PANDIT DEENDAYAL PETROLEUM UNIVERSITY

SOT
SCHOOL OF TECHNOLOGY

NEWSLETTER

December 2019

School of Technology

Department of Mechanical Engineering

FACULTY ZONE

- ⇒ Publications
- ⇒ Conference/ Workshop Attended
- ⇒ Administrative Assignments
- ⇒ Events/Workshop Organized
- ⇒ Guest Lectures
- ⇒ Professional Visits
- ⇒ DC Conducted
- ⇒ Recognition

STAFF ZONE

- ⇒ Training/Installation of Major Equipment

STUDENT ZONE

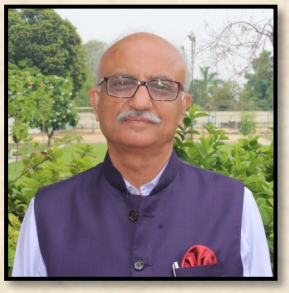
- ⇒ Workshops Attended
- ⇒ Workshops Organized
- ⇒ Projects

Editorial Team

Faculty Coordinator: Dr. Pankaj Sahlot

Staff Coordinator: Mrs. Pooja Nimavat

MESSAGE from the...



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 @ 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.

HEAD OF THE DEPARTMENT'S DESK ...

Prof. Vishvesh Badheka

It gives me immense pleasure to share Newsletter of the Mechanical Engineering Department, December 2019. 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.

FACULTY PUBLICATIONS

JOURNALS

Dr. Vishvesh Badheka, Dr. Vivek V Patel, Dr. Rakesh Chaudhary, Dr. Garlapati Nagababu and Dr Jay Kumar Vora published the following journal papers in month of December 2019:

- Patel P., Rana H., ***Badheka V., Patel V***. & Li W. Effect of active heating and cooling on microstructure and mechanical properties of friction stir–welded dissimilar aluminium alloy and titanium butt joints. Welding in the World (2019).

- Khanna, N., Bharati, M., Sharma, P. and ***Badheka, V***. , "Design-of-experiments application in the friction stir welding of aluminium alloy AA 8011-h14 for structural application", Multidiscipline Modeling in Materials and Structures,.(2019).

- Sakshum Khanna, Utsav, Roma Patel, Priyanka Marathey, ***Rakesh Chaudhari***, ***Jay Vora***, Rupak Banerjee, Abhijit Ray, and Indrajit Mukhopadhyay. "Growth of titanium dioxide nano-rod over shape memory material using chemical vapor deposition for energy conversion application." Materials Today: Proceedings (2019).

FACULTY PUBLICATIONS

CONFERENCE PAPERS

Dr. Simranjeet Singh, Mr. Parth Prajapati, and Mr. Krunal Mehta presented the following papers at the Conference in the month of December 2019.

- ***Dr. Simranjeet Singh*** presented two research paper which were published in the Proceedings of 43rd National Systems Conference on Innovative and Emerging Trends in Engineering Systems (NSC 2019), IIT Roorkee, 6-8th December 2019.
  - ⇒ "Free vibration analysis of sandwich plate with honeycomb core and FGM face sheets" and
  - ⇒ "Effect of foundation on free vibration of tapered functionally graded material plate".

NSC 2019-IIT Roorkee

43rd National Systems Conference

- Trushil Patel, Nishant Mandal, and ***Mr. Parth Prajapati*** presented "Review of solar powered organic Rankine cycle for Indian conditions" at 43rd National Systems Conference on Innovative and Emerging Trends in Engineering Systems.

- ***Mr. Krunal Mehta*** presented a research paper entitled "Friction Stir Processing (FSP): An innovative alternate for fabricating Aluminum Surface Composites" at International Conference, FiMPART-2019 at Ahmedabad as a team-member of Dr. Vishvesh Badheka.

- ***Mr. Krunal Mehta*** presented two research papers entitled "Elevated temperature wear behavior of aluminum 6061 alloy " and "Effect of multi pass friction stir processing on elevated temperature wear behavior of aluminum 6061 alloy at International Conference, IndiaTrib-2019, IISc Bangalore. The research work was an outcome of final year projects conducted by Mr. Haaris Memon, Mr. Arvind Jograna, Mr. Ronak Jagetiya and Mr. Charchit Joshi. The projects were co-supervised by ***Prof. Vishvesh Badheka***.

FACULTY PUBLICATIONS

CONFERENCE PAPERS

Dr. Vivek Kumar and Dr. Vipindas K, presented the following papers at the Conference in the month of December 2019.

- ***Vivek Kumar*** and Satish C. Sharma, "Elastohydrostatic Lubrication of Control Flow Valve Compensated Thrust Bearing", 10th International Conference on Industrial Tribology (ICIT-2019), December 1-4, 2019, IISc Bangalore, India.

- Satish C. Sharma and ***Vivek Kumar***, "Performance of textured surface hybrid thrust pad bearing considering micro-roughness", 10th International Conference on Industrial Tribology (ICIT-2019), December 1-4,2019, IISc Bangalore, India.

- ***Vipindas K***, " Modeling and Simulation of Cutting Temperature during Micro End Milling of Inconel 718", 11th International Conference on Precision, Meso, Micro and Nano Engineering, 12 - 14 December 2019, pp. 69, 2019, IIT Indore.

FACULTY PUBLICATIONS

BOOK CHAPTER

Dr. Vipin Das published the following Book Chapters in the month of December 2019:

- Y.Rahul, ***K.Vipindas***, Kattari Muni Sekhar and Jose Mathew, "Modelling of Mechanical Residual Stresses in Micro-End Milling of Ti-6Al-4V Alloy", Advances in Micro and Nano Manufacturing and Surface Engineering, Springer, 01 December 2019, pp-401-409,https://link.springer.com/chapter/10.1007%2F978-981-32-9425-7_36.

- ***K. Vipindas,*** Jose Mathew, "Machining of Borosilicate Glass Using Micro-End Milling", Advances in Micro and Nano Manufacturing and Surface Engineering, Springer, 01 December 2019, pp-189-200, https://link.springer.com/chapter/10.1007%2F978-981-32-9425-7_16 .

FACULTY

CONFERENCE/WORKSHOP ATTENDED

- ***Mr. Krunal Mehta*** attended an International Conference, IndiaTrib-2019, at IISc Bangalore.

- ***Dr. Nagababu Garlapati*** attended International Conference on New and Renewable Energy Resources for Sustainable Future, SKIT college and Malaviya National Institute Of Technology, Jaipur.

- ***Dr Vishvesh Badheka*** attended Distinguished Lecture by Mr. Sujoy Choudhury, Executive Director – Indian Oil Corporation Ltd. on "Oil & Gas Scenario" on 2nd December, 2019.

- ***Dr Vipin Das*** has attended Conference at IIT Indore as Session chair for the 11th International Conference on Precision, Meso, Micro and Nano Engineering.

COPEN-11, IIT Indore

FACULTY

CONFERENCE/WORKSHOP ATTENDED

Dr. Vishvesh Badheka attended International conference on "Frontiers in Materials Processing, Application, Research & Technology"(FiMPART) during 15-18th December, 2019 held at Club O7, Ahmedabad. He presented an **Invited talk** on 16th December on 'Advanced Welding Processes' for Metal Joining and Additive manufacturing'. He was also **invited to chair a session** on 17th December 2019 on 'Materials for High Temperatures'.

His group presented following papers,

- Copper welding: Challenges and future scope *Raghavendra Darji* , ***Vishvesh Badheka, Kush Mehta.***

- A-TIG welding of P91 steels Bead-on-plate welds – weld bead morphology study of Conventional & A-TIG welds;*Kamal Harikrishna Dhndha*, ***Vishvesh Badheka.***

- Optimization of machining parameters on Electro discharge machine of pure nickel and titanium with copper and graphite electrode materials *Munjal S Mehta, Aakash H Bhogesara, Ashutosh M Gohel,* ***Vishvesh J Badheka.***

- Superplasticity: Recent Approaches & Trends *Deepika Murlidhar Harwani*, ***Vishvesh J Badheka, Vivek P Patel.***

- Over view on friction base joint of aluminium and stainless steel *Hardik Dineshbhai Vyas*, ***Kush P Mehta, Vishvesh J Badheka.***

PDPU team at International conference on Frontiers in Materials Processing, Application, Research & Technology (FIMPART)

FACULTY

ADMINSITRATIVE ASSIGNMENTS

- ***Department of Mechanical Engineering*** concluded PhD admission on 5th December 2019.

- ***Dr Vishvesh Badheka*** appointed as coordinator for PG Admission 2020.

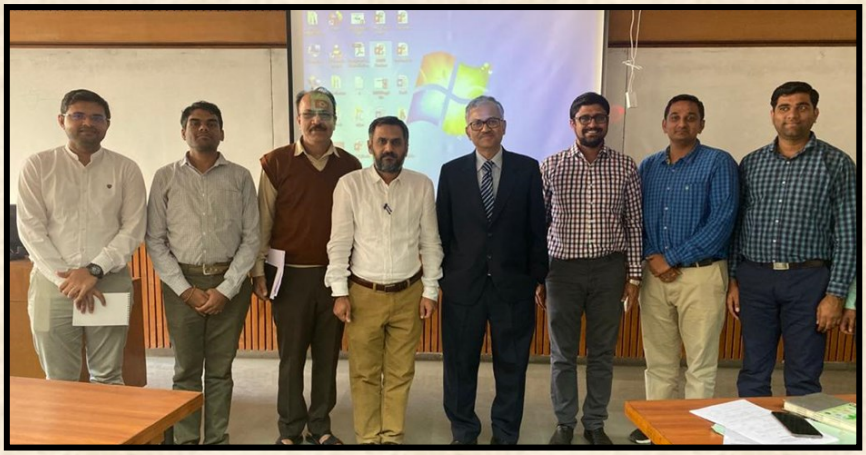
- ***Dr Vishvesh Badheka*** presented 'Best Practices- Mechanical Engineering Dept.' during HoD meeting held on 2nd December 2019.

- ***Dr Vivek V Patel*** presented the capabilities and facilities available at PDPU for Manufacturing group, ***Dr Vinay Vakharia*** for Design group and **Dr. Rajesh Patel** for Thermal Group during Industry connect 2019.

Industry connect 2019

- ***Dr Vivek V Patel*** contributed to upgradation of the syllabus by suggesting certain change and revision related to manufacturing subjects to the Board of Studies.

- ***Dr. Vishvesh Badheka*** arranged an Interaction of Faculties - Department of Mechanical Engineering with Prof Gour Gopal Roy, Professor, IIT Kharagpur on 19th December, 2019.


Interaction with Mechanical Faculties

FACULTY

EVENTS/WORKSHOP ORGANIZED

Dr. Nirav Patel and Dr. Jaydeep Patel organized the departmental event "**Industry Connect 2019**" attended by industry people from around 17 organisation and delivered expert talk on various topics like Industry 4.0, FEA & CFD in industry application, Engineering Fundamentals in Industry etc, visited various lab available at PDPU followed by poster presentation with participation from 21 teams. (Report 1 Attached)

Industry Connect 2019

FACULTY

GUEST LECTURES ARRANGED
WITHIN PDPU

Dr. Simranjeet Singh organised the following expert talk during month of December 2019.

⇒ "Optimization Techniques" by Mr. Milap Shah, Sr. Manager at Kalpataru Power Trans. Ltd, Gandhinagar, 5th December 2019.

Expert Talk on "Optimization Techniques"

⇒ "ME 4.0" by Mr. Satish C Pandey from Siemens under ASME-PDPU Chapter.

Expert Talk on ME 4.0 under ASME PDPU Chapter

FACULTY

GUEST LECTURES ARRANGED
WITHIN PDPU

Dr Rakesh Chaudhari and Dr. Jayumar Vora organised the following expert lecture during month of December 2019.

- ***Dr. Rakesh Chaudhari*** organised the following expert talks during December 2019 :
  - ⇒ "Joule Thomson effect and its industry applications" by Mr. Akash Shinde, Executive Engineer, Linde Engineering, Vadodara.
  - ⇒ "Rankine cycle and design aspects of steam turbine" by Mr. Ninad Jadhav, Project Engineer, ABB India Limited, Vadodara.

- ***Dr. Jaykumar Vora*** organised Guest lecture on "Solidification Behaviors during Power Bed Fusion (PBF) and Metal Additive Manufacturing (3 D Printing)" by Prof. Zhan Chen, Professor in Mechanical Engineering (AUT, New Zealand) on 18th December 2019 followed by visit to welding and metallurgy labs.

Guest Lecture on PBF and 3D Printing

FACULTY

GUEST LECTURES ARRANGED WITHIN PDPU

- **Prof. Vishvesh Badheka** arranged the following expert lectures :

⇒ "Interdisciplinary Research Projects on Field Assisted Sintering Technique (FAST)" by Prof. Anil K. Kulkarni, Professor of Mechanical Engineering, The Pennsylvania State University, on 26th December 2019 under IIW-PDPU Student Chapter Activities.

Expert Lecture on Field Assisted Sintering Technique (FAST)

⇒ **Role of Fluid Convection in Fusion Welding** by Prof Gour Gopal Roy, Professor, Associate Dean, Sponsored Research & Industrial Consultancy, Department of Metallurgical & Materials Engineering, Indian Institute of Technology, Kharagpur, on 19th December 2019.

Expert Lecture on Role of Fluid Convection in Fusion Welding

FACULTY

GUEST LECTURES DELIVERED
OUTSIDE PDPU

Dr. Vishvesh Badheka delivered the following invited talks,

- Advanced Welding Processes and Welding for Additive manufacturing talks were delivered at BITS, Vadodara on 12th December 2019.

- Recent Trends in Welding Technology delivered at One Day Workshop sponsored GUJCOST at Sigma Institute of Engineering, Vadodara on 20th December 2019.

Expert talk at BITS Vadodara

FACULTY

PROFESSIONAL VISITORS AT PDPU

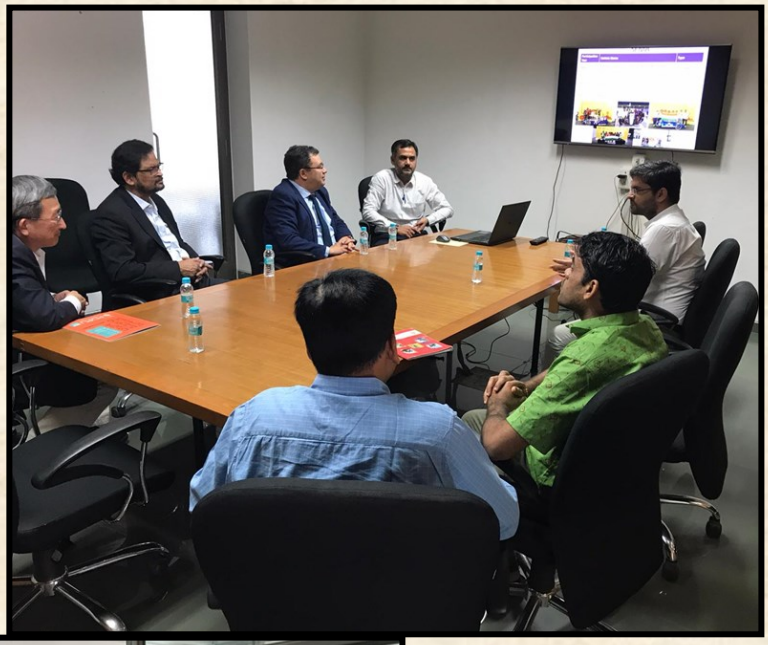
The Following Professors visited PDPU on 25th December 2019, followed by detail interaction with Director SOT and visited various Mechanical Engineering Dept. facilities.

- Prof Feng C Lai, Presidential Professor, Mechanical Engineering The University of Oklahoma,
- Prof Anil K Kulkrni, Professor, Mechanical Engineering, The Pennsylvania state University,
- Prof. M. El Ganaoui , University of Lorraine, France

Interaction with Director SOT

FACULTY

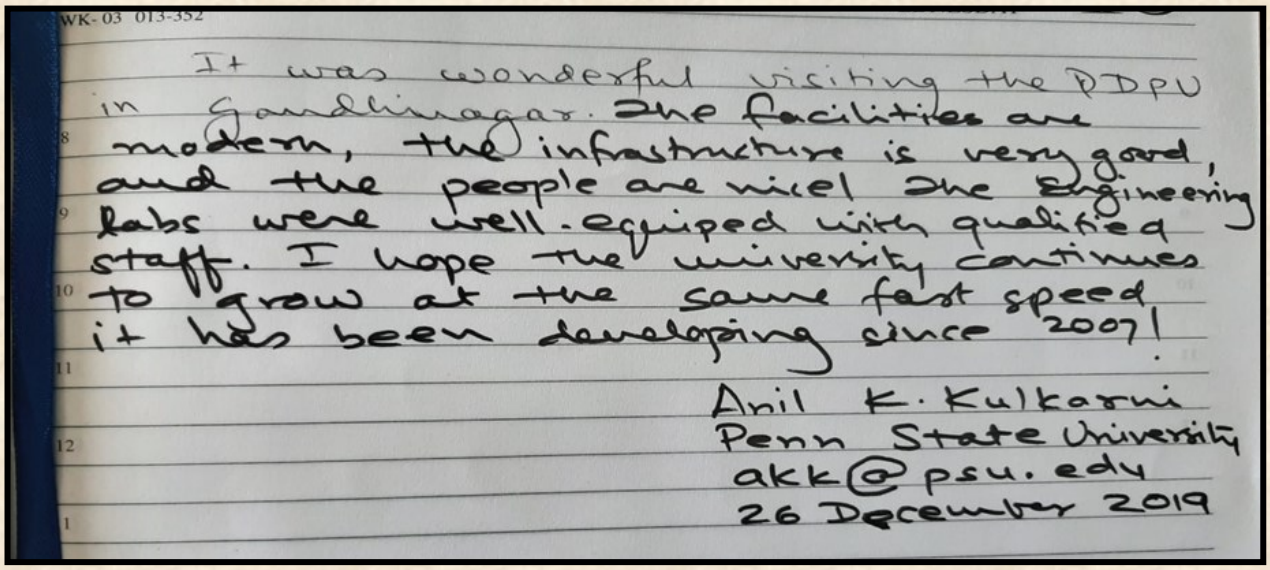
PROFESSIONAL VISITORS AT PDPU



Faculty Interaction and Lab Visits During Visit of Professors

FACULTY

PROFESSIONAL VISITORS AT PDPU



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It was wonderful visiting the PDPU in Gandhinagar. The facilities are modern, the infrastructure is very good, and the people are nice! The Engineering labs were well-equiped with qualified staff. I hope the university continues to grow at the same fast speed it has been developing since 2007!

Anil K. Kulkarni
Penn State University
akk@psu.edu
26 December 2019

FACULTY

PROFESSIONAL VISITORS AT PDPU

- Dr. H. G Rana, Faculty, LDRP visited for Technical Interaction on 2nd December 2019.

- Mr Vijay V & Mr Alap Mistry from Velosi, Qatar, visited Metallurgy & Welding Lab on 3rd December 2019.

Mr Vijay V & Mr Alap Mistry from Velosi, Qatar

- IITRAM students visited for Technical Interaction 5th December 2019.

- Prof T. K. Pal, Research Professor, Mechanical Engg. Department, GIET University, Gunupur-and Formerly Professor, Jadavpur University, Kolkata visited Metallurgy and Welding Research lab and explored possibility of joint collaboration.

Prof T. K. Pal, Formerly Professor, Jadavpur University, Kolkata

FACULTY

PROFESSIONAL VISITORS AT PDPU

- Prof Gour Gopal Roy, Professor, IIT Kharagpur visited Welding Research Lab on 19th December, 2019.

Prof. Gour Gopal Roy, Professor, IIT Kharagpur

- Dr Komal Dave and Mr Hardik of L.D College of Engineering visited welding research lab on 30th December 2019.

Dr. Komal Dave & Mr Hardik, L.D.C.E

FACULTY

PROFESSIONAL VISITORS AT PDPU

- Dr. (Er.) Manoj Kumar Gupta, Scientific Officer-G, Mechanical & Mr Bharat Doshi Scientific Officer-G of IPR (DAE) visited PDPU on 31st December 2019.

Dr.(Er) Manoj Kumar Gupta and Mr Bharat Doshi. IPR

- Dr. P H Shah, Head Mechanical Engineering Dept, SVIT and Dr. Darshak Desai, Professor & Head - Mech. Engg. GCET visited workshop and welding research lab along with PhD scholars on 27th December 2019.

Dr P H Shah, SVIT & Dr. Darshak Desai, GCET

FACULTY

PROFESSIONAL VISITORS AT PDPU

- Faculties and Students from Gokul Global University visited Welding Research Lab on 26th December 2019.

Faculties and Students from Gokul Global University

FACULTY

PROFESSIONAL VISITS OUTSIDE PDPU

Dr Vishvesh Badheka visited the following places for Professional Work during December 2019:

- IIT Delhi on 4th December 2019 followed by interaction with Prof S Aravindan of Mechanical Engineering Dept and visit to his research labs.

- Birla Vishvakarma Mahavidyalaya Engineering College (BVM), A. D. Patel Institute of Technology (ADIT), G H Patel College of Engineering and Technology (GCET) and Maharaja Sayajirao University (MSU), Vadodara regarding PG admission 2020 on 7th December 2019.

- IIW, Baroda Branch for attending executive committee meeting held on 7th December 2019.

- Gujarat Technological University (GTU) as an external expert for PhD proposal review on 9th December 2019.

- Sahajanand Laser Technology Ltd, Gandhinagar with Prof Pal visited on 18th December 2019.

- Nirma University for attending RAC Expert meeting on 23rd December 2019.

- Gujarat Technological University (GTU) for attending two meeting as DPC expert for Gujarat Technological University (GTU) students held on 27th and 31st December 2019.

- Gujarat Technological University (GTU) for attending as an external expert for Research Week Seminar on 24th and 26th December 2019. He attended the same along with Prof Anil K Kulkrni, Professor, Mechanical Engineering, The Pennsylvania state University.

Research Week Seminar at GTU

Research Labs IIT Delhi

FACULTY

PROFESSIONAL VISITS OUTSIDE PDPU

Dr. Vipindas K visited IIT Indore for attending 11th International Conference on "Precision, Meso, Micro and Nano Engineering" as Session Chair on 14th December 2019.

Dr. Jaykumar Vora following places for Professional Work during December 2019:

- 4C consultancy Ahmedabad for CP projects and job opportunities available for students where two students from final year have been offered joining as well as CP.
- IIT Gandhinagar for attending DPC of Gujarat Technological University (GTU) candidate as a DPC member.
- Government Engineering College (GEC), Gandhinagar for attending DPC of Gujarat Technological University (GTU) candidate .
- Centre for Entrepreneurship Development (CED), Gandhinagar as an appointed member of the screening panel for Centre of Excellence (COE) projects.

FACULTY

DC CONDUCTED

- ***Dr. Jaykumar Vora*** conducted the Synopsis of Mr. Rakesh Chaudhari in presence of External Expert Dr. Piyush Gohil who granted permission for the submission of thesis.

- ***Dr. Vishvesh Badheka*** conducted the Final-Viva Voce of Mr. Gaurang Joshi (13RME004), Part-time PhD Scholar who defended his PhD defense on Developments of friction stir welding process for dissimilar copper - stainless steel Joints , in presence of External Expert Dr. Gour Gopal Roy dated 19th December 2019.

Mr Gaurang Joshi, PhD scholar, defended his PhD defense

- ***Dr. Vivek Patel*** conducted the following Doctoral Committee Review in the month of December 2019:
  - ⇒ Mr. Shubhas Das (17RME005) in presence of Dr. Jay Vora and External Expert Dr. Piyush Gohil dated 6th December 2019. (Candidate Sponsored by ITW welding group, Vadodara).
  - ⇒ Ms Deepika M Harwani(18RME001) in presence of Dr. Vishvesh Badheka and External Expert Dr. Komal Dave dated 30th December 2019.

- ***Dr. Jaykumar Vora*** conducted the Doctoral Committee Review Meeting of Mr. Rajesh Goswami in presence of External supervisor Dr. Basab Bhattacharya, Industry, External expert - Prof. I.B. Dave. (Candidate sponsored by technip FMC, Malaysia).

- ***Dr. Garlapati Nagababu*** conducted Doctoral Committee Review Meeting of Mr. Ravi Patel (18RME006) in presence of Prof. Surendra Singh Kachhwaha and External Expert Prof. RN Patel on 31st December 2019.

FACULTY RECOGNITION

- ***Dr. Rajesh Patel and Dr. Vivek K Patel*** promoted to the post of Associate Professor with effect from 1st December 2019.

- ***Dr. Anurag Mudgal and Dr. Pankaj Sahlot*** served as reviewer of innovative ideas/ innovations received under the INSPIRE Awards– MANAK for the year 2019-20. He received an appreciation for his support and efforts towards INSPIRING INNOVATIONS of TOMORROW.

- As a part of Ongoing Project titled "bIo-mimetic and phyto-techNologies DesIgned for low-cost purificAtion and recycling of water" by ***Dr. Anurag Mudgal***, the first newsletter is released for the month of December 2019. (Attached as Report 2)

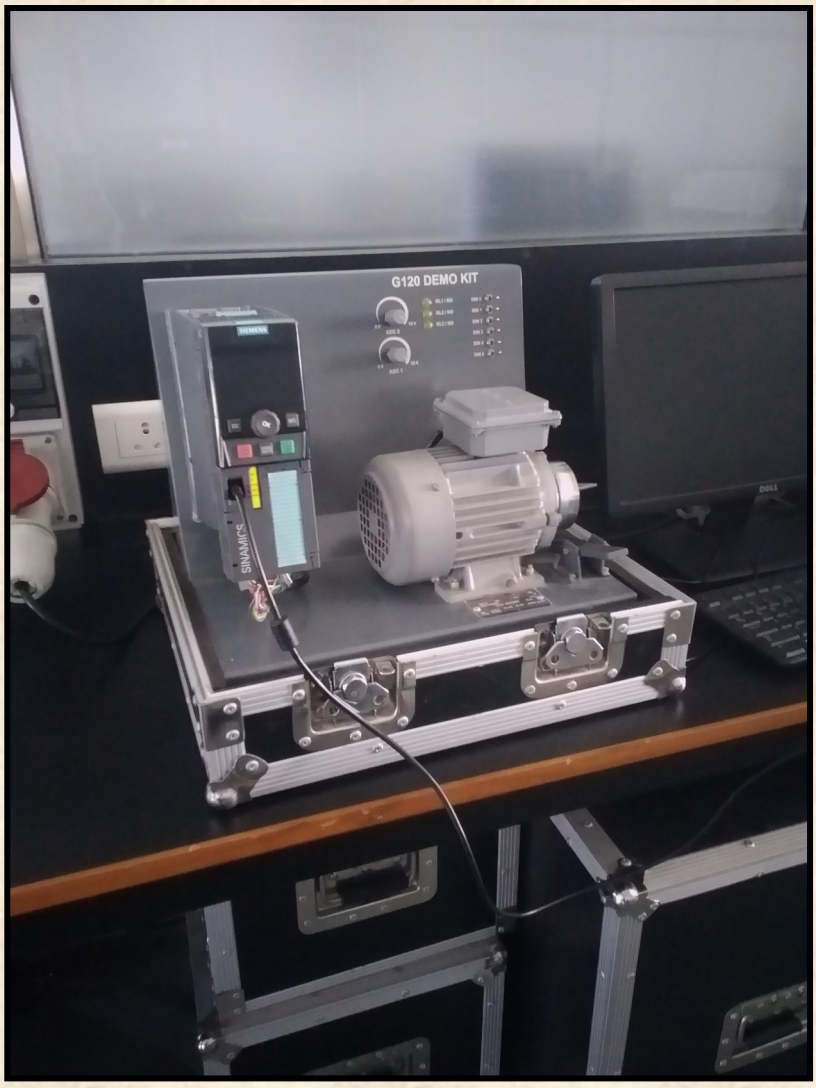
- ***Dr. Simrajeet Singh*** received the Best Paper award in 43rd National Systems Conference on Innovative and Emerging Trends in Engineering Systems (NSC 2019) held at IIT Roorkee, 6-8th December 2019.

- ***Dr. Vivek Kumar*** received the Second Best paper award in the category of Oral Short presentation at 10th International Conference on Industrial Tribology (ICIT-2019), 1-4th December , 2019, IISc Bangalore, India.

STAFF

TRAINING OR INSTALLATION OF MAJOR EQUIPMENT

Mr. Arvind Makwana attended "Basics of AC & DC Drive" course – a 5 days STTP by Siemens C.O.E. – SOT, PDPU by Trainer Mr. Labhanshu Sharma for the Equipment : Sinamics G120 drive module with 1phase induction , 1 HP motor with 0.75 power factor and S700 drive for 3 phase DC motor 3HP.



STUDENTS

WORKSHOPS ATTENDED

Kush Thakar, attended the workshop on "Indo-Swiss Building Energy Efficiency Camp (BEEP Camp-2019)" at CEPT University organized by Building Energy Efficiency Project and Bureau of Energy Efficiency (BEE) dated 15- 22nd December 2019 under guidance of ***Dr. Rajesh Patel*** and Mr. Gaurav Patel (GERMI).

Workshop on "Indo-Swiss Building Energy Efficiency Camp (BEEP Camp-2019)"

STUDENTS

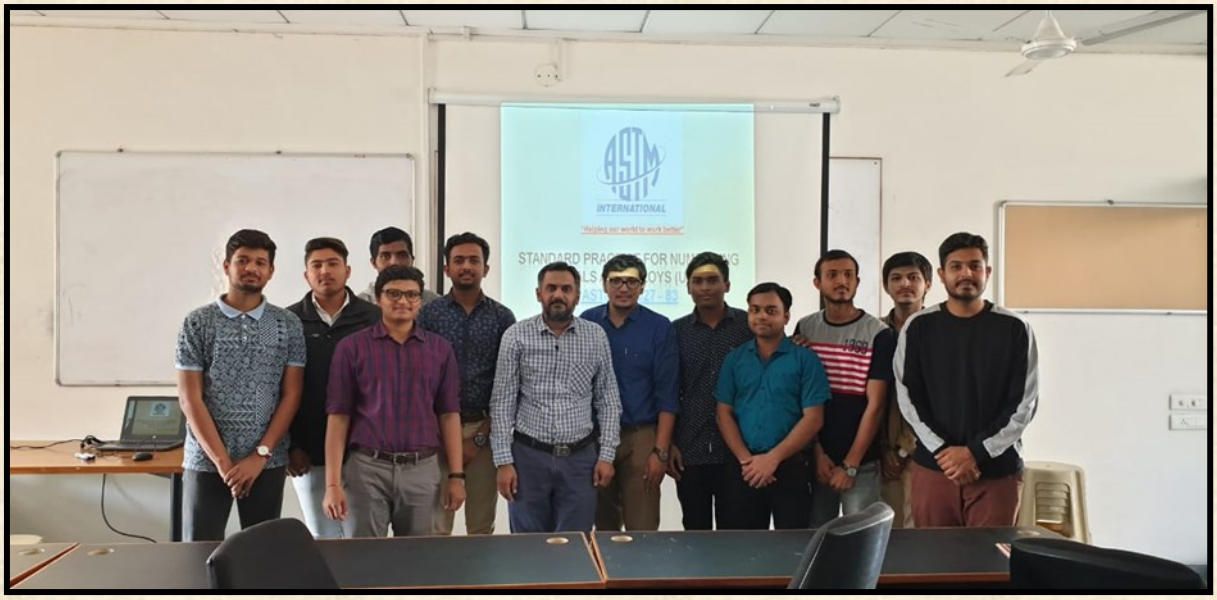
WORKSHOPS ATTENDED

- M. Tech (Manufacturing) students attended One day workshop on BRAZGIN organised by Keepsake and Lucas Milhaupt at L D College Ahmedabad on 5th December 2019.

M. Tech Students at Workshop on BRAZGIN

STUDENTS
WORKSHOPS ATTENDED

- Young Professional seminar by M.Tech (Manufacturing) on 10-11th December 2019 on ''ASTM standards for Mechanical Testing''.



Young Professional Seminar– M.Tech Manufacturing

- Young Professional Seminar by PhD scholars for M.Tech (Manufacturing) organised on 3rd December 2019.

Young Professional Seminar by PhD scholars

STUDENTS

WORKSHOPS ORGANIZED

The Industry Connect 2019 was supported by the M. Tech Design 2019 batch from student end. They have managed each stage of the event to make it happen smoothly.

Industry Connect 2019

Parth Mody (18MMT008) was involved in an Interactive session with Industrial persons and Poster Presentation during Industry Connect 2019, Department of Mechanical, under guidance of ***Dr. Jatin Patel*** held on 6th December 2019.

Poster Presentation during Industry Connect 2019

STUDENTS

ORSP PROJECT

The following Student Research Projects are ongoing during the month of December 2019 :

Sr. No	Title of the Project	Name of the faculty	Name of the Student	Amount of the Project (in INR)
1.	Development of a multi - functioning smart wheelchair.	Dr. Jaydeep Patel	1. Chirag Chauhan (18MMD001) 2. Parthiv Chudasama (15BME129D) 3. Manan Darji (15BME131D)	216000
2.	Damage Detection In a Pipe Using Vibration Based Non Destructive techniques	Dr. Nirav Patel	1. Neel Gandhi (18MMD005) 2. Bhargav Bhavsar (18MMD007)	219000
3.	Development of Humidification-Dehumidification based Water Desalination Technique using Solar Energy	Dr. Rajesh Patel	1. Nidhi Trapasia (17MME007) 2. Yash Dulani (18MMT018)	202500
4.	Design and Manufacturing of Bio-metric Splints for ankle fracture or dislocation using Additive Manufacturing	Dr. Pavan Gurrala	1. Amaan Shahana (16BME006) 2. Anuj Gandhi (16BME012) 3. Mann Parmar (16BME095) 4. Honey Shah (16BME095)	92000
5.	Establishment of sound Cu to Cu joint by Gas Metal Arc Welding	Dr. Vishvesh Badheka	1. Rishabh Desai (15BME026) 2. Raghavendra Darji (18RME008)	50000
6.	An Experimental investigation of Nitinol shape memory alloys using Non-conventional machining techniques	Mr. Rakesh Chaudhari & Dr. Jay Vora	1. Sheth Manav Bhaveshbhai (17BME101) 2. Gajjar Kunj Rajesh (17BME025) 3. Aryan Jain (17BME033)	72000
7.	Effect of impeller geometry on cavitation, noise and performance of the centrifugal pump.	Dr. Vivek Patel & Dr. Rajesh Patel	1. Thakkar Sushil Sureshbhai (18MMT013) 2. Vala Henil Nileshkumar (18MMT002)	157600
8.	CONCRETE 3-D PRINTER to design and develop a 3d printer for optimizing the structural properties of 3-D printed concrete structures.	Dr. Jay Vora & Mr. Naimish Bhatt	1. Dhanraj Patel (18BME015)	155918
9.	Design and Analysis of surgical tools derived using compliant mechanisms.	Mr. Krunal Mehta	1. Dev H Shah (17BME022) 2. Aman Patel (17BME005) 3. Gaurav Patel (17BME027)	125287
10.	Stress distribution around a cut -out in infinite laminated composite plate subjected to in-plane loading	Dr. Nirav Patel	1. Tank Sarang D. (18MMD014)	33200
11.	Application of UAV at Siachen Glacier	Mr. Krunal Mehta	1. Kapadia Hardik Snehal (17BME038)	196000

STUDENTS

ORSP PROJECT

The following Student Research Projects are ongoing during the month of December 2019 :

Sr. No	Title of the Project	Name of the faculty	Name of the Student	Amount of the Project (in INR)
12.	Design and analysis of suspension system consisting of concentric springs for off-road vehicles.	Mr. Krunal Mehta & Mr. Rahul Deharkar	1. Mann Shah (17BME042) 2. Suthar Yug Sandeepkumar (18BME128)	66080
13.	Removal of Flouride and Phosphate ions from Ground water through Continuous Consecutive Electrocoagulation	Dr. Anurag Mudgal & Dr. Manish Kumar	1. Aasi Ansari (18MNE010)	160000
14.	Development of a cost-effective Metal Additive Manufacturing Process for fabrication of 3 D Structural components	Dr. Pankaj Sahlot	1. Onattu Rohan Sony (16BME060) 2. Gor Meet Vinodkumar (19MMM013) 3. Harsh Soni (19MMM007) 4. Gaut Singh Rajput (19MMM006)	76900
15.	Development of Activated TIG welding (A-TIG) for Low alloy steels	Dr. Jay Vora & Mr. Rakesh Chaudhari	1. Chokshi Sanket Naimeshbhai (17BME014) 2. Parikh Hardik Hetal (17BME029) 3. Hetul Shah (17BME032) 4. Harshit (17BME031)	80000
16.	Study of vertical falling film over a fluted pipe to improve fresh water production	Mr. Rahul Deharkar	1. Mehta Bhavya Bhadreshbhai (17BME046) 2. Patel Joban Ramjibhai (17BME071) 3. Patel Kishan Hareshbhai (17BME072) 4. Dhakane Vishal Uttam (18MNE011)	137000
17.	Making an Aeroamphibious drone which can move efficiently and swiftly.	Mr. Krunal Mehta	1. Vora Dharmik Ketan (16BME123) 2. Verma Harsh Pyarelal (16BME122) 3. Sandeep Yadav (16BME088) 4. Paravila Nikhil Johny (16BME137)	111600
18.	Design and Performance Optimization of electronic continuously variable transmission (eCVT) to improve power transmission and improve fuel economy and to develop a cost-effective hybrid transmission system with variable tuning options.	Mr. Rahul Deharkar	1. Devam Patel (16BME021) 2. Apoorva Parimal Panchal (17BCP006)	132800

STUDENTS

ORSP PROJECT

The following Student Research Projects are ongoing during the month of December 2019 :

Sr. No	Title of the Project	Name of the faculty	Name of the Student	Amount of the Project (in INR)
19.	Water purification using cold Plasma	Dr. Manish Kumar & Dr. Anurag Mudgal	1. Sumit Bainjwan (18MNE006)	200000
20.	Development of Small Scale (25 Houses) Solid Waste Segregation and Management Plant for Ahmedabad and Gandhinagar Region	Dr. Debasis Sarkar & Dr. Anurag Mudgal	1. Sukhbir S. Khalsa (17BCL107) 2. Purohit Kuldeep Balvantsingh (17BCL081)	105000
21.	Solar Distillation	Mr. Parth Prajapati	1. Yashkumar Manharbhai Patel (18MSE012)	110000
22.	Solar Desiccant Indirect Evaporative cooling Air Conditioner	Dr. Jay Vora	1. Jeet Sanjay Mehta (18MSE008)	145000
23.	Ultrasonic Welding of Plastics	Dr. Vishvesh Badheka	1. Kairav Parmar (16BME159D)	76000
24.	Friction Stir Welding on Dissimilar Metals	Dr. Vishvesh Badheka	1. Solanki Darshan Anilbhai (19MMM011) 2. Jaynishkumar Hasmukhbhai Idhariya (19MMM009)	94000

REPORT -1

Date: 6th December, 2019
Venue: CLT1 - PDPU

Industry Connect Event – 2019

Organized by Department of **M**echanical **E**ngineering
School of Technology, PDPU

Event Organizer:

Dr. Nirav Patel, Department of Mechanical Engineering
Dr. Jaydeep Patel, Department of Mechanical Engineering

Present Industry Leaders:

Sr. No	Name	Position	Company Name	Address
1	Dr. Pradip Kumar	Team Leader-Structural	Altran Technology	Noida
2	Mr. Satish Pandey	Head Strategy, Marketing & Quality Management	Siemens Ltd.	Mumbai
3	Mr. Kumar Kalyani	Senior Executive Project Management	Siemens Ltd.	Baroda
4	Mr. Nitin Jansari	Dy. General Manager (Design and Engineering)	Inox India Limited	Katol
5	Mr. Anand Misra	Plant Quality & Launch, SVAP	Ford India	Ahmedabad
6	Mr. Alok Das	Vice President – Business Development	Suzlon Energy Ltd.	Ahmedabad
7	Ms. Aashana Haribhakti	Director – TCR Advanced	TCR Advanced Engineering Pvt. Ltd.	Vadodara
8	Mr. Aakash Trivedi	Vice President Training & Development	TCR Advanced Engineering Pvt. Ltd.	Vadodara
9	Mr. Tejas Mehta	Director	Tejas Metal & Plast Products (Group Company of VINOD ENGINEERS)	Ahmedabd
10	Mr. Vishal C. Rajyaguru	Assistant Manager	Ingersoll-Rand (India) Ltd.	Ahmedabad
11	Mr. Asit Rathod	Manager, Research and Development	Hitachi Hi-Rel Power Electronics Pvt. Ltd.	Gandhinagar

12	Mr. Krunal Patel	Manager, Research and Development	Hitachi Hi-Rel Power Electronics Pvt. Ltd.	Gandhinagar
13	Mr. Chirag Shah,	Sr. Manager-(Piping Stress)	Jacobs Engineering India Private Limited-Vadodara	Baroda
14	Mr. G.S Bhammar	(Engineer-R&D)	Ice Make Refrigeration Limited	Gandhinagar
15	Mr. Anand Savaliya	Director (Technical)	RETARC – Rajkot Engineering Testing and Research entre	Rajkot
16	Mr. Haresh Sagaparia	M.D.	Brahmani Oil Corporation, Rajkot	Rajkot
17	Mr. Ketan Dhruv	Deputy General Manager, Bosch Production System	Bosch Rexroth (India) Ltd.	Ahmedabad

Few Photographs:

IH$_2$O Newsletter – December 2019

India-H2O project launched

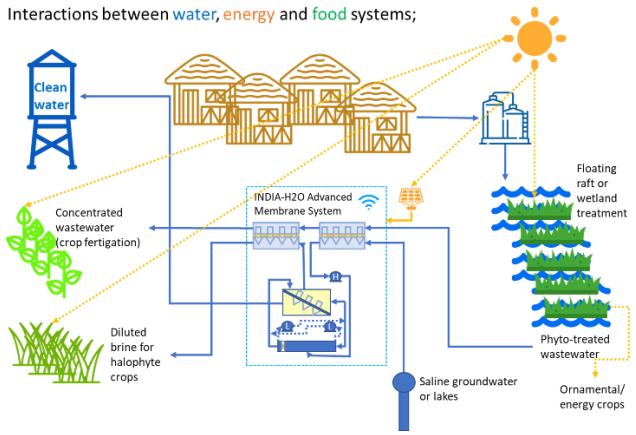
Water is an essential human need and over the next decade the number of people affected by severe water shortages is expected to increase fourfold. In developing countries that are most affected, 80-90% of all diseases and 30% of all deaths result from poor drinking water quality.

These challenges are acutely felt in India, where population growth, industrialisation and climate change exacerbate the crisis. Water quality, water shortage and accumulation of pollutants are threats which must be addressed to maintain sustainable development in both rural and urban areas across India and other emerging economies.

In July 2019 the European Union and India's Department for Biotechnology jointly funded INDIA-H20 almost 4M€ or more than 3M Lakhs to develop, design and demonstrate high-recovery, low-cost water treatment and recycling systems for saline groundwater and industrial wastewaters. The focus for developments will be in the arid state of Gujarat, where surface water resources are very scarce.

We will develop new technologies to massively reduce energy consumption and use solar power to minimise water costs.

These solutions will be demonstrated in small-scale rurally relevant low-cost systems converting brackish groundwater for use as safe drinking water. To minimise water losses new plant-based solutions for recycling domestic wastewater and making use of salty brines in crop cultivation will be developed.



For specific industrial wastewater in textile, desalination and dairy we will develop and demonstrate cost-effective high-efficiency hybrid technologies for water recycling with minimum liquid discharge, using advanced membrane technologies to achieve the required water quality for recycling.

A new Centre of Excellence will be established in water treatment technologies, design operation and monitoring to sustain the adoption and training in Indian of these new technologies.

The EU India collaboration will also support the development of business models to exploit the developed solutions to mutual EU/India economic advantage.

Professor Anurag Mudgal the India Coordinator welcomes the partners to the first IH$_2$O meeting at PDPU

A Strong Consortium of EU and Indian Partners

The IH2O project is led by Pandit Deendayal Petroleum University, Dr Anurag Mudgal and the University of Birmingham's Professor Philip Davies and includes a total of 16 partner organisations who came together in Ahmedabad in February 2019 to launch the project.

India's National Environmental Engineering Research Institute and *Govind Ballabh Pant Agricultural and Technological University* for their expertise in bio-based systems and detailed knowledge of India's water challenges. Specific EU expertise comes from Ben Gurion University, Israel world-leading expertise in salt-tolerant plants supporting the integrated bio-treatment concepts of the project.

Central to the INDIA-H$_2$O technology focus is *Aquaporin, Denmark* who have taken the research and development of new membrane technologies to new levels based on their life-science expertise in protein formulation and is an essential provider of knowledge and expertise in the design and piloting studies.

EU partners from Spain *LEITAT* and *CITEM* are experts in both desalination and industrial wastewater solutions and approaches to water management and recycling in arid regions threatened by water shortage and climate change. Spain's Energy, Environmental and Technological Research Centre is the home for Europe's is the largest concentrating solar technology research, development and test centre.

India's Central Electronics Engineering Research Institute, Pilani bring expertise in instrumentation technologies to provide drinking water and decision support system for water quality monitoring and can develop the web-based systems to ensure optimum management and reliability of INDIA-H$_2$O systems.

The consortium has a strong Indian industrial representation from Davey Products, the winners of the "MAKE IN INDIA 2016" Award for Membrane

Research and Development and Envirochem Services are active in the supply of water treatment systems in India.

Aston University and Jadavpur University together with Modus Research and Innovation will ensure opportunities for mutually beneficial exploitation of the projects are outputs are explored and supported. IHE Delft Institute for Water Education will provide water treatment expertise and socio-economic and policy analyses. Together this newly formed consortium has all the inter-disciplinary research excellence and expertise to deliver an exciting and highly innovative project to cement old and develop new relationships between India and the EU around the subject of water.

New Report shows groundwater stress is rising

Emphasising the importance of the India-H$_2$O project to help adaptation to climate change and mitigate the negative impacts of water abstraction from natural groundwater sources. A recent report in the journal Nature suggests that even under fixed industrial and domestic water demands and fixed irrigated area, increased irrigation demand due to climate change may have a major impact on future groundwater depletion volumes. The rate of depletion of aquifer water which already reached more than 4,000 km^3 in 2010 could double according to climate change models. India is one of the countries identified where the problem could be most acute.

Forward Osmosis – a key new technology

Forward osmosis is a natural process, which takes place

Forward Osmosis is how trees draw large amounts of water to heights far above the ground

all around us on an everyday basis. Forward osmosis enables plants to transport water from their root systems to their leaves and it provides the primary means of transporting water in and out of cells across most organisms in Nature. The India-H$_2$O project plans to exploit the products developed by partners Aquaporin, Denmark and Davey, India to help reuse and recycle water.

The main difference between forward osmosis membranes and reverse osmosis membranes is that reverse osmosis membranes require high amounts of energy whereas forward osmosis membranes require only osmotic pressures. This makes them an ideal component for development of low-energy water purification systems.

The perfect crop for saline conditions

Probably you have already eaten Salicornia, often called Samphire on a salad or in a stew.

Gnocchi with butter and samphire which can grow in salty conditions

Already, almost one third of farmed areas are affected by salinity (too much salt) making it is essential that new crops with greater salt tolerance than conventional agricultural crops are farmed.

Salicornia is known across the world by many different names. Samphire (English), glasört (Swedish), zeekraal (Dutch), चट्टान पर उगनेवाला सुगंधित पत्तियों का एक पौधा (Hindi), ਸੰਢਾਇਚ (Punjabi), and hamcho (Chinese).

Dr Moshe Sagi from Ben Guirion University, Israel is a worldleading expert in this area and is collaborating in India-H$_2$O to support the development and establishment of Salicornia cropping systems in arid regions of Gujarat.

New technologies for water recycling in the dairy industry

The dairy industry is a huge consumer of water, mainly for cleaning to ensure our fresh milk and dairy products are safe. India-H$_2$O collaborator *Madhur Milk Dairy* has been working with LEITAT, Spain to design a new water treatment process to recycle the water and cleaning chemicals used in the diary. If successful this will save the use of more than 1,000 m^3 of fresh water and reduce processing cost for the diary. Madhur is a cooperative run by and for Gujarati farmers, so the development will put money back into the pockets of local people as well as reducing the strain on water resources.