Loyola-ICAM College of Engineering and Technology (LICET)
Department of Electrical and Electronics Engineering
Electrical Engineers League (EEL)
Under
AICTE – Scheme for Promoting Interests, Creativity and Ethics among Students (SPICES)

Event Report

Category: **Guest Lecture**

Title of the Event: **Transition towards Smart Grid**

Date: 24-08-2022

Venue: F11 (Seminar Hall)

Details of Participants

- Total No. of Participants: 74
- II EEE (Batch: 2021 – 2025) : NIL
- III EEE (Batch: 2020 – 2024): 53
- IV EEE (Batch: 2019 – 2023): 21

Technological/ Academic/ Other benefits generated by conducting the event with respect to:

(a) the institution	• Networking & building brand recognition - promote the institution and help people connect with our brand • Showcase the facilities at the institution by bringing the faculty from premium institutions
(b) the faculty	• Strengthen faculty community and build relationships with each other • Meet like-minded individuals in person and encourage active engagement
(c) Students	• To stay on the top of current trends, especially with technology, causing rapid change across many different industries. • Academic engagement/ engagement in scholarly activities
(d) Industry/ Society	• Clarifying the image of the avenues of development in the near future • Contributing to make the literacy rate rise higher thereby helping build a more educated, empowered and aware society

Proceedings of the event

Category: Guest Lecture

Report on Transition towards Smart Grid

Date: 24-08-2022 Time: 10:00 am to 12:30 pm Venue: F11

Resource Person: Dr. V. Gomathi, Associate Professor, Department of Electrical and Electronics Engineering, College of Engineering Guindy, Anna University, Chennai

Audience: III EEE (Batch: 2020 – 2024) & IV EEE (Batch: 2019 – 2023)

The guest speaker inculcated interest among the participants by asking them to mention a few of the significant achievements of the 20th Century. After receiving the response from the participants, the speaker quoted that Power Industry is at the forefront as per the US National Academy of Engineering's Report. Highlighting the statistical prediction of the International Energy Agency (IEA), she presented the expected growth of power demand by 2030. She thus slowly revealed the motivation for the transition towards Smart Grid (SG). She then introduced the requirements of SG and the various definitions of SG (given by European Technology Platform Smartgrids, US Department of Energy, Canadian Electricity Association, National Institute of Standards and Technology and other standard associations/ organisations).

The four types of technologies that drive the advancement of SG technology were presented. They are integrated, automated communication between components of the electric grid; sensing and measurement technologies; automated controls for distribution and repairs; improved management dashboards and decision support software. The features of SG: Distribution Automation, Renewable integration, Demand participation signals and options, Smart appliances – PHEVs and Storage, System coordination and situation assessment, system operations, energy efficiency, Distributed generation and storage and finally transmission automation were also explained. The architecture and design of SG with the different functional layers was explained. The role of ICT applications in the various domains of SG was also presented. She also mentioned that ICT is an enabler in the transition towards SG as it helps minimize the cost thereby optimizing profit and enabling demand response.

The available technologies that marked SG into reality and those that deserve special highlights were mentioned. They are energy storage, telecommunication systems, ICT infrastructure for advanced protection systems, smart management units and modern enabling technologies. She then stated the future of SG by citing the perspectives on the integration of energy and ICT services, decentralized and self-healing grid architecture. She also referred to the initiatives carried out in India by placing Phasor Measurement Units (PMUs) and thereby enhancing the high-voltage network intelligence. For the installation of these PMUs, strategic locations are chosen. Following this, she discussed a few areas of active research in this context:

- Optimal PMU placement problem
- Development of visualization software for better visibility of the network

- On-line disturbance monitoring
- Design and implementation tools for data storage, retrieval and analysis
- Enhancing system observability
- Development of remedial action scheme based on adaptive islanding
- Self-healing approach and improved protection

She also emphasized the extent to which the Indian grid has advanced in the above-mentioned domains. Several other major SG standardization roadmaps and studies were also presented. The speaker encouraged the participants to refer to standard forums like India Smart Grid Forum (ISGF) to stay abreast with the recent advancements related to Smart Grid technology in our nation. She also motivated all participants to explore concepts related to SG as it would be helpful for them towards job placement preparation in core industries as most of the core industries are prominent players in the field of SG.

Relevant Courses in the current semester

EE8501 Power System Analysis

- Power Scenario in India
- Power System Analysis Techniques for Planning

EE8702 Power System Operation &Control

- Power Scenario in Indian Grid
- Requirements of Good Power System
- Power System Operation Studies

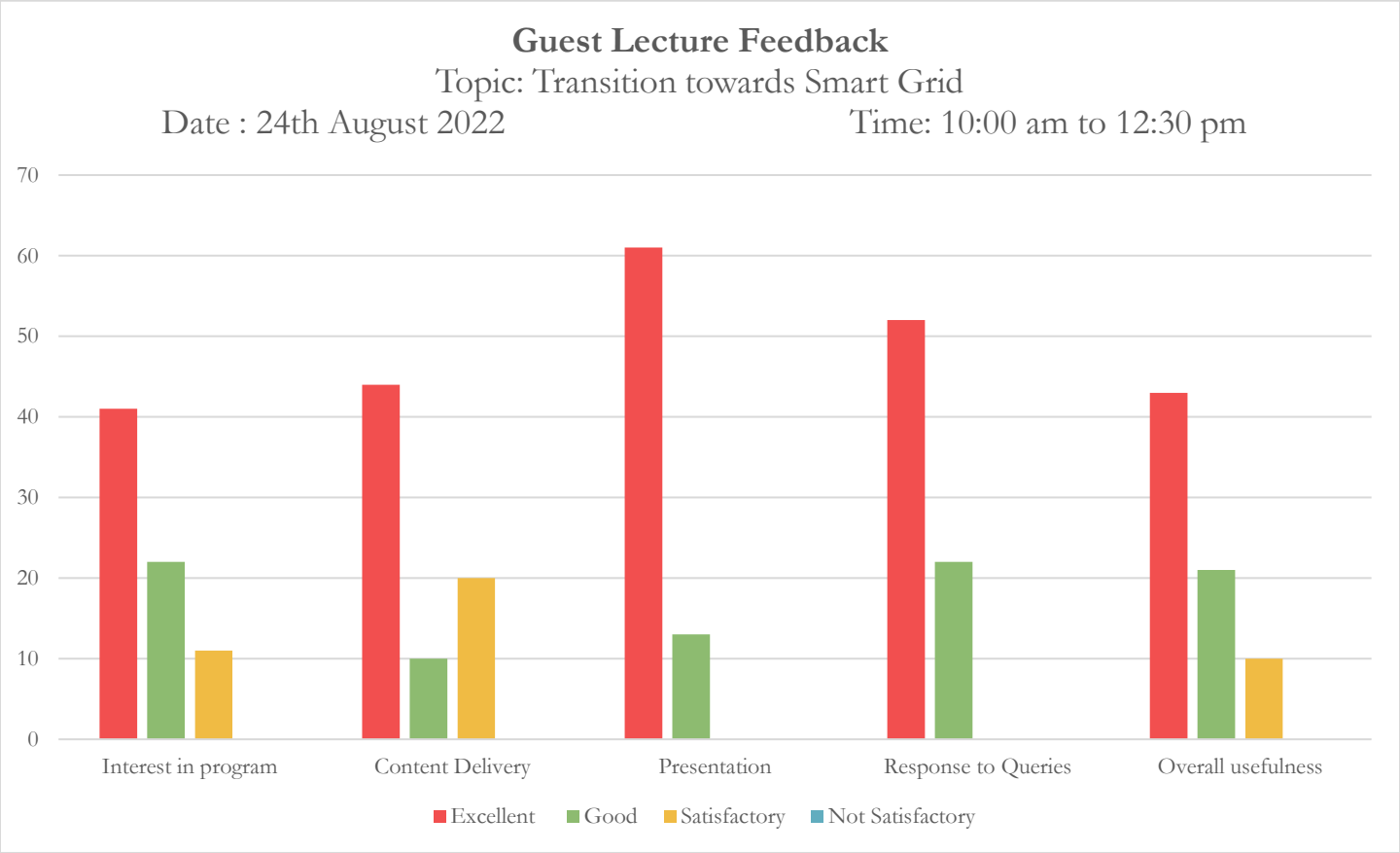
EE8703 Renewable Energy Systems

- Present Indian & International Energy Scenario of Conventional and RE sources
- Energy Storage System

Relevant Program Outcomes

- PO5 – Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
- PO6 – The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- PO7 – Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and the need for sustainable development.
- PO8 – Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO12 – Life-long learning: Recognise the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Feedback


Guest Lecture Feedback
Topic: Transition towards Smart Grid
Date : 24th August 2022
Time: 10:00 am to 12:30 pm
70
60
50
40
30
20
10
0
Interest in program
Content Delivery
Presentation
Response to Queries
Overall usefulness
Excellent
Good
Satisfactory
Not Satisfactory