



# POORNIMA

## COLLEGE OF ENGINEERING

Promoted by Shanti Education Society, Affiliated to Rajasthan Technical University & Approved by AICTE

### A Report on 2-days Faculty Development Program

**TITLE AND DURATION:** “Alternative fuel” from 4 – 5 September, 2020.

**SPONSORS:** TEQIP-III, Rajasthan Technical University Kota.

**SUPPORTERS:** Rajasthan Technical University Kota.

**ORGANIZERS:** Rajasthan Technical University, Kota and Department of Mechanical Engineering, Poornima College of Engineering, Jaipur.

**OBJECTIVES:** The event aims to provide a forum to exchange views, ideas of latest innovations in the field of alternative fuels.

#### **EXPECTED OUTCOMES:**

- To provide research-oriented discussion along with theoretical concepts, which shall facilitate the understanding of process through practical implementation in area of alternative fuels.
- Bringing together the experts of alternative fuels, technologists, enthusiasts, and faculty to discuss the Latest issues and possible solutions in area of fuels.
- Identifying Industry challenges and sensitize about latest trends and technologies in area of alternative fuels.

## BROCHURE / POSTER / LEAFLET / FLYER:

### PCE ORGANIZING COMMITTEE

Mr. Devendra Somwanshi	Registrar, PCE
Dr. Umesh Kanan	Professor, PCE
Dr. Jayant K. Purohit	Professor, PCE
Dr. Yashpal	Associate Professor, PCE
Dr. Rahul Sen	Associate Professor, PCE
Dr. Surendra Kumar Saini	Associate Professor, PCE
Dr. Sagar Kumar	Associate Professor, PCE
Dr. Robin Gupta	Associate Professor, PCE
Dr. Akshay Jain	Assistant Professor, PCE
Dr. Bhuvnesh Sharma	Assistant Professor, PCE
Mr. Bhavesh Devra	Assistant Professor, PCE
Mr. Amit Mandal	Assistant Professor, PCE
Mr. Sanjay Kumawat	Assistant Professor, PCE
Mr. Kalpit Jain	Assistant Professor, PCE
Mr. Ashwani Kapoor	Assistant Professor, PCE
Ms. Asha Kumawat	Assistant Professor, PCE
Mr. Rakesh Sharma	Assistant Professor, PCE
Mr. Dhananjay Kumar	Assistant Professor, PCE
Mr. Buddhi P. Panwar	Assistant Professor, PCE
Mr. Rahul Sharma	Assistant Professor, PCE

### ELIGIBILITY

This course is open to all the Faculty Members of AICTE Approved Institutions, Research Scholars, and Persons working in R&D organizations or Industry. Number of participants for FDP is limited. All the sessions will be conducted online only.

### REGISTRATION AND FEE PARTICULARS

- There is no registration fee for faculty from AICTE approved Institutions, Participants from Industry, and Research Scholars.
- Registration for the program may be done by filling the Registration Form online, Reg. Link: <https://tinyurl.com/y3pargcj>

### IMPORTANT DATES

Last date of receipt of application	September 01, 2020
Intimation of selection by mail	September 02, 2020
FDP duration	September 04-05, 2020

### CORRESPONDENCE

**Dr. Narayan Lal Jain** (Professor & Head, ME)  
✉ : [narayan.jain@poornima.org](mailto:narayan.jain@poornima.org) • ☎ : +91-9414728922

**Dr. Raj Kumar Satankar** (Associate Professor, ME)  
✉ : [raj.kumar.satankar@poornima.org](mailto:raj.kumar.satankar@poornima.org) • ☎ : +91-8561995290

**Mr. Shailendra Kasera** (Assistant Professor, ME)  
✉ : [shailendra.kasera@poornima.org](mailto:shailendra.kasera@poornima.org) • ☎ : +91-9983144773

### Venue

Department of Mechanical Engineering  
Poornima College of Engineering  
ISI-6, RIICO Institutional Area, Sitapura, Jaipur, Rajasthan 302022  
[www.pce.poornima.org](http://www.pce.poornima.org)

### TEQIP-III SPONSORED

## Faculty Development Program on "ALTERNATIVE FUELS"

### September 4-5, 2020

### Organized by

Rajasthan Technical University, Kota & Department of Mechanical Engineering

## POORNIMA COLLEGE OF ENGINEERING

Affiliated to RTU, Kota • Approved by AICTE & UGC under 2(f) • Accredited by NBA

### RESOURCE PERSONS

The resource persons for the FDP will be Eminent Professors and Experts in the area of Alternative Fuel from IITs, NITs and other Esteemed Institutions.

### ABOUT TEQIP-III

The Project, third phase of Technical Education Quality Improvement Programme (referred to as TEQIP-III) is fully integrated with the Twelfth Five-year Plan objectives for Technical Education as a key component for improving the quality of Engineering Education in existing institutions with a special consideration for Low Income States and Special Category States and support to strengthen few affiliated technical universities to improve their policy, academic and management practices.

### RAJASTHAN TECHNICAL UNIVERSITY

Rajasthan Technical University (RTU) is located in Kota in the state of Rajasthan. It was established in 2006 by the Government of Rajasthan. The University currently affiliates about 129 Engineering Colleges, 4 B.Arch., 41 MCA Colleges, 95 MBA Colleges, 44 M.Tech. Colleges and 3 Hotel Management and Catering Institutes. The University aims to provide quality technical education which may help Rajasthan in its technical development and will boost technical environment in the country.

### POORNIMA COLLEGE OF ENGINEERING

Poornima College of Engineering (PCE), established as a brand of technical education in the year 2000, has its own glorious legacy of leading the young engineers to the mammoth sky of success. Its accomplishments forecast its journey through the hardships and its triumph over them one after another. PCE left no stone unturned since its establishment in turning the glorious vision into unbelievable reality providing the platform for knowledge and research and their practical implementations in different engineering professional prospects. Glorious glimpses of PCE:

- Highly recognized and renowned affiliated technical institution all over Rajasthan with built up area more than 3.5 lac square feet
- Affiliated to RTU, Kota & approved by AICTE, New Delhi
- The most preferred NBA Accredited Engineering College with running of six specializations of Engineering at UG Level (CSE, ECE, EE, ME, IT, CIV) and two at PG level (CS & VLSI)
- The only institution permitted by RTU to admit FN/PIQ Gulf students & designated as centre of excellence by IBM

### DEPARTMENT OF MECHANICAL ENGINEERING

The Department of Mechanical Engineering of PCE came into existence in the year 2004 with an alignment of the department's evolution with key events and technological advances for the betterment of society and nation. At present, it has the intake of 120 students providing all the amenities of infrastructure related to knowledge, research, experiments

### ABOUT FACULTY DEVELOPMENT PROGRAM

Alternative fuels are substances that can be used as fuels, other than conventional fuels which serve, at least partly, as a substitute for fossil oil sources in the energy supply to transport. Alternative fuels also have the potential to contribute to its decarbonization and enhance the environmental performance of the transport sector. Alternative fuels continue to hold promise, but for a variety of reasons none has yet significantly penetrated the vehicle market around the world. There are several fuels and propulsion systems that offer the possibility of displacing oil and lowering vehicle CO2 emissions, including natural gas, liquefied petroleum gas (LPG), alcohol, and biodiesel for internal combustion engine vehicles; electricity for battery-powered vehicles; and hydrogen (produced from any number of different fuels) for fuel cell-powered vehicles.

### TOPICS TO BE COVERED

- Recent development in the field of alternative fuels
- Hydrogen as a future fuel
- New perspective of alternative fuels
- Future challenges of alternative fuels
- Potential of Bio-fuels in India
- Bio-diesel formulation techniques
- Engine performance and emissions of alternative fuels

### OBJECTIVES OF THE FDP

The event aims to provide a forum to exchange views, ideas the latest innovations in the field of Alternative Fuels. It also offers learning on basics, emerging trends and challenges in the field of Alternative fuels. In addition it helps to improve ability in carrying out research, testing consultancy in the above mentioned area.

Pollution levels reaching alarming levels, world over there is a quest to search for the environment-friendly alternative fuels and their optimal use may lead to minimizing environmental impacts, produce minimum secondary wastes to make them economically viable.

### FDP COMMITTEE

#### CHIEF PATRON

Prof. (Dr.) R. A. Gupta  
Hon'ble Vice Chancellor, RTU Kota

#### PATRON

Dr. S. M. Seth  
Chairman (Emeritus) Poornima Group

Ac. Shashikant Singh  
Chairman, Poornima Group

#### ADVISORS

Mr. M. K. M. Shah  
Director General, Poornima Group

Mr. Hari Singh Shekhawat  
Director, (Infrastructure), Poornima Group

Ac. Rahul Singh  
Director, Poornima Group

Dr. Mahesh M. Bunde  
Principal & Director, Poornima College of Engineering

Mr. Pankaj Dharma  
Vice-Principal, Poornima College of Engineering

#### RTU (ATU) TEQIP-III COORDINATOR

Prof. (Dr.) Dharendra Mathur

#### RTU EVENT COORDINATOR

Mr. Vaibhav Gupta (RTU, Kota)

#### RTU (ATU) TEQIP-III COMMITTEE

Dr. Harish Sharma	Nodal Officer
Prof. D. K. Sambariya	Nodal Officer (Procurement)
Dr. S. D. Purohit	Nodal Officer (Finance)
Dr. Irum Alvi	Conference
Mr. Santosh Sharma	Expert Lecture
Mr. Anshul Bansal	GATE & Induction
Mr. Dinesh Kumar	Workshop

#### HOST INSTITUTE COORDINATORS

Dr. Narayan Lal Jain	Professor & Head
Dr. Raj Kumar Satankar	Assistant Professor
Mr. Shailendra Kasera	Assistant Professor

**Dr. Mahesh Bunde**  
B.E., M.E., Ph.D.  
Director  
Poornima College of Engineering  
ISI-6, RIICO Institutional Area  
Sitapura, JAIPUR




## ABOUT FDP:

Alternative fuels are substances that can be used as fuels, other than conventional fuels which serve, at least partly, as a substitute for fossil oil sources in the energy supply to transport. Alternative fuels also have the potential to contribute to its decarbonization and enhance the environmental performance of the transport sector. There are several fuels and propulsion systems that offer the possibility of displacing oil and lowering vehicle CO<sub>2</sub> emissions, including natural gas, liquefied petroleum gas (LPG), alcohol, and biodiesel for internal combustion engine vehicles; electricity for battery-powered vehicles; and hydrogen (produced from any number of different fuels) for fuel cell powered vehicles.


This Two days, TEQIP III, RTU (ATU) sponsored online FDP on **Alternative Fuels** is organized by the Department of Mechanical Engineering, Poornima College of Engineering, Jaipur under the aegis of Rajasthan Technical university, Kota.

About **Two hundred participants** from various parts of the country have registered for this Faculty development program. In these two days, six technical sessions were conducted by the eminent speakers from IITs and NITs.

## PROGRAM SCHEDULE:




**RAJASTHAN TECHNICAL UNIVERSITY, KOTA**  
&  
**POORNIMA COLLEGE OF ENGINEERING, JAIPUR**  
TEQIP-III (ATU) Sponsored Two Days Faculty Development Program on  
**"ALTERNATIVE FUELS"**  
September 4-5, 2020




### SCHEDULE OF ONLINE FDP

**DAY-1 ( Friday, September 4, 2020)**


**INAUGURAL FUNCTION OF FDP**  
Time: 09:00 AM - 10:00 AM




**Prof. (Dr.) R. A. Gupta**  
Chief Guest  
Hon'ble Vice Chancellor, RTU Kota




**Prof. (Dr.) Dharendra Mathur**  
Guest of Honour  
TEQIP Coordinator, RTU Kota



**Prof. (Dr.) Mahesh M. Bunde**  
Director & Principal  
PCE, Jaipur




**Mr. Vaibhav Gupta**  
RTU Event Coordinator




**Prof. (Dr.) Narayan Lal Jain**  
FDP Coordinator & HoD, ME, PCE

**SESSION-I**  
Time: 10:00 AM - 11:15 AM  
Topic: Recent development in the field of alternative fuels




**Dr. Rakesh Kumar Sharma**  
Indian Institute of Technology, Jodhpur

**SESSION-II**  
Time: 12:00 noon - 1:15 PM  
Topic: Prospects and challenges of alternative fuels



**Prof. (Dr.) L. M. Das**  
Indian Institute of Technology, Delhi


**SESSION-III**  
Time: 01:30 PM - 02:45 PM  
Topic: Future prospects of green and environmental friendly methanol economy



**Prof. (Dr.) Avinash Kumar Agarwal**  
Indian Institute of Technology, Kanpur


**DAY-2 ( Saturday, September 5, 2020)**

**SESSION-I**  
Time: 10:00 AM - 11:15 AM  
Topic: Hydrogen as a future fuel




**Prof. (Dr.) Dilip Sharma**  
Malviya National Institute of Technology, Jaipur

**SESSION-II**  
Time: 12:00 noon - 01:15 PM  
Topic: Introduction to the Gasifier and its Application




**Dr. Vikram Rathore**  
Sardar Vallabhbhai National Institute of Technology, Surat

**SESSION-III**  
Time: 01:30 PM-02:45 PM  
Topic: Introduction of biofuels



**Dr. T. N. Verma**  
Maulana Azad National Institute of Technology, Bhopal

**FEEDBACK CUM VALEDICTORY SESSION**  
Vote of thanks • Time: 3:00-3:30 PM



**Dr. Mahesh Bunde**  
B.E., M.E., Ph.D.  
Director  
Poornima College of Engineering  
ISI-6, FIICO Institutional Area  
Stapura, JAIPUR

## INAUGURAL SESSION:

The screenshot shows a Zoom meeting interface. The main slide is titled "TEQIP-III SPONSORED ONLINE FACULTY DEVELOPMENT PROGRAM ON ALTERNATIVE FUELS" and "Recent development in the field of alternative fuels". It features a portrait of Dr. Rakesh Kumar Sharma, Indian Institute of Technology, Jodhpur. The session is identified as "Session-1" on "Friday, Sep 4, 2020, 10:00 AM". Logos for Rajasthan Technical University, Kota and Poornima College of Engineering, Jaipur are displayed at the bottom. The Zoom toolbar at the bottom includes controls for Unmute, Start Video, Security, Participants (43), Chat, Share Screen, Pause/Stop Recording, and Reactions. A list of 43 participants is visible on the right side of the screen.

The screenshot shows a Zoom meeting interface with a slide titled "So, what is there besides gasoline?". The slide lists "The alternatives are:" followed by two columns of fuel types: Biodiesel, Electricity, Ethanol, Hydrogen, Methanol, Natural Gas, Propane, and P-Series. The Zoom toolbar at the bottom is visible, and the participant list on the right shows 46 participants.

## DETAILS OF RESOURCE PERSONS:

Dr. Rakesh Sharma, Associate Dean (R&D), IIT, Jodhpur.

Prof. L.M. Das Retired Professor at the Centre for Energy Studies, IIT Delhi

Prof. Avinash Agarwal from IIT, Kanpur

Professor Dilip Sharma, MNIT, Jaipur

Dr. Vikram Rathore from SVNIT

Dr. T.N. Verma from MANIT Bhopal

## CV OF SPEAKERS :



**Prof. R. A. Gupta,**  
**Vice -Chancellor, Rajasthan Technical**  
**University, Kota (RTU, Kota)**

Professor R. A. Gupta, Vice -Chancellor, Rajasthan Technical University, Kota (RTU, Kota), has been associated with Malaviya National Institute of Technology, Jaipur (formerly MREC, Jaipur) for 30 years where he joined as Associate Professor in 1990, became Professor in 1999. Prior to joining MNIT, he served as Assistant Professor at MBM Engineering College, Jodhpur for about eight years. He did BE in 1980 and ME 1984 both in Electrical Engineering from MBM Engineering College, Jodhpur and Ph.D. from University of Roorkee (presently Indian Institute of Technology Roorkee) in 1996. Professor Gupta in his career, worked on various positions of administrative responsibility at MNIT Jaipur including Dean Faculty Welfare, Head Electrical Engineering Department, Co-ordinator TEQIP, Convener Faculty Grievance Redressal Cell, Chairman Departmental Research Committee (DRC), President Games & Sports, Proctor, Warden, PG Co-ordinator, Co-ordinator QIP centre, Chairman Industry-Institute Interaction Cell, Chairman Vision Document Preparing Committee, Convener NBA at MNIT and so many administrative responsibility at MNIT. Professor Gupta worked as Independent Director on the Board of Jaipur VidhyutVitaran Nigam Ltd, Jodhpur Vidhyut Vitaran Nigam Ltd, Ajmer VidhyutVitaran Nigam Ltd. and he is Member of Advisory committee, Rajasthan Electricity Regulatory Commission.

Professor Gupta made a contribution in research in various areas of Electricals Machines, Drives and Power Electronics, Renewable Energy etc. He published about 220 research papers and guided 18 PhDs.

He was also key person to Design and Developed a new Power Electronics laboratory out of one MHRD Grant in MREC for UG, PG, and Ph.D. Students. Prof. Gupta was also associated in research in Conditioning Monitoring of Electrical Machines and Power Electronics where he also worked on two sponsored research projects awarded by AICTE and MHRD.

Professor Gupta received Eminent Engineer's Award in recognition of eminence and contribution to the profession of Electrical Engineering by the Institution of Engineers (India) at Chennai on 7th November, 2019 and he also received a Life Time Achievement Award by The Institution of Engineers (India) at Jodhpur on 52th Engineers Day, 15th September, 2019. Professor Gupta is a Fellow of the Institution of Engineers (India), Senior Member of IEEE and life member of the Indian Society of Technical Education.

Professor Gupta has been assigned so many administrative responsibilities by the State Govt./Hon'ble Governor of Rajasthan like: Chairman of the committee to Grant of CAS (6000-7000, 7000-8000 and 8000-9000) to the Faculty Members of all Govt. Engineering College in Rajasthan, Prepare a scheme to switchover from Annual scheme to semester system, prepare syllabus, examination scheme, Choice based credit system on the guide lines of Modal Syllabus provided by AICTE to all the Polytechnic Colleges in Rajasthan from the session 2020-2021.





**Dr. Rakesh K Sharma,**  
**Associate Professor, Indian Institute of Technology,**  
**Jodhpur**

Rakesh K Sharma was born in village Sikrai in Dausa, Rajasthan in 1976. He received B.Sc. and M.Sc. in organic Chemistry from University of Rajasthan, Jaipur. After being employed at Zydus Healthcare limited, Ahemdabad and Central Salt and Marine Chemicals Research Institute (CSIR) where he worked on total synthesis and zeolite based heterogeneous catalysis respectively. Rakesh received his Ph.D. in 2007 from Department of Inorganic and Physical Chemistry, Indian Institute of Science, Bangalore where he discovered natural chiral pool based metalbisphosphinite complexes for asymmetric catalysis. He was awarded NIH Postdoctoral Fellowship for 2006-2010 at The Ohio State University, Columbus and Harvard University, United States. Presently, Rakesh is Associate Dean (R&D) and former head of chemistry department at Indian Institute of Technology Jodhpur. He has published more than 80 international research papers and 20 patents.

He has been awarded more than 15 international, national and industrial research grants of worth >8 crore. He has been selected best teacher based of student poll at IIT Jodhpur for his innovative teaching methods. He has developed various technologies using Rajasthani Clay such as Biofuels, Catalytic converters, water treatment, fast charging Li-Ion batteries, sensors and solid lubricants, highlighted in various print and electronic media worldwide. His water sensor technology has been bought and marketed by Panasonic Japan. His biofuel, catalytic converter and emollient technologies are under development stage by automobile and cosmetic manufactures. His current research interests focus on carbon-dioxide to methane, fast charging lithium ion batteries, heterogeneous asymmetric catalysis, and technologies for soil, air, and water remediation.



**Prof. L. M. Das**  
**Retired Professor,**  
**Centre for Energy Studies, IIT Delhi**

Dr. L. M. Das is currently Retired Professor at the Centre for Energy Studies, IIT Delhi. He took his Bachelor's degree in Mechanical Engineering from Regional Engg college, Rourkela in 1970 and M Tech degree from Indian Institute of Technology, Kharagpur and PhD from IIT, Delhi. Dr Das has got a teaching/research experience of about thirty-eight years to his credit. His primary areas of research interest include development of alternative-fuelled low emission engines/vehicles. He has supervised 34 PhD theses and about 78 M. Tech Projects in this area. Dr Das has published more than 80 research papers in various independently refereed international and national journals in the area of alternative fuels such as Hydrogen, CNG, Biodiesel and Hydrogen-CNG blend. Dr. Das has had a close international research interaction. He had several research assignments in University of California, Riverside(USA), Thornton Research Centre, Chester,(England) INRETS, Lyon, (France) and at the Instituto Superior Technico, Lisbon(Portugal). He had delivered invited lectures in several international symposia/conferences in India and abroad such as USA, England, France, Germany, Japan, Switzerland, Australia, Belgium, Netherlands, Thailand, Moscow, Turkey, Philippines, Nepal and Sri Lanka. He was a Member, Expert Group on Transportation constituted by the Steering Group of the National Hydrogen Energy Board, India as well as a Member of the CAR (Core group of Automotive Research) of the Govt of India. He was the Convener of the Technical Committee of the World Hydrogen Technology Convention held in August 2009 at New Delhi. Extremely eco-conscious in his research models aiming at sustainable growth and development he has been rather passionate about the use of Biodiesel extracted from several Indian non-edible seeds in existing vehicles. As part of a sponsored project by General Motors, vehicle was operated on road from Delhi to Kanyakumari using 20% biodiesel. He has been awarded "Rajiv Gandhi Samman" by the Department of Science and Technology, Government of Orissa as an Exemplary Scientist and Educationist for Achievements and contributions in the field of Non-conventional Energy Sources in 2005. This year in 2012 he has been a winner at the "Innovators Competition" for DST-Lockheed Martin India Innovation Growth Programme.



Dr Das has had several consultancy/projects sponsored by UNIDO, General Motors (USA), European Union, Shell, MNRE, and DST. With an effort to transfer the technology from lab to land, Dr Das has co-ordinated an academia-industry UNIDO-Sponsored project consortium consisting of IIT Delhi, Mahindra and Air products with support from UNIDO-ICHET, UNIDO (India) and ITPO in which world's first fleet of hydrogen-operated three wheelers were demonstrated during Auto-expo 2012 in New Delhi.



**Prof. Avinash Kumar Agarwal**  
**Department of Mechanical Engineering,**  
**Indian Institute of Technology, Kanpur**

Prof. Avinash Kumar Agarwal obtained his B.E. (Mech Engg., 1994) from Malviya Regional Engineering College, Jaipur and M.Tech. (Energy, 1996) and Ph.D. (Energy, 1999) from Indian Institute of Technology Delhi. After his Post-Doctoral Fellowship (1999 – 2001) stint at the Engine Research Center, University of Wisconsin, Madison, USA, he returned to India in 2001 and joined Department of Mechanical Engineering, Indian Institute of Technology Kanpur, where he is now serving as SBI Endowed Chair Professor. He was a Visiting Professor to University of Loughborough, UK, Photonics Institute, University of Vienna, Austria, Hanyang University, South Korea and Korea Advanced Institute of Science and Technology, South Korea.

At IIT Kanpur, Prof. Agarwal worked in the areas of IC engines, combustion, conventional fuels, alternative fuels, methanol fuelled engine development, hydrogen, fuel sprays, lubricating oil tribology, optical diagnostics, laser ignition, HCCI, particulate and emission control, and large bore engines. Prof. Agarwal has published more than 280 peer reviewed international journal and conference papers, 35 edited books, 63 books chapters and has 9300+ Scopus and 14500+ Google scholar citations. He is Associate Principle Editor of “FUEL”, Editor-in-Chief of Journal of Energy and Environmental Sustainability and Associate Editor of “ASME Journal of Energy Resources Technology”, International Journal of Vehicle Systems Modelling and Testing and the Journal of the Institute of Engineers (Series C), and editorial board member of IMechE International Journal of

Engine Research. He has edited “Handbook of Combustion” (5 Volumes; 3168 pages), published by Wiley VCH, Germany, which is the most updated compilation on combustion in the world.

For his outstanding contributions, Prof. Agarwal is conferred upon **Sir J C Bose National Fellowship** (2019) by SERB, Clarivate Analytics India Citation Award-2017 in Engineering and Technology, **Prestigious Shanti Swarup Bhatnagar Prize (2016)** in Engineering Sciences, Rajib Goyal Prize in Physical Sciences (2015); NASI-Reliance Industries Platinum Jubilee Award (2012); INAE Silver Jubilee Young Engineer Award (2012); Dr. C. V. Raman Young Teachers Award (2011); SAE International’s Ralph R. Teetor Educational Award (2008); INSA Young Scientist Award (2007); UICT Young Scientist Award (2007); INAE Young Engineer Award (2005); Devendra Shukla Research Fellowship (2009-12), Poonam and Prabhu Goyal Endowed Chair Professorship (2013-16), SBI Endowed Chair Professorship (2018-21) at IIT Kanpur; AICTE Career Award for Young Teachers (2004); DST Young Scientist Award (2002); and DST BOYSCAST Fellowship (2002).

Prof. Agarwal is highly cited researcher-2018 and is among top ten HCR from India, among 4000 HCR researchers globally in 22 fields of enquiry. He is an elected **Fellow of Society of Automotive Engineers** International, USA (SAE; 2012), **American Society of Mechanical Engineers** (ASME; 2013), Indian National Academy of Engineering (INAE; 2015), International Society for Energy, Environment and Sustainability (ISEES; 2016), Royal Society of Chemistry (RSC; 2018), National Academy of Science Allahabad (NASI; 2018) and **American Association for Advancement in Science** (AAAS; 2020). At IIT Kanpur, Prof. Agarwal has established a state-of-the art “Engine Research Laboratory” ([www.iitk.ac.in/erl](http://www.iitk.ac.in/erl)) and he is also the founder of IIT Kanpur’s Science and Technology Research Parks (Technopark@iitk; <http://www.technoparkiitk.com>).



**Prof. Dilip Sharma**  
**Professor, MNIT Jaipur**

Prof. Dilip Sharma is a Mechanical Engineering Graduate (1988) from MREC Jaipur (Now known as MNIT Jaipur). After working with CIMMCO Ltd, Bharatpur for a short while, he joined Roorkee University for Post Graduation in Thermal Engineering and was awarded with University Medal for securing highest marks in Post Graduation. Dr. Sharma joined as a faculty in Mechanical Engineering (1992) at MREC, which is now known as. He is presently working as Head, Department of Mechanical Engineering. He has done research in the field of biodiesels, engine performance, emissions and tribology investigations at MNIT Jaipur and was awarded Ph.D. degree from University of Rajasthan Jaipur.

12 students have completed Ph.D. under his supervision and **04** are pursuing in the field of Alternate Sources of energy. He has **published more than 150 research papers in Journals and Conferences**. He has filed **07 patents (2 Awarded)**, published **15 books** and **07 book chapters**. Dr. Sharma has completed **07 major R&D projects**. He has done more than **41 consultancy projects**.

He had been a member of various Selection Committees, Academic Councils and Board of Studies Various Universities and Colleges. He is associated with various academic bodies such as NBA, NAAC, AICTE and TEQIP etc. He had also been member of various committees in UPSC, DRDO and RPSC etc. He had been a member of Research Degree committee of PTU Jalandhar and MANIT Bhopal. He is actively associated in innovation activities and is a board member of State Innovative council (**SIC**) (Earlier known as GIAN) and member of many other bodies working in the field of Innovations. Dr. Sharma has taken various assignments at MNIT, Jaipur, such as Dean (Students Welfare & Alumni Affairs), Associate Dean (Students Welfare and Alumni Affairs), Coordinator Institute Security, Coordinator Transportation, Assistant Proctor, In-charge of Institute Guest house etc.

He at present is working with Alcohols, Hydrogen, Acetylene, Biodiesels, Waste vegetable oils



and other additives as substitution fuel in I.C. engines for single generation as well as trigeneration. He is also working in the field of Solar Cogeneration and Trigeneration systems.

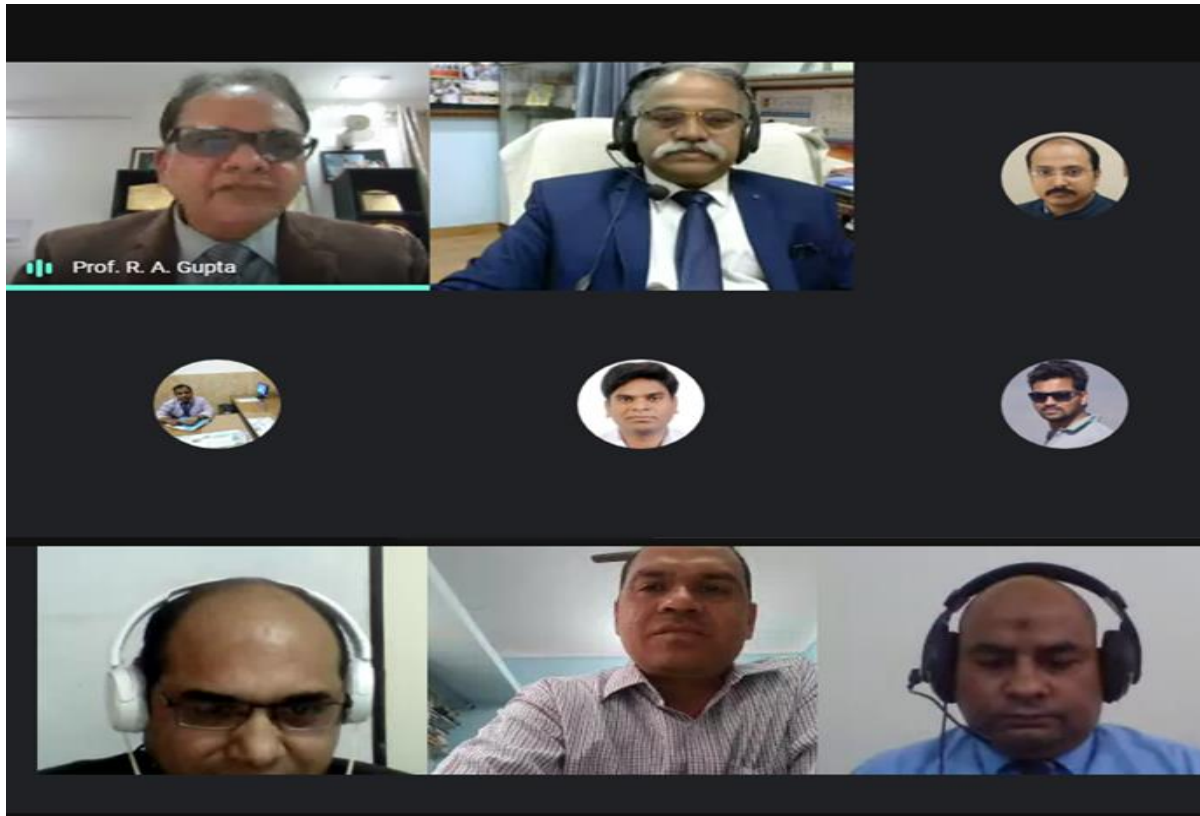


**Dr. T.N. Verma**  
**MANIT Bhopal**

Dr. T.N. Verma was born in Bhilai in Chhattisgarh state of India. He received his Bachelor of Engineering degree in Mechanical Engineering from Pt. Ravi Shankar Shukla University, Raipur in 2006. He did his Masters in Thermal Engineering from the department of Mechanical Engineering, MANIT Bhopal in 2009, Further, He received his PhD degree from National Institute of Technology Raipur and then joined National Institute of Technology Manipur as Assistant Professor in September 2015 and served there till May 2020.

Presently Dr. T.N. Verma is working as an Assistant Professor (Grade-I) in Mechanical Engineering department at Maulana Azad National Institute of Technology, Bhopal. His current areas of research interest includes computational fluid dynamics, heat and mass transfer, renewable energy and alternative fuels in internal combustion engines. Dr Verma has 70 international journal paper, 28 research papers in the proceedings of international and national Conferences, 11 book chapters and he has also published one (01) book in his name. He has been a 3 times Recipient prestigious Khel Shikhar Swarn Alankaran award given Chhattisgarh government. Dr. Verma is an active researcher and reviewer of various reputed journals published by Elsevier and Springer.

## GLIMPSES OF CONDUCTION:



Zoom Meeting

You are viewing Dr. Raj Kumar Satankar's screen

View Options

Participants (43)

Find a participant

Sanjay Kuma... (Co-host, me)

Dr. Raj Kumar Satankar (Host)

Dr. Raj Kuma... (Co-host)

Narayan Lal Jain (Co-host)

Shailendra Kasera (Co-host)

Rakesh Sharma

Anil Kumar Yadav

Ankit Sharma

Asha Kumawat

Ashwani Kapoor

BHAVESH DEVRA

BHUPENDRA VERMA

Bhumes Sharma(177)

Dhananjay Kumar

Dr Vikas Misra

Dr. Akshay Jain

Hukumchand Toshwal

Unmute

Start Video

Security

Participants

Chat

Share Screen

Pause/Stop Recording

Reactions

Leave

TEQIP-III SPONSORED ONLINE FACULTY DEVELOPMENT PROGRAM ON  
ALTERNATIVE FUELS

**Recent development in the field of  
alternative fuels**

Session-1  
Friday, Sep 4, 2020, 10:00 AM

Dr. Rakesh Kumar Sharma  
Indian Institute of Technology, Jodhpur

Rajasthan Technical University, Kota  
&  
Poornima College of Engineering, Jaipur

10:44  
04-09-2020

*Dr. Mahesh Bundele*  
B.E., M.E., Ph.D.  
Director  
Poornima College of Engineering  
ISI-6, FIICO Institutional Area  
Sitapura, JAIPUR



Programme was initiated by a formal inaugural ceremony in the esteemed presence of Mr. Dheerendra Mathur, TEQIP-III Co-ordinator, RTU Kota, Dr. Mahesh M. Bundeale, Director, Poornima College of Engineering Jaipur and other dignitaries of the institute.

The first technical session was conducted by **Dr. Rakesh Sharma, Associate Dean (R&D), IIT, Jodhpur**. He delivered his talk on **recent developments in the field of alternative fuels** where he focused on the need of bio-fuels to replace the fossil fuels. In addition to it **Prof. Sharma** also discussed results from current research studies on bio-fuel operated engines using catalytic converters. He also discusses about his experimentation and results with various clays.

**Second Technical session** was delivered by **Prof. L.M. Das from IIT Delhi** on the **prospects and challenges of alternative fuels**. Where he discussed about various challenges of bio fuels but his focused was on **Hydrogen as a clean and future fuel**. In his presentation he demonstrated various vehicles which are designed to operate with Hydrogen fuel. He also presented the comparison of the risk involved in hydrogen operated vehicle with the vehicles operated with other alternative fuels.

The last technical talk of the day was conducted by **Prof. Avinash Agarwal from IIT, Kanpur** on future prospect of green and environment friendly methanol economy. His talk was comprised of three important technical issues; **green, clean and future fuel of India, Methanol for SI**

*(Signature)*  
**Dr. Mahesh Bundeale**  
 B.E., M.E., Ph.D.  
 Director  
 Poornima College of Engineering  
 ISI-6, FIICO Institutional Area  
 Sitapura, JAIPUR



**Engine and DI-Ethyl Ether for CI engine.** He presented detailed comparison on properties and economics of methanol with existing fuels. He also compared IC Engine with Electric Vehicles and focused that IC engines are better than Electric vehicle in all respects. In his talk he supported, the use of hybrid vehicles instead of electric vehicle. **Prof. Agrawal** also discuss the economics of policy of Govt. of India to produce and use of 30% electric vehicle by 2025.

In the first session of second day of FDP professor Dilip sharma from MNIT, Jaipur delivered his talk on **hydrogen as an alternative fuel**. He discussed various properties of hydrogen and compared it with other fuels. One important aspect was also discussed to generate hydrogen by solar energy. He also discussed about main technologies, barriers and challenges in engines using hydrogen. He suggested various modifications require in IC engines for operating it with pure hydrogen. He also discussed use of hydrogen as a fuel with CNG, petrol and diesel fuel and discussed about hydrogen-based fuel cell to operate the vehicles.

The second session was conducted Dr. Vikram Rathore from SVNIT on introduction of gasifiers and its applications. He suggested to generate the gases using many types of waste bio mass generated in kitchen and agriculture farms and industries. He also discussed on the gasification systems and types of gasifiers with the potential of bio mass in India.

The last session of this FDP was delivered by Dr. T.N. Verma from MANIT Bhopal on Introduction to bio fuels. He mentioned the various types of plant seeds available in India which can be used to extract the oil and extracted oil can be used as fuel in IC Engines. He also informed that the use of edible oils is banned in India only the non-edible oil can be used as a fuel in India. But edible oils is being used as a fuel in USA.

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**Poornima College of Engineering - Activity Report**

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**Poornima College of Engineering - Activity Report**

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## FEEDBACK ANALYSIS:

	Effective use of Time	Effectiveness of Theoretical Session	Course Content Planning and Organization	Effectiveness of Hands on Sessions
<b>Strongly Agree</b>	28	25	31	24
<b>Agree</b>	11	11	8	12
<b>Neutral</b>	0	6	0	3
<b>Disagree</b>	0	0	0	0
<b>Strongly Disagree</b>	4	1	4	4

