FROM THE DIRECTOR’S DESK...
Dear Colleagues and Students:

Industry 4.0 (the fourth Industrial revolution) encapsulates the future development trends to achieve more intelligent manufacturing. As we @ PDPU embark on this journey to 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.
Dr. Vivek Patel, Dr Vishvesh Badheka, Dr. Vivek Kumar, Dr. Garlapati Nagababu and Dr Jay Vora published the following Journal Paper during July 2019:


CONFERENCE PAPERS

Mr. Rakesh Chaudhari and Dr Jay Vora published the following Conference Papers during July 2019:


BOOK CHAPTER

Dr. Jay Vora published the following book chapter during the month of July 2019,

Dr. Vishvesh Badheka attended the following workshop during the month of July 2019:

- **Dr. Vishvesh Badheka** attended the workshop on Materials science with 2D atomic layers by Prof. P M Ajayan, Rice University at IIT Gandhinagar on 17th July 2019.
- **Dr. Pankaj Sahlot** successfully competed one week Faculty Induction Program held at PDPU Gandhinagar from 15th – 20th July 2019.
Dr. Vishvesh Badheka attended Doctrol Programme Committee at L. D. college of Engineering on 6th July 2019, at Nirma University on 19th July 2019, and at GCET on 26th July 2019.

Dr. Vishvesh Badheka visited MILACRON, Ahmedabad on 26th July 2019 along with Career Development Cell (CDC) team followed by plant visit, interaction with PDPU summer interns and Alumni of PDPU working at Milacron.

Dr. Vishvesh Badheka assisted B.Tech students of 2nd year, 3rd year and M.Tech Design in getting their internships at various reputed companies like IOCL, Tata Motors, Xylem, Milacron, Arvind Mills, CEAT, and Corrtech in his personal capacity. He was able to place for internship a total of 17 students out of which 04 students were from fourth year including one student from Petroleum Engineering, 08 were from third year and 05 were post-graduate students. The responses from them are given the report. (Report - 1)

Dr. Vishvesh Badheka assisted Mr Farhan Khimani to complete 6 weeks Research Internship on the topic “Friction Stir Processing of Copper, Solid State Additive Manufacturing- A Review, Friction Stir Additive Manufacturing of Aluminum 6061”.
Dr. Vishvesh Badheka attended Executive Committee meeting of Indian Institute of Welding Baroda Branch on 20th July 2019.

Dr. Vishvesh Badheka and his team delivered Friction welded joints under BRNS project with Mr. Bharat Doshi at IPR on 12th July 2019 as a part of project deliverable.
Department of Mechanical Engineering carried out the following Administrative Activities during the month of July 2019:

- Interaction of newly joined faculty members with Director—SOT on 8th July 2019.
- Review Meeting for NBA on 10th July 2019 in presence of Prof. H. K Raval, SVNIT.

- Interview during M.Tech Admission on 9th July 2019 and PhD Admission on 11th July 2019.
- Departmental Meeting with Director School of Technology was conducted on 23rd July 2019.
- Dr Vishvesh Badheka coordinated visit of Prof Ramesh of Lamar University (USA) on 25th July followed by his expert talk and interaction with final year students on “US higher education”
- Departmental Meeting was conducted on 29th July 2019.
Mr Vivek Kumar defended Ph.D. titled "A Study of Hydrostatic/Hybrid Thrust Pad Bearings Considering Non-Linear Behaviour of Lubricants"

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE
ROORKEE - 247 667, INDIA

PROVISIONAL DEGREE CERTIFICATE

This is to certify that Mr. Vivek Kumar (En. No. 1592027) has completed his research work for the award of Ph.D. degree. His viva-voce examination was held on July 10, 2019 and he has successfully completed the requirements prescribed under the regulations for the award of Ph.D. degree. The topic of his Ph.D. thesis is "A STUDY OF HYDROSTATIC/HYBRID THRUST PAD BEARINGS CONSIDERING NON-LINEAR BEHAVIOUR OF LUBRICANTS".

Dated: July 12, 2019

Note: The above Research Scholar has qualified for the Ph.D. degree which will be awarded to him/her in the ensuing Convocation of the Institute.
The following professionals visited PDPU in connection with Dr Vishvesh Badheka

- Dr. Prasoon Kumar, PhD, Department of Medical Devices, National Institute of Pharmaceutical Education and Research – Ahmadabad, visited on 5th July 2019 for technical interaction and 3D printing facility.
- Mr. Naishad Patel and Mr. D. G. Sharma, Faculty Members from Government Engineering College visited for ongoing collaborative work on 11th July 2019
- Under Graduate students from Gokul University visited for technical interaction followed by visit to welding research lab 19th July 2019.
Dr. Vishvesh Badheka and Dr. Jaykumar Vora delivered the following talks during the month of July 2019:

- **Dr. Vishvesh Badheka** delivered lecture on “Advances in Welding”, at UTU, Bardoli, under GUJCOST sponsored program on 1st July 2019.

- **Dr Jay Vora** delivered a talk on “Careers in Manufacturing : Way ahead” at Kalol Institute of Technology (KIT), on 23rd July, 2019 to Pre-final and final year students.

- **Dr Jay Vora** delivered a talk on "NDT and its way ahead " on 12th July 2019 under Center for Quality - One week STTP on Industrial Based NDT techniques organized by Gujarat Industrial Services and Government Engineering College (GEC).
OUTSIDE PDPU

♦ Dr Jay Vora delivered a talk on "Advances in NDT" on 26th July 2019 at LDRP Institute of Technology & Research, KSV University, Gandhinagar.

WITHIN PDPU

♦ Dr. Vishvesh Badheka delivered lecture on Managing Research Projects from Concept to Conclusion, during faculty development program, organised by PDPU on 15th July 2019
Mr. Ravi Kant, has completed his B.Tech. from IIT Madras, M.Tech from IIT Kharagpur. He is pursuing his Ph.D from IIT Gandhinagar in Mechanical Engineering with specialization in active fluid flow control. His research interests are broadly computational fluid dynamics (CFD), fluid flow control, fluid flow instability, hydrodynamics and control theory. He has joined Department of Mechanical Engineering on 1st July 2019. He has contributed 01 publications and have attended 02 conferences.
Mr Mehul Bhalu, Mr Piyush Chaudhari, Mr Alpesh Rajput and Umang Soni were involved in Laboratory visits as a part of M. Tech Admission Support during July 2019.
STudents
ReCOgNItIOns

Team Sovereign have Secured 9\textsuperscript{th} AIR and 2\textsuperscript{nd} Rank in Gujarat Region in Virtual BAJA SAEINDIA 2019, a qualifier for BAJA SAEINDIA 2020 at Chitkara University, Chandigarh during 11\textsuperscript{th} to 13\textsuperscript{th} July 2019. Big success in National Competition is sweet fruit of hard work dedication of 25 student members of Team Sovereign from Mechanical & Electrical departments, guidance of faculty advisors Mr. Rahul Deharkar (Mechanical Department) and Mr. Ravi Botta (Electrical Department) and fulltime support & cooperation of both Mechanical - Electrical Departments as well as PDPU Management.

From left: Mohit Patel, Arun Maurya, Mann Shah, Pritesh Kiri, Raj Chokshi (13\textsuperscript{th} July 2019, Chitkara University, Chandigarh)
It gives us immense pleasure to inform that this year 4 final year students **Krutarth Dave, Anand Patel, Raj Dadhaniya and Fenil Modi** from Mechanical Engineering Department were invited to Ryerson University, Toronto, Canada to perform Mandatory Research Internship under the guidance of Dr Pavan Gurrala, Dr Rajesh Patel and Prof. Ziad Saghir of Ryerson University. The road started simply from volunteering in ICTEA 2019 which was held in PDPU and executing the work given to the students which not only impressed the faculty members of PDPU but also Prof Ziad Saghir of Ryerson University Canada. After reviewing their current position in the PDPU Prof. Ziad willingly invited all of them to his University and work under his supervision in the field of **Nanofluid and Hybrid Nanofluid**. They went there for 2 months from 12th June to 15th August 2019. They wrote Literature Review first in the given field and then learnt Comsol Multiphysics software under Prof Ziad Sir and created a model with wavy transmission channel to enhance the thermal conductivity and cool the computer chip faster and more efficiently. All the physical analysis done in Comsol Software and Graphs were plotted accordingly. They expressed their gratitude to whole Mechanical Engineering department especially **Dr. Rajesh Patel, Dr. Pavan Gurrala, and Prof. Vishvesh Badheka** for supporting them at each an stage wherever required.
<table>
<thead>
<tr>
<th>Sr No</th>
<th>Name of student</th>
<th>Roll No</th>
<th>Name of the company</th>
<th>Duration of internship</th>
<th>Industry mentor</th>
<th>Learning outcome</th>
<th>Feed back</th>
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<tbody>
<tr>
<td>1</td>
<td>Chintan Chavda</td>
<td>16BPE017</td>
<td>Indian Oil Corporation Limited</td>
<td>6 weeks</td>
<td>Dr. Rajeev Srivastava</td>
<td>Market Research. Learnt how to communicate with the companies. Organising Seminars. And also worked on case study of Gujarat refinery</td>
<td>Such internships are helpful for overall development of the student</td>
</tr>
<tr>
<td>2</td>
<td>Paras Laumas</td>
<td>16BME063</td>
<td>Indian Oil Corporation Limited</td>
<td>6 weeks</td>
<td>Dr. Rajeev Srivastava</td>
<td>I learnt about market research and various aspects of business formulation. I learnt how to communicate with companies. I with my colleagues have also organised a seminar on Thermal Fluids.</td>
<td>I recommend more and more such opportunities for students as it helps in overall development of students.</td>
</tr>
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<td>3</td>
<td>Kirtipalsinh Parmar</td>
<td>16BME135</td>
<td>Tata Motors Limited</td>
<td>6 weeks</td>
<td>Mr. Pranav Dhagat</td>
<td>Practical exposure of theoretical concepts. Teamwork and Time management. How to put forward your idea so that it’s understood by everyone</td>
<td>Operators are very helpful and they cleared our most of the doubts. Transportation and hospitality facilities were add ons but no admiration for the work done for them.</td>
</tr>
<tr>
<td>4</td>
<td>Viraj Purohit</td>
<td>16BME142</td>
<td>Tata Motors Limited</td>
<td>6 weeks</td>
<td>Mr. Pranav Dhagat (DGM) Mr. Kartik Kishanwala</td>
<td>Manufacturing of cylinder blocks and cylinder head Assembly line and testing for cylinder Wip (work in process) standards Buffer inventory Machine health Fino card Maintenance of machine</td>
<td>It is really great to work in a Multinational company like TATA Motors. Pros: Good environment Good management Free food Free transportation Cons: Not appreciate the work Don’t give the major project as internship is of 1.5 months</td>
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<td>5</td>
<td>Raj Chokshi</td>
<td>17BME013</td>
<td>Xylem water solution - ITC, Vadodra</td>
<td>4 weeks</td>
<td>Mr. Alpesh Chaudhuri</td>
<td>Hand’s on learning experience on CREO Parametric in great detail with concepts learning of GD&amp;T, Machine &amp; Casting drawing, ASME Y14.5, Design of Injection Molding Patterns/mold &amp; cooling System, 3D Scanning. Learning Experience of competition analysis &amp; concept building in 2 ongoing R&amp;D projects</td>
<td>Xylem ITC, Vadodra is great place for students who are interested in Design field (industrial design/ Drafting/ 3D Scanning/ printing/ plastic moulding design) as well as Fluid Machinery...! I am very thankful to Prof. Badheka sir, Alpesh Chaudhuri sir, Xylem &amp; PDPU to give me such wonderful opportunity which will be surely helpful to me future endeavour.</td>
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<tr>
<td>6</td>
<td>Aashutosh Dobriyal</td>
<td>17BME024</td>
<td>Milacron Private limited</td>
<td>4 weeks</td>
<td>Mr. Pinak Gajjar</td>
<td>Manufacturing and assembling of injection moulding machines</td>
<td>Good industrial exposure</td>
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<td>7</td>
<td>Shalin Patel</td>
<td>17BME083</td>
<td>Arvind mills ltd.</td>
<td>6 weeks</td>
<td>Mr. Vijay Kane</td>
<td>Learned about different cooling systems and textile machinery such as dyeing machines, wet finishing, desizing machine, singeing machine and many more</td>
<td>Much potential to learn from Arvind mills. I would like to recommend Arvind for internship.</td>
</tr>
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<td>8</td>
<td>Urvish Sukhadia</td>
<td>17BME106</td>
<td>Indian Oil Corporation Limited</td>
<td>6 weeks</td>
<td>Dr. Rajeev Srivastava</td>
<td>Getting on field experience about market research and working towards value addition of package of servo thermic fluid. I have also learnt in depth about thermal fluid heaters and properties of thermal fluids.</td>
<td>Such internships are very important for overall shaping of a student. Classroom knowledge is important but such on field experiences give you the real taste of the industrial working environment and other important traits required for corporate world.</td>
</tr>
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<td>9</td>
<td>Trupal Patel</td>
<td>17BME109</td>
<td>Indian Oil Corporation Limited</td>
<td>6 weeks</td>
<td>Dr. Rajeev Srivastava</td>
<td>Marketing Strategies and Thermic Fluid Heaters Basics</td>
<td>Very good exposure to the marketing industry, Helpful and Knowledgeable</td>
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<td>10</td>
<td>Pratyush Srivastava</td>
<td>17BME116</td>
<td>Tata Motors Limited</td>
<td>6 weeks</td>
<td>Mr. Sudhanshu Bajpai, Mr. Pranav Dhagat</td>
<td>The internship experience has been exceedingly enriching. My learning period in the Powertrain department gave me great exposure to the nitty-gritties and the culture of an industry. The state-of-the-art facilities at the plant gave me an exemplary platform to explore and learn various technologies that goes into the manufacturing and maintenance of a component. All in all, my experience as an intern has been amazing. It gave me opportunity to work in different roles in the plant and really explore an industry in depth.</td>
<td>During my tenure as an intern at Tata Motors, the university has provided me with great support and encouragement all along. For the duration of 6 weeks could not have been possible without the support of the mentors at my university and at the industry. I would like to extend my sincere gratitude to the mentors, as their support has comprehensively helped me in my smooth transition from a student to an individual working in an industry and to provide me with any kind of support either professionally and emotionally, as and when it was needed. Thank you!</td>
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<td>11</td>
<td>Dixit Piyush .H.</td>
<td>17BME136D</td>
<td>Arvind mills ltd.</td>
<td>6 weeks</td>
<td>Mr. Raj Kayastha</td>
<td>Learnt about the new kind of yarn dyeing &amp; that is sustainable dyeing/FOAM DYEING.</td>
<td>Experience is good. Problems in making project report because the foam dyeing is also new for Arvind personnel engineers. Because it is one and only machine in India and still trials are going on...</td>
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<td>12</td>
<td>Rajnish Kumar</td>
<td>17BME141D</td>
<td>Arvind Ltd (Denim Division)</td>
<td>6 weeks</td>
<td>Mr Ramesh S. Vadaliya</td>
<td>Data Analytics in SAP Software</td>
<td>It was a splendid experience to work with Arvind as an intern. Here, I learnt how to interact with people in professional world, explored the industrial structure, perceived making of fabrics from cotton along with Data analytics using SAP.</td>
</tr>
<tr>
<td>13</td>
<td>Dhaval J. Jungivala</td>
<td>18MMD004</td>
<td>Milacron Private limited</td>
<td>6 weeks</td>
<td>Mr. Shreyash Raval</td>
<td>- A few Hands on experience of some basic works. - How you should be precise when working. - Punctuality is important. - How to increase Productivity by taking a regular meeting with workers.</td>
<td>It was a good experience in assembly and machining shop but can not expose the design depart yet. It could be better if we got to experience in designing.</td>
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<td>14</td>
<td>Patel Ravikumar Anilbhai</td>
<td>18MMD010</td>
<td>CEAT LTD.</td>
<td>52 weeks</td>
<td>Mr. L.Subramaniam, Mr. Kamal Shuhlka</td>
<td>I will learn how to test tyre on different condition like on high speed, low speed and what are the affected parameter?? How the forces and moments are varying according to vehicle &amp; tire condition?? How predict the results from graphs and data.</td>
<td>It's a good experience to work over here, we will learn lots of things. Industry mentors are so supportive &amp; work environment is also very good and pleasant.</td>
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<td>15</td>
<td>Dakshal Shukla</td>
<td>18MMD012</td>
<td>CEAT LTD.</td>
<td>52 weeks</td>
<td>Mr. Prashant Dholiya</td>
<td>Overview of basic aspect of design, material and operations, broad overview of pneumatic tyre technology, learn how tire perform and construction for achieving our requirements, implementation of virtual reality (VR) with CAD.</td>
<td>Good working environment, supportive guide, highly enthusiastic people with working.</td>
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<td>16</td>
<td>Tank Sarang Dineshbaival</td>
<td>18MMD014</td>
<td>Cortech Pvt.</td>
<td>4 weeks</td>
<td>Mr. Nikunj Khatri</td>
<td>Learn about Manufacturing of baldes, shorud and other parts of gas turbine and their repair shop, coating of baldes.</td>
<td>Nikunj Khatri is supportive and machine facility is great, work environment is not great</td>
</tr>
<tr>
<td>17</td>
<td>Hemant Jamani</td>
<td>18MMD017</td>
<td>Milacron Private limited</td>
<td>6 weeks</td>
<td>Mr. Shreyash Raval</td>
<td>Latest technology used in moulding machine. Various types of machines currently used in moulding industry. Importance of quality in terms of product. Hands on experience on working on run off and various other machines. Whole working as well as testing of the moulding machines including run off.</td>
<td>Design department exposure was a bit less. Hands on could have been more in certain departments.</td>
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