A Report on
Online Guest Lecture
"Smart Grid and Renewable Energy with AI Tools"
Organised by
Department of Electrical & Electronics Engineering
in association with
Institute Innovation Council (IIC) at MITS, Madanapalle
16.10.2024(Wednesday)

Event Organizer: Dr. K. Lakshmikhandan, Assistant Professor, Department of EEE
Resource Person: Dr. K. Ravi, Professor, Department of EEE, Vellore Institute of Technology, Vellore, Tamilnadu.
Mode of Conduct: Online Mode
Time: 02:00 PM to 04:00 PM
Attendees: 22 Students & 7 Faculty.

Introduction:

On October 16, Wednesday 2024, the Department of Electrical & Electronics Engineering (EEE) in collaboration with the Institute Innovation Council (IIC) hosted an online guest lecture titled "Smart Grid and Renewable Energy with AI Tools". The guest lecture was delivered by the esteemed Dr. K. Ravi, Professor, Department of EEE, Vellore Institute of Technology, Vellore, Tamilnadu.

Dr. K. Ravi, a renowned expert in smart grid and renewable energy in engineering sector enlightened the audience with his deep insights into the energy sector and smart grid design integration and its role in fostering research and innovative methods of use.

The session was started at 2 PM. The Guest Lecture was initiated by Dr. A. V. Pavan Kumar, HOD of EEE Department. The resource person **Dr. K. Ravi** was introduced by Dr. K. Lakshmikhandan, Assistant Professor in the Department of EEE. The resource expert addressed the significant careers in renewable energy and the various power grids.

At the beginning of the presentation, the eminent resource person gave the introduction of the traditional power grid with its generation, transmission and distribution which were designed 120 years back. Then he explained the various characteristics of an electrical power system. Then he also gave the general idea of the characteristics of a modern power system with the latest communication technologies, Information technologies and also about the power and energy technologies. He also highlighted the key benefits of the power system management with the smart grid benefits of all stakeholders. He also gave a brief idea about the interdependence of renewable energy and smart grids with the integration of renewable energy in smart grids. Then he explained about the renewable energy sources with the data management system.

Then the prominent speaker focused on to the Sustainable energies which were used in various parts of India and the capacities of energy production and scarcity faced by the consumers in various parts of our country. Then the resource person also explained the key areas of smart metering system which were being installed in tribal areas. The prominent speaker also listed out the major Professional Organisations of manufacturing smart metering systems and the power production process. Therefore, the renewable energy has been the potential to provide a basis for advancements in future to meet the demands of the people.

Program Outcomes:

1. The guest lecture proved to be an enriching experience for the students and faculty members alike. The following outcomes were achieved:
2. Enhanced Knowledge: Students gained a deeper understanding of renewable energy sources and its production design. They were inspired to adopt this approach in their academic and professional academics.
3. Innovation-Oriented Mindset: The event nurtured an innovation-centric mindset among participants, equipping them with practical tools and methodologies to approach challenges in a creative and structured way using the integration of renewable energy in smart grids.
4. Interdisciplinary Approach: The lecture fostered an appreciation for the value of interdisciplinary research and collaboration, motivating attendees to consider cross-disciplinary opportunities of doing research with renewable energy and smart grid integration.

Conclusion:

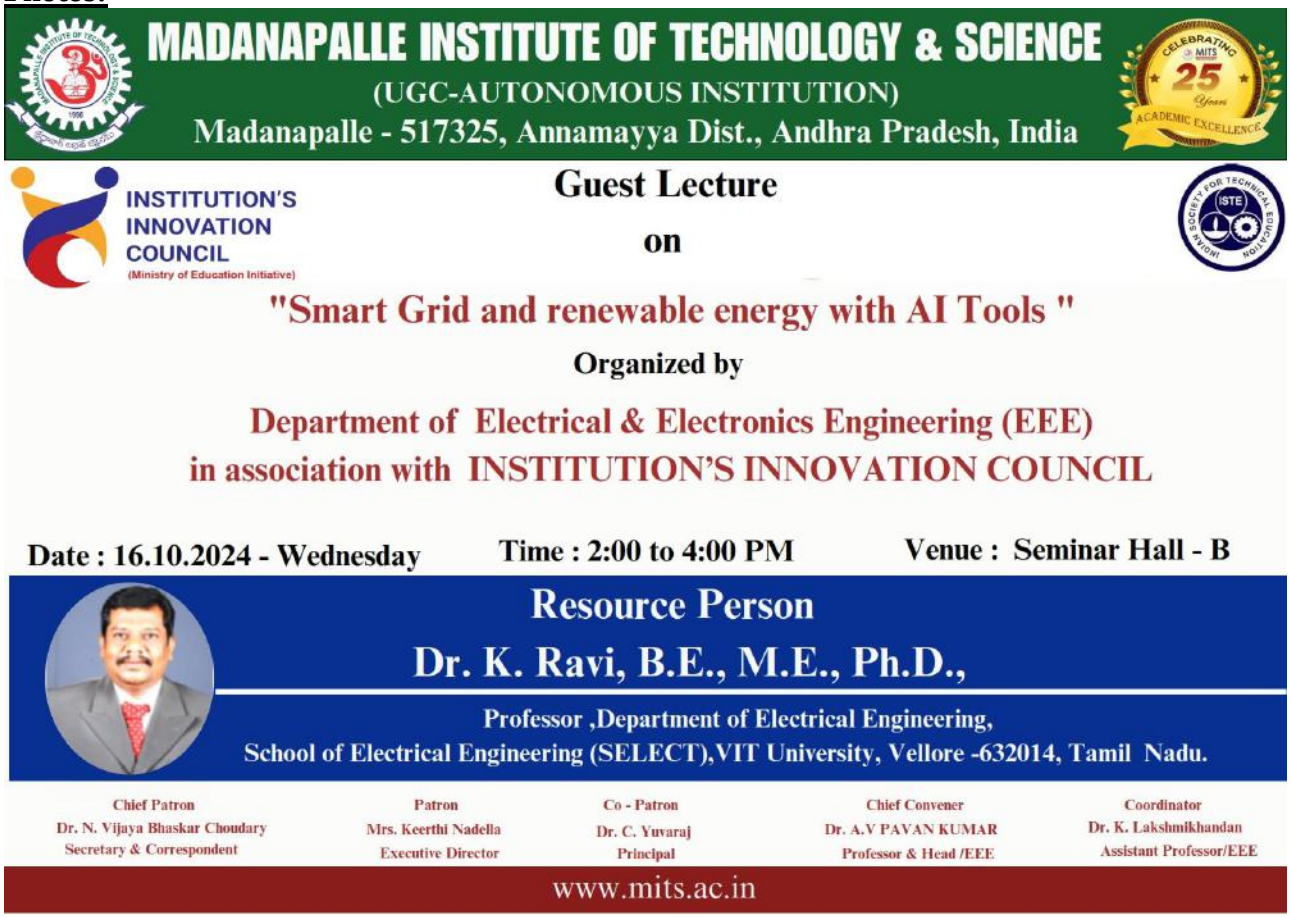
The students gained knowledge about the various types of renewable energies, its production and the process to meet the demands of the people using smart grid and the process of becoming an entrepreneur in future in this green fast evolving field of energies.

Vote of Thanks:

On behalf of Department of EEE, MITS, I would like to extend our heartfelt gratitude to our esteemed speaker, Dr.K.Ravi, for taking the time to share your deep expertise with us. Your thought-provoking lecture on the principles of renewable energy, its application in smart grid, and the role of innovation in shaping the future has provided us with valuable perspectives that will undoubtedly fuel our curiosity and creativity, Enhanced understanding of latest smart grid design methodologies and problem-solving skills, Inspiration for pursuing innovative approaches in renewable engineering sector.

Finally the session was concluded followed by a heart felt vote of thanks which was given by Dr.K.Lakshmikhandan by thanking the esteemed Management-MITS Madanapalle, Principal Prof. Dr.C.Yuvaraj, Vice Principal(Academics) Dr.P.Ramanathan, Vice Principal (Administration) Dr.Kamal Basha, HOD of EEE department Dr. A.V.Pavan Kumar, department colleagues, the students and all those who have been involved indirectly for making the event a grand success.

Photos:


MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE
(UGC-AUTONOMOUS INSTITUTION)
Madanapalle - 517325, Annamayya Dist., Andhra Pradesh, India
CELEBRATING MITS 25 Years ACADEMIC EXCELLENCE
INSTITUTION'S INNOVATION COUNCIL
(Ministry of Education Initiative)
Guest Lecture
on
"Smart Grid and renewable energy with AI Tools "
Organized by
Department of Electrical & Electronics Engineering (EEE)
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Date : 16.10.2024 - Wednesday
Time : 2:00 to 4:00 PM
Venue : Seminar Hall - B
Resource Person
Dr. K. Ravi, B.E., M.E., Ph.D.,
Professor ,Department of Electrical Engineering,
School of Electrical Engineering (SELECT),VIT University, Vellore -632014, Tamil Nadu.
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Professor & Head /EEE
Coordinator
Dr. K. Lakshmikhandan
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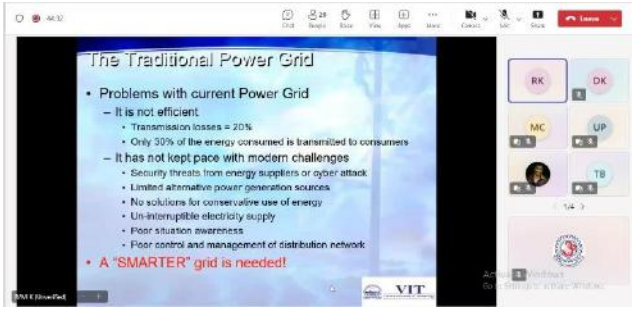
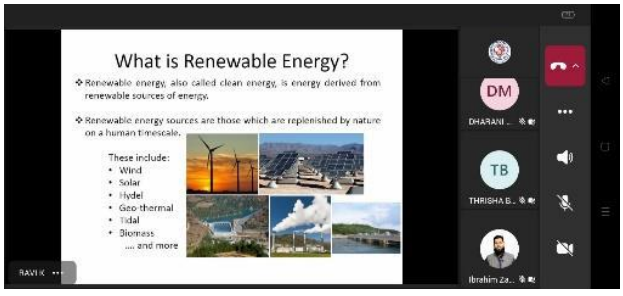
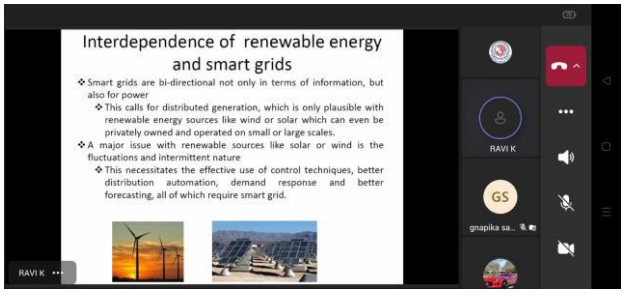

The Traditional Power Grid
Problems with current Power Grid
It is not efficient
Transmission losses = 20%
Only 30% of the energy consumed is transmitted to consumers
It has not kept pace with modern challenges
Security threats from energy suppliers or cyber attack
Limited alternative power generation sources
No solutions for conservative use of energy
Un-interruptible electricity supply
Poor situation awareness
Poor control and management of distribution network
A "SMARTER" grid is needed!
VIT


What is Renewable Energy?
Renewable energy, also called clean energy, is energy derived from renewable sources of energy.
Renewable energy sources are those which are replenished by nature on a human timescale.
These include:
Wind
Solar
Hydel
Geo-thermal
Tidal
Bioness
.... and more
RAVI K


Interdependence of renewable energy and smart grids
Smart grids are bi-directional not only in terms of information, but also for power
This calls for distributed generation, which is only plausible with renewable energy sources like wind or solar which can even be privately owned and operated on small or large scales.
A major issue with renewable sources like solar or wind is the fluctuations and intermittent nature
This necessitates the effective use of control techniques, better distribution automation, demand response and better forecasting, all of which require smart grid.
RAVI K
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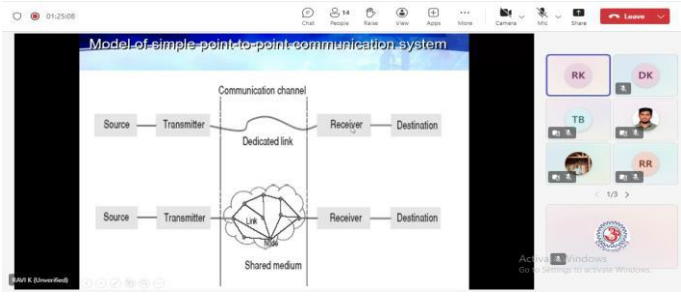
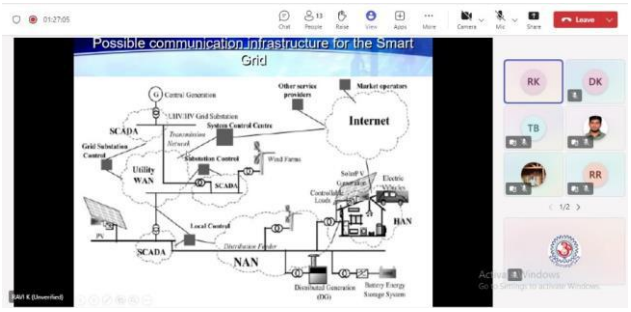
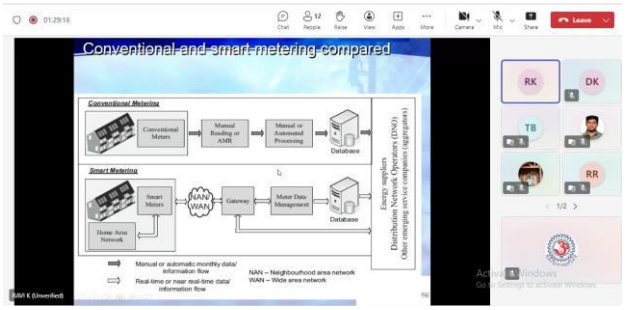
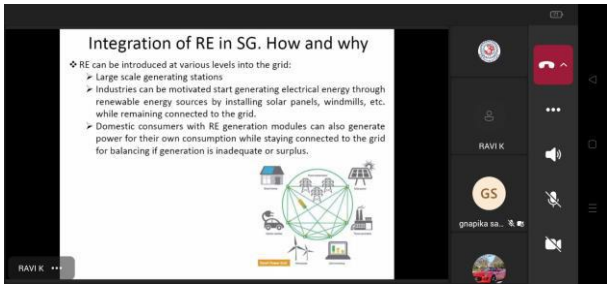
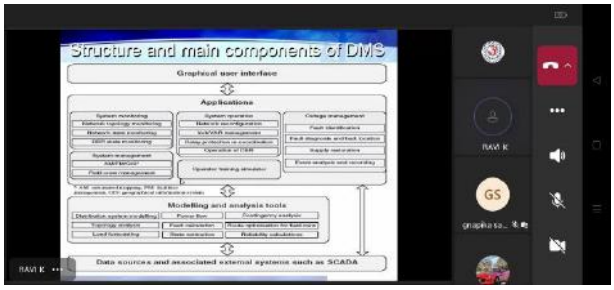

Model of simple point-to-point communication system
Communication channel
Source
Transmitter
Dedicated link
Receiver
Destination
Source
Transmitter
Link
Receiver
Destination
Shared medium









Signature of Faculty Coordinator

Signature of HoD