

Faculty Corner

Research Article



Changing Patterns in Energy Technologies – an Electrical Engineer’s viewpoint. The world has increased focus on sustainability and green future; and these are among the UN development goals. The nations across the globe are heavily cutting down the fossil fuel and natural gas usage with a desire to subvert the climate changes, while sustaining and improving human living standards. This is actually driving the economies today. The renewable resources are seen as a potential solution to meet human energy needs, however, its intermittent nature does not ensure the continuity of the electrical supply and has always raised questions on availability. The utilization of desert land for solar-based generation, offshore wind generation, employing mechanical systems for tide/ocean wave-based generation, micro and mini hydel power generations are poised to be the key renewable resources. The electric power grid although is getting adept to the renewable energy sources, needs to be overhauled for the evacuation of large power generated at remote locations. The ‘smart’ grid, based on sensor inputs, analytics and governed by the economies of scale is bound to power the green future.

The building management systems (BMS) too is likely to change the way energy usage is undertaken. Energy self-sufficiency is the expectation for the skyscrapers and dependence on the grid needs elimination. A key to reduction in energy consumption is driven by the sensor technology where heating, ventilation and air-conditioning (HVAC) systems is the major consumer. Redesigning of the HVAC central chillers and energy efficient heaters is happening.



- The LED based lighting arrangements are looked at carefully for low – carbon emission with illumination, architectural and aesthetic aspects. The waste generated across cities are recycled and the energy generation plants are established. The noise and carbon free luxurious transportation is the demand of the day for the urban and rural areas.
- The electric vehicles are the evolution backed by battery technology and power electronic
- controller operated electric motors. The battery storage offers a limited driving range and can be charged at geographically sparse charging units or at home from the electric power grid. Not only the personal travel but also the public transport and goods transport is using electric vehicles and is already in trial use and the extensive usage is underway. The battery technology growth and its rising energy density paves way to ensure the continuity of power supply and the needed energy. An important role is played by the power electronics in controlling, operating and extending the life cycle of the batteries. However, the initial cost, life cycle, fire safety and maintenance of batteries contrasts their imminent future. Alternatively, exploration of hydrogen fuel-based technologies is evaluated for their benefits and the technological
- advancements.
- Interestingly, these technological solutions are flexible enough to incorporated computing tools e.g. AI, nature inspired algorithms, data analytics and statistical inferences. Though evolving technologies are quite promising, efficient, sustainable, each individual is expected to be mindful of energy consumptions. Let us drive towards the greener future.

Dr S C Vora
Professor
Department of Electrical Engineering



PhD Completed



Name : Prof. Jayesh Patel
Title of Thesis: 'Design for Non-linearity Improvement of Current Steering Digital to Analog Converter for Biomedical Applications'
Name of Guide: Dr Amisha Naik
University :Nirma University

Name : Prof. Nital Patel
Title of Thesis: 'Soft Sensors for Primary Clarifier in Industrial Effluent Treatment Plant'
Name of Guide: Dr Jayesh Barve & Dr Jayesh Ruparelia
University :Nirma University



Name : Prof. Vishal Parikh
Title of Thesis: 'Intelligent Video Analytics based Framework for Multiview Video Summarization'
Name of Guide:
University : Nirma University

Name : Prof. Shebaz Memon
Title of the Thesis: 'Optimization of hybrid renewable energy systems for standalone and grid-connected scenario'
Name of the Guide: Dr Rajesh N. Patel
University: Nirma University



PhD Completed

Name : Prof. Tejal Upadhyay
Title of Thesis: Analysis and Prediction of
Cancer using Genome by Applying Data
Mining Algorithms
Name of Guide: Dr Samir Patel
University : Charusat University



Name : Prof. Parita Oza
Title of Thesis: Computer-Aided Diagnosis of
Breast Cancer Using Deep Learning
Name of Guide: Dr Paawan Sharma
University : Pandit Deendayal Energy
University

Name: Prof. Rajesh Gupta
Title of Thesis: Secure Resource Allocation
Framework For Device to Device
Communication
Name of Guide: Dr Sudeep Tanwar
University: Nirma University



Name: Prof. Nitin Rathore
Title of Thesis: Investigations of
Microservices Architectures in Edge
Computing Environment
Name of Guide: Dr. Anand Rajavat
University: Shri Vaishnav Vidyapeeth
Vishwavidyalaya

New Joinings



Dr Vishal Lad
Assistant Professor
Department of Civil Engineering



Dr Lukman Munsuri
Assistant Professor
Department of Civil Engineering



Dr Somil Thakkur,
Assistant Professor
Department of Civil Engineering



Dr Bela Shrimali
Assistant Professor
Department of Computer Science
and Engineering



Dr Viranchi Pandya
Assistant Professor
Department of Electronics and
Communication Engineering



New Joinings



Dr Santoshinee Mohapatra
Assitant Professor,
Department of Computer
Science and Engineering



Dr Ravi Nata
Assitant Professor
Department of Computer
Science and Engineering



Dr Rameshram Naik
Assitant Professor
Department of Computer
Science and Engineering



Dr Nitin Rathore
Assitant Professor
Department of Computer
Science and Engineering

RESEARCH PROJECTS

During the period institute has ongoing total 71 externally as well as internally funded research projects worth of Rs. 718.55 lacs.

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RESEARCH PUBLICATIONS

During the tenure faculty members of institute has published more than 160 international publications in high impacted journals.

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CONFERENCES ATTENDED

The Institute has sponsored faculty members to attend national and international conferences.

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Awards



2nd Best paper award. At
26th ISTE Gujarat State
Annual Faculty
Convention 2022



Badminton Doubles
winner at inter Institute
Sports Competition



Prof. P. N. Kapil guided the “**Best MTech Thesis in Electrical Engineering-2022**” awarded by ISTE



Awards

Dr H. K. Patel, HoD, EI Department received a Certificate of Appreciation on behalf of the Electronics and Instrumentation Department, Institute of Technology, Nirma University, for noteworthy contributions for Mitsubishi ATC at 2nd ATC Meet, AKGEC, Ghaziabad. He received the certificate from Mr Tomohiro Yoshida, Director – Factory Automation, Mitsubishi Electric, Japan.



Dr Ankit Rajeshkumar Thakkar has been awarded the state-level ISTE Gujarat-Vadodara Institute of Engineering award for Best Faculty in Computer Engineering, U.G. Program in Gujarat state for the year 2021-22 during the 26th State Annual Faculty Convention and Conference held on 27 April 2023 at Indus University, Ahmedabad.



Awards

- Prof. Rajesh Gupta received an International Travel Grant from the Science and Engineering Research Board (SERB) to present his research paper at one of the top-ranked conferences of IEEE. IEEE ICC 2023 during *28 May to 01 June 2023*, at La Nuvola Convention Center, Rome, Italy. This conference is organized by IEEE ComSoc only and top-ranked conference in the Communication domain.
- Dr Saurin Parikh is invited to be a member of this Indian committee (panel17) formed by BIS (Bureau of Indian Standards)

Others

Dr Mayur A. Makhesana,
Assistant Professor,
Mechanical Engineering Department,
Institute of Technology



Details about the award:

A research fellowship was awarded under the SERB International Research Experience scheme for the year 2022-2023, supported by the Science and Engineering Research Board (SERB), a statutory body of the Department of Science and Technology, Government of India.

Name of agency providing the award:

Science and Engineering Research Board (SERB), DST, India

Date of award received: 12/05/2022.

Research Fellowship completed in : December 2022

Purpose of award:

The research fellowship was awarded to work on the collaborative research project at Materials Science and Engineering, School of Mechanical & Manufacturing Engineering, Faculty of Engineering & Computing, Dublin City University, Ireland.



Dr Darshit Upadhyay, Assistant Professor, Mechanical engineering department, IT, NU received the International Travel Support award in the young scientist category from the Science and Engineering Research Board, DST-India in April 2023. It includes a round trip of economic class airfare by the shortest route, airport tax, visa fees & registration fees. This grant is received to attend the 10th International Conference of Fluid Flow, Heat and Mass Transfer (FFHMT 2023) from June 7, 2023 - June 9, 2023, at Carleton University, Ottawa, Canada.



Prof. Shebaz Memon, Assistant Professor in the Mechanical Engineering Department, was awarded

The Indian Society For Technical Education (ISTE) Gujarat-M. C. Bhavsar Award for Innovative Work in the Area of Renewable Energy. He was honored with the award during the inaugural ceremony of the 26th State Annual Faculty Convention and Conference to be held on 27th April 2023 at Indus university, Ahmedabad . ISTE is a non-profit organization and one of the largest autonomous societies focusing on enhancing the quality of technical education and its allied areas in the nation at large. ISTE- Gujarat section has taken initiation to identify an ISTE Student Member/Research Scholar or a group of ISTE Student Members from an Institutional Member of ISTE every year from its family in Gujarat and to felicitate them for their outstanding innovative work in the areas of renewable Energy & thereby redefining excellence in Technical Education.

Two faculty members of the mechanical engineering department, Dr Darshit Upadhyay and Dr Shebaz Memon received WAAH (We All Are Human) Science Laureate Awards (Senior Laureate category) from Vikram A Sarabhai Community Science Centre, Ahmedabad. Details of teams are as follows.

1) **Participants:** Dr Shebaz Memon and Dr Darshit Upadhyay

Title: Environment Friendly and Energy Improved Biomass Cookstove for Better Human Health

Rank: 1st Runner up

2) **Participants:** Dr Darshit Upadhyay

Title: Solid Waste Treatment: A Potential for Future Fuel

Rank: 2nd Runner up.

Faculty members and PhD students of the Mechanical Engineering Department, at the Institute of Technology, recently received “We All Are Human (WAAH)” Science Laureate Awards (Senior Laureate category) on January 11, 2023. Ahmedabad based Vikram A Sarabhai Community Science Centre conferred the awards at a function held at the Mahatma Gandhi Prarthana Mandir, D. N. High School, Anand. PhD student Kinnary Modi along with Assistant Professors Dr Shebaz Memon and Dr Darshit S Upadhyay won the first runners-up position for their study on ‘Environment Friendly and Energy Improved Biomass Cookstove for Better Human Health’. Associate Professor Dr Niraj Shah had mentored the trio.

Assistant Professor Dr Darshit Upadhyay along with PhD students Sidhartha Sondh and Ms Kangana Bhatt bagged the second runners-up award for their work on ‘Solid Waste Treatment: A Potential for Future Fuel’. Their mentor was Nirma University Professor Dr Sanjay Patel, Professor, Chemical engineering department.

