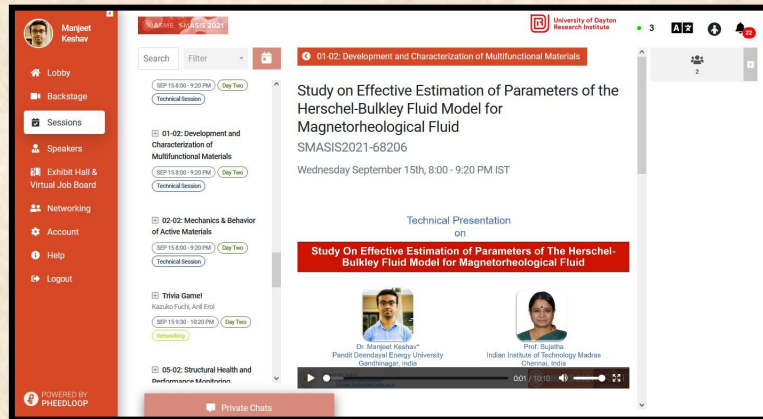
- ⇒ Seminar on the theme “Wire Arc Additive Manufacturing : Development, Challenges & Opportunities” as part of 23rd Foundation Day Celebration of IIW Baroda on 18th September 2021.

FACULTY

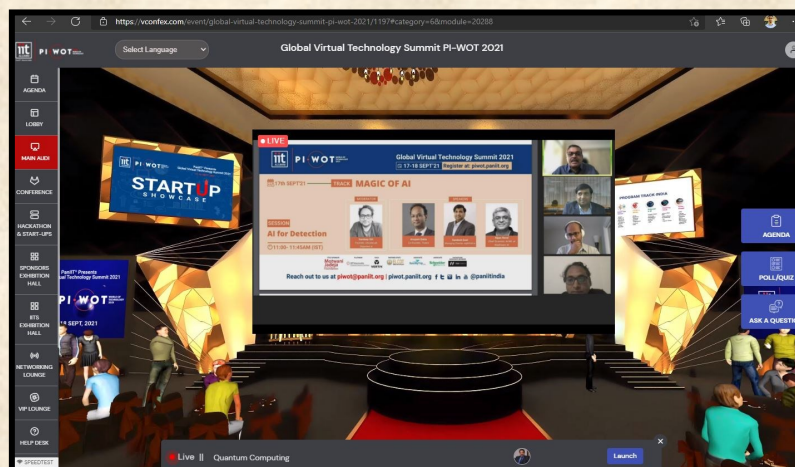
EVENTS ATTENDED

Dr. Manjeet Keshav attended the following events during the month of September 2021:

⇒ The ASME 2021 Conference on Smart Materials, Adaptive Structures and Intelligent Systems", a Virtual Conference organized by ASME, New York (USA) during 14-15 September 2021.



⇒ "PanIIT Global Virtual Conference and Hackathon 2021", organized by Pan IIT Organization for Word of Technology 2021 (PI-WOT) during 17th -18th September 2021.



⇒ Participated & completed successfully AICTE Training and Learning (Atal Academy) online Elementary FDP on "Branding of Higher Education Institutes for Enhanced Outcomes" by National Institute of Technical Teachers Training & Research, Chandigarh (Punjab) during 13th - 17th September 2021.

FACULTY

VISITS AT PDEU

Dr. Vishvesh Badheka coordinated the following visits at Welding Research Lab followed by technical interaction and IIW-PDEU students' chapter updates during the month of September 2021:

⇒ Government Engineering College (GEC) faculty members performed Friction Stir Welding (FSW) experiments on 6th and 21st September 2021.



⇒ Student and Faculty from Parul University visited on 15th September 2021.

⇒ PhD Student of Mechanical Engineering, SVNIT and M. Tech students of Ganpat University visited on 22nd September 2021.



⇒ Mr. Vyom Desai, PhD Student from Institute of Plasma Research (IPR) visited on 27th September 2021.



FACULTY

VISITS (OUTSIDE PDEU)

Dr. Vishvesh Badheka visited the following places during the month of September 2021:

- ⇒ Arvind Materials, Ahmedabad on 17th September 2021 and
- ⇒ VEXMA Technologies, Vadodara on 18th September 2021.





FACULTY

DC CONDUCTED

DC Review	Date	PhD Scholar	External Expert	Guide/Supervisor
4th	29th September 2021	Jay Dineshkumar Patel (19RME001)	Prof. Mitesh Shah	Dr. Rajesh Patel



PHD DEFENSE

Ph.D. title:	Multi-objective optimization approach for modified organic Rankine cycle
Ph.D. candidate:	Parth Prajapati (15RME004)
Supervisor:	Dr. Vivek K. Patel
National Examiner:	Prof. P.P. Rathod, GEC Rajkot, India
International Examiner:	Prof. Piotr Kolasinski, WUST, Poland
Date of defense:	8th September 2021

STUDENTS RECOGNITION

Faculty Advisors

Mr. Rahul Deharkar and Dr. Vivek Patel

Team Czar

Harsh Shah (19BME034), Captain, Design Head,

Rushaang Thakkar (19BME104), Vice-Captain, Powertrain Head,

Gourav Jain (19BME031), Team Manager,

Adit Patel (19BME006), Analysis Head,

Meet Lad (19BME073), Steering Head,

Rajat Panchal (19BME098), Manufacturing Head & Suspension Head,

Nidhi Zala (19BIT088), DAQ Head

Team CZAR stood AIR-2 in Quiz of Preliminary Phase for BAJA SAEINDIA 2022 that concluded on 5th September 2021 and stood AIR-18 out of 138 teams (1st in Gujarat) in the overall score of Phase-1 of BAJA SAEINDIA 2022 in the M-BAJA category.

BAJA SAEINDIA 2022

**PRELIMINARY ROUND
BAJA SAEINDIA 2022**

TEAM CZAR

PANDIT DEENDAYAL ENERGY UNIVERSITY

TEAM ID : 22091

▲ Old Team ID	21110
🚗 Car No.	149
▶ Endurance Score	7.2
🏆 Total Score	372.5
🏆 Awards	1

MEET_LAD_22091
HARSH_SHAH_22091
GOURAV_JAIN_22091
RAJAT_PANCHAL_22091
RUSHANG_THAKKAR_22091
NIDHI_ZALA_22091
ADIT_PATEL_22091

Industry Connect Conclave

Date: 25th September, 2021 Saturday

Venue: PDEU, Gandhinagar (Virtual)

The main objective of this conclave was to make the current engineering students aware of the recent technologies and advancement in the fields of Science and Technology and how perfectly the students can be the future of the Nation. For this wonderful and useful session, the speakers from various brands contributed their important by sharing their thoughts and words that can connect the students to the current technology used by the industry and the ongoing research and development. The event was conducted completely online through ZOOM platform and was a huge success. The speakers were: -

1. Prof. Vishvesh Badheka: As the Head of the Department of Mechanical Engineering, the conclave began by welcoming all the speakers, guests, Director General (PDEU) – Prof. S. Sundar Manoharan, Director SOT (PDEU) – Prof. Sunil Khanna, the faculties of the department and last but not the least, the students from various technical background and from various year of study.
2. Prof. Sunil Khanna: The Director, SOT sir addressed all the present members, speakers with his incredible words about the School of Technology, PDEU, its vision & mission, how magnificent is the role of PDEU in Preparing Energy Soldiers for Tomorrow.
3. Prof. S. Sundar Manoharan: Continuing to the incredible words of Director Sir, the Director General Sir of PDEU welcomed everyone. He gave a virtual tour of the campus and the facilities at PDEU for Research and Development for the faculties, industry professionals, students and all others interested to conduct research in the field of Science and Technology. Brief details were provided about the Labs and workshops of the Pandit Deendayal Energy University. Especially, the tour of the F-block (TRANSITIONAL RESEARCH CENTRE).
4. Mr. Prashant Gandhi, Managing Partner, Siddhi Engineers: He started the session with the importance of engineering in everyone's life. Based on his years of experience in the industry, he provided the information on how they evolved as a successful industry after a huge span of almost 4 decades. Through his words, it could be known that how important role accuracy and precision play for a company/industry. Siddhi Engineers indirectly caters the need of country's defence sector.
5. Mr. Dharmesh Mahant, Vice President (Production), KALPATARU POWER TRANSMISSION LTD.: With a large experience in production field of the components/ devices required for the energy transmission, city piping network, etc. he shared his thoughts and processes in brief with all. He also, gave an idea of how necessary and critical it is to design power transmission/ piping network/ signaling towers, etc. and execute the same plan for a city/ a locality. From his keen words, it could be easily understood that manufacturing process is typically a crucial part.
6. Mr. R. D. Chauhan, Additional General Manager, NTPC Limited: Ramesh Chauhan Sir delivered his speech on the advantages of joining the core companies like NTPC. He provided very minute details on how the students should prepare themselves for being industry ready. His prime focus was on to magnify the importance of quality for each and every industry/company.

7. Mr. Ketan Dhruv, Deputy General Manager Lean Manufacturing, Bosch Rexroth: The main aim for this session by Mr. Ketan was on the industry 4.0, its salient features and advantages. Without his tremendously energetic words, it would probably not be possible for the students to grab the opportunity to know Industry 4.0.
8. Mr. Nital Zaveri, Managing Director at Concept Business Excellence Pvt. Ltd.: Being in the consulting firm for over 2 decades, Mr. Nital shared his experience on connection between technology and consulting as two frontline pioneers for development of any industry.
9. Mr. Bhaumik Ashar, Assistant Manager at CADILA HEALTHCARE LTD: Being the alumni of Industrial Engineering from PDEU itself, he was very excited and cheerful to share his thoughts on the current industry, methods to prepare an individual self on the basis of the needs. He shared his wonderful experience on how he grew and developed himself from a student to a professional. He shared his beautiful journey from PDEU to Cadila Healthcare Ltd.
10. Mr. Vivek Javani, Digitalization Officer and IT Head at L&T Defence - Hazira Manufacturing Complex: According to Mr. Vivek, defence is one of the pillars of a nation. So, it is tremendously necessary to stay updated and bring innovation & invention in this field of Science & Technology. He also shared his experience from being a mechanical engineer to the IT head at L & T Defence (Hazira). He showed a wide scope in digitalization of mechanical engineering. Based on his experience, every individual can compare themselves for are they ready to survive the industrial revolution and update themselves according to the latest technology.
11. Dr. Krunal Mehta, Assistant Professor, Department of Mechanical Engineering, PDEU: He summarized the complete conclave with his valuable words.
12. Dr. M B Kiran, Associate Professor, Department of Mechanical Engineering, PDEU: He too summarized the conclave with his awesome words and gave the vote of thanks to all the speakers, guests, Director General (PDEU) – Prof. S. Sundar Manoharan, Director SOT (PDEU) – Prof. Sunil Khanna, the faculties of the department and last but not the least, the students from various technical background and from various year of study.

Conclusion: Without this conclave, the students could not get a virtual but interesting experience of the industrial methods, standards, work procedures, etc. aspects and also it was an add on for their knowledge on Industrial revolution 4.0. With the knowledge, the students will be the benchmark of the University's goal of Preparing Energy Soldiers for Tomorrow