



# MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE

(UGC-AUTONOMOUS INSTITUTION)



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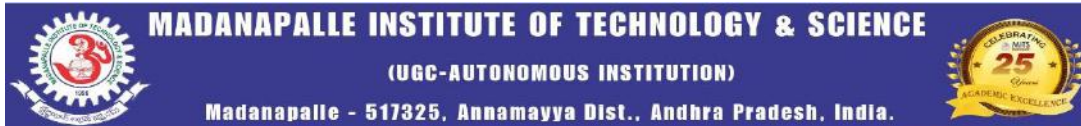
A Report on

## IEEE Virtual Speaker Program on “Grid Modernization: Technological Advancements Beyond Smart Grid”

Organized by

Department of EEE and MITS IEEE Student Chapter

17.10.2024



### IEEE Bureau Virtual Speaker Program

on

### “Grid Modernization: Technological Advancements Beyond Smart Grid”



ORGANIZED BY : MITS IEEE Circuits and Systems Society Student Branch Chapter,

Department of Electrical and Electronics Engineering

in Association with MITS IEEE Student Branch Chapter, IEEE Hyderabad Section



Resource Person

**John D. McDonald, P.E.**

IEEE Life Fellow, Member of National Academy of Engineering, CIGRE Honorary Member

Date : 17.10.2024

Time : 6:30 PM - 7:30 PM



Scan code for Registration

**Chief Patron**  
Dr. N. Vijaya Bhasker Choudary  
Secretary & Correspondent  
**Convenor**  
1. Dr. Nehru Kandasamy  
Professor, EEE

**Patron**  
Mrs. Koerthi Nadella  
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**Convenor**  
2. Dr. V. B. Thurai Raaj  
Assistant Professor, EEE

**Program Chair**  
Dr. C. Yuvaraj  
Principal  
**Convenor**  
3. Dr. Vineet Kumar  
Assistant Professor, EEE

**Chief convenor**  
Dr. A.V.Pavan Kumar  
HOD-EEE  
**Convenor**  
4. Mr. N. Sridhar  
Assistant Professor, EEE

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**Chief Convener: Dr. AV Pavan Kumar, Professor and Head, Department of EEE, MITS.**

**Convener:**

1. Dr. Nehru Kandasamy, Professor, ECE
2. Dr. V. B. Thurai Raaj, Assistant Professor, EEE
3. Dr. Vineet Kumar, Assistant Professor, EEE
4. Mr. N. Sridhar, Assistant Professor, EEE

**Resource Person/Speaker: John D. McDonald, P.E., IEEE Life Fellow, Member of National Academy of Engineering, CIGRE Honorary Member.**

**Attendees: 34 members**

**Venue: Seminar Hall**

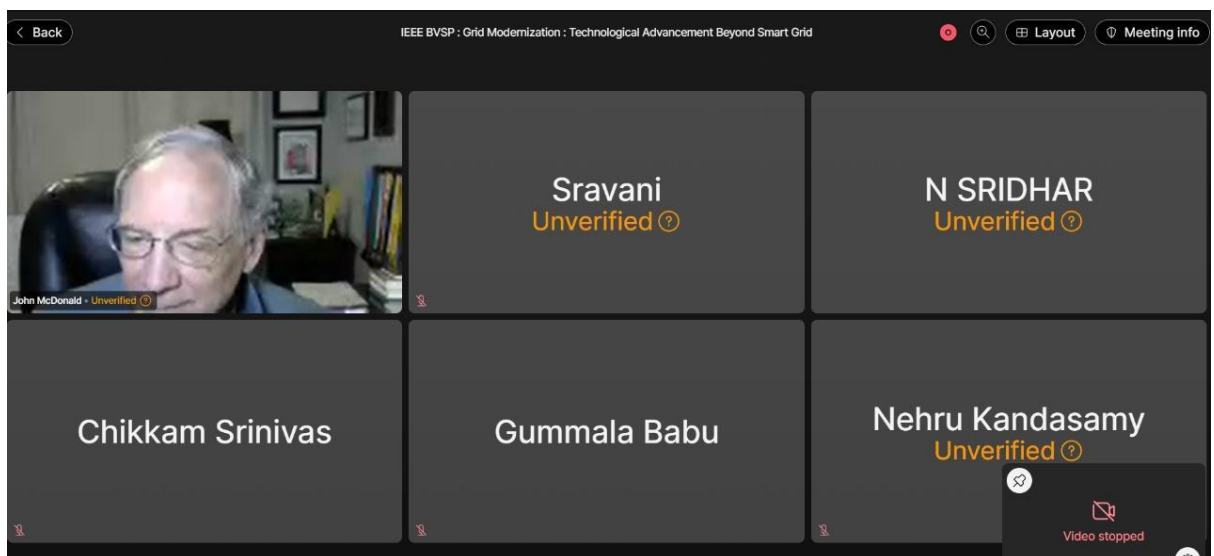
**Time: 4:00 PM**

## **Background**

On 17th October 2024, the Department of Electrical and Electronics Engineering in association with the IEEE Circuits and Systems Society Student Branch Chapter at MITS Madanapalle successfully conducted an IEEE Virtual Speaker Program on the topic “Grid Modernization: Technological Advancements Beyond Smart Grid”. The session was attended by both undergraduate students and faculty members from the EEE department, as well as IEEE members, providing a deep understanding of the technological advancements shaping the modern grid system.



The distinguished speaker for the event was John D. McDonald, P.E., a renowned expert with over 50 years of experience in electric power system automation. He has served in various leadership positions, including IEEE PES President, and is recognized for his contributions to the field of smart grid technologies and grid modernization.





Viewing John McDonald's shared content

### Smart Grid Lessons Learned

#### Project Management:

- **Establish Program Management Office**
  - Multiple Project Managers reporting to the Program Manager
  - Adhere to PM guidelines such as Communication, Status Reporting, Risk Management, etc.
  - Build an "A" team with project and technical members – there will be challenges to collectively solve
- **Establish Corporate Steering Committee**
  - Key status meetings with Utility Executives and Alliance Suppliers
  - Escalation and Risk Mitigation in timely manner is critical
- **Build Strategic Alliances with Key Suppliers**
  - Define, Engineer and Build the Smart Grid solutions collectively
  - Alliance Supplier provides "On-site" management and technical support

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John McDonald • Unverified





## **Speaker details**

**Name:** John D. McDonald, P.E.

**Designation:** Founder & CEO, JDM Associates, LLC

**Key Qualifications:**

BSEE (1973), MSEE (Power Engineering) (1974) – Purdue University

MBA (Finance) (1978) – University of California, Berkeley

Over 50 years of experience in electric power system automation

Published over 150 papers and co-authored five books

IEEE Life Fellow, Member of National Academy of Engineering

Extensive involvement in smart grid deployments and modern grid standards development

**Expertise:** Grid Modernization, Smart Grid Automation, Integration of Microgrids and Distributed Generation, Energy Management Systems.

## **Detailed Summary of the Event**

The event began with a warm welcome address delivered by Dr. Nehru Kandasamy, Professor, ECE, and Head of the EEE Department. He greeted the audience and highlighted the importance of grid modernization in addressing the challenges of the evolving energy landscape.

Following the welcome, Dr. Nehru Kandasamy introduced the distinguished speaker, John D. McDonald, emphasizing his contributions to smart grid technologies and his long-standing association with IEEE.

John D. McDonald commenced his lecture by providing a brief background of the key industry and societal trends that are driving the modernization of the electrical grid. He discussed the transition from traditional grid systems to holistic solutions that incorporate advanced technologies such as big data analytics, cloud computing, and smart meters.

The key focus of the lecture was on the integration of microgrids and distributed generation. Mr. McDonald explained how modern grid systems enable two-way power flows, optimize renewable energy integration, and improve grid flexibility and resilience. He further elaborated on the need for interoperability standards, which are essential for the seamless integration of new technologies with existing infrastructure.

The presentation also covered crucial aspects of Advanced Distribution Management Systems (ADMS), microgrid controllers, and the increasing convergence of IT and OT (Operational Technology) in smart grid systems. He emphasized the role of automation in improving reliability, reducing carbon emissions, and enhancing energy efficiency.

The lecture concluded with a discussion of lessons learned from global smart grid deployments, where Mr. McDonald shared his experiences and insights from various projects, highlighting the importance of testing, integration, and change management in the successful deployment of grid modernization technologies.

Viewing John McDonald's shared content

**SmartGrid** **NIST**  
National Institute of Standards and Technology

### NIST- Recognized Standards Release 1.0

Following the April 28-29 Smart Grid Interoperability Workshop, NIST deemed that sufficient consensus has been achieved on 16 initial standards

On May 8, NIST announced intention to recognize these standards following 30 day comment period

NIST's announcement recognized that some of these standards will require further development and many additional standards will be needed.

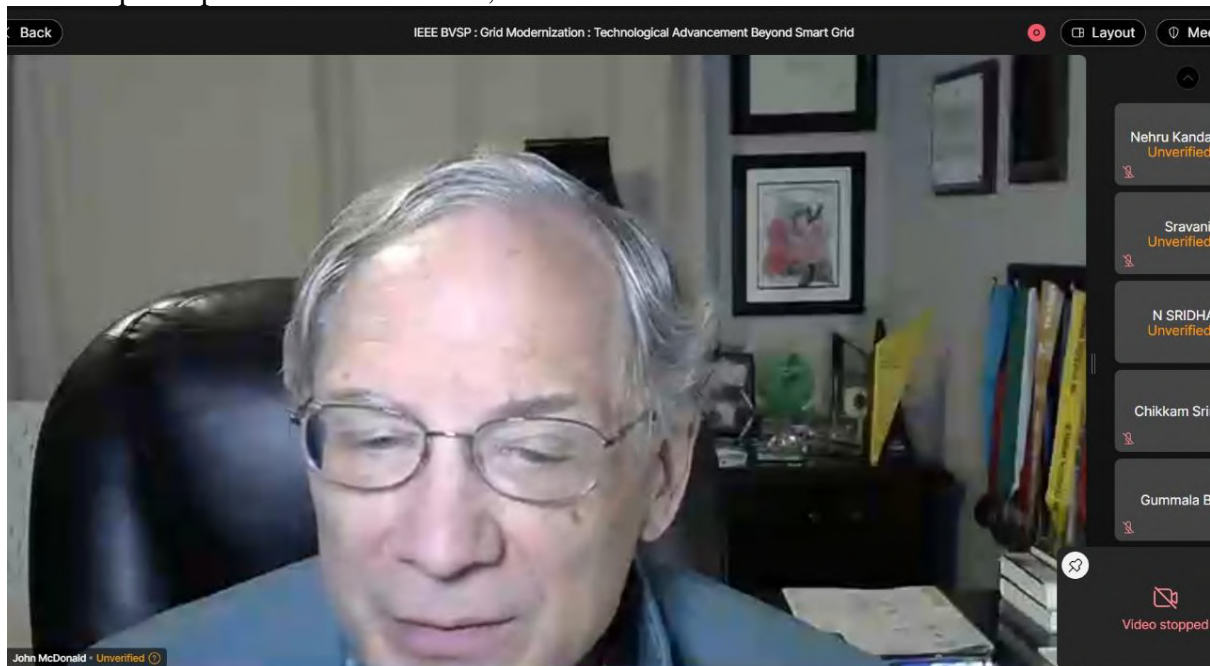
NIST will recognize additional standards as consensus is achieved

Standard	Application
ANSI C12.18 System Security Requirements	Advanced metering infrastructure (AMI) and smart grid control and security
ANSI C12.75/IEEE 1771	Revenue metering information system
IEEE Std 1547-2011/IEEE 1547-2010	Interconnecting Inverter-Based Resources
IEEE 1547.2	Substation and feeder device automation
IEEE 60801.1-2/TAM-2	Info control center communication
IEEE 1547M	Substation automation and protection
IEEE 1547.4.1/IEEE 1547.4.1	Application layer energy management system/automation
IEEE 1547.5.1-2	Information security for smart grid control operations
IEEE 1547.11.1	Power line carrier and (PLC) communications
IEEE 1547.9	Physical and electrical interconnections between utility and distributed generation (DG)
IEEE 1547-2011	Security for intelligent electronic devices (IEDs)
IEEE 1547-2011	Cyber security standards for the bulk power system
NIST Special Publication (SP) 800-53, NIST SP 800-52	Cyber security standards and guidelines for federal information systems, including those for the bulk power system
IEEE 1547.11.2/IEEE 1547.11.2	Power line carrier and (PLC) communications
IEEE 1547.11.1	Power Area Network (PAN) communication, measurement, and control
IEEE 1547.11.2/IEEE 1547.11.2	Power Area Network (PAN) Device Communications and Operations Model



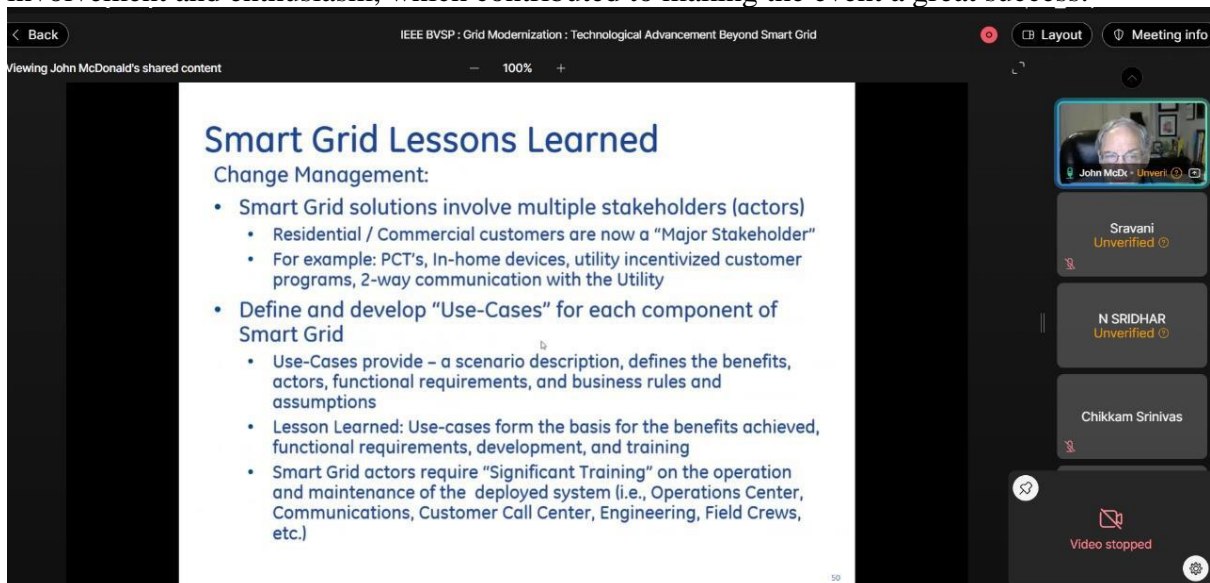
Call control icons: Mute, Video off, Speaker, Screen share, More options, End call

The event concluded with a vote of thanks by Dr. Nehru Kandasamy, who expressed his gratitude to John D. McDonald for delivering an insightful lecture. Dr. Nehru also appreciated the efforts of the MITS IEEE coordinator, Dr. Kumar C., and all faculty members and students for their participation and enthusiasm, which contributed to the event's success.



Dr. Nehru expressed gratitude to the *Head of the Electrical and Electronics Engineering Department, Dr. A.V. Pavan Kumar*, for his continuous guidance and support in organizing such academic events. Furthermore, appreciation was extended to *Dr. Kumar C, the MITS IEEE coordinator*, for his efforts in coordinating the event under the banner of the IEEE student chapter. Special thanks were extended to the *Principal Sir, Dr. C. Yuvaraj* and the MITS management for their unwavering support and encouragement in organizing this event, which made it possible to enrich the academic experience of our students.

Finally, thanks were given to all the faculty members, students, and participants for their active involvement and enthusiasm, which contributed to making the event a great success.



## Outcome of the Event

The event was highly successful in providing a comprehensive overview of grid modernization and its key challenges. The following outcomes were observed:

**Enhanced Understanding of Grid Modernization:** The participants gained a solid understanding of the key trends and technologies shaping the future of the power grid, including distributed energy resources, microgrids, and smart grid deployments.

**Introduction to Advanced Technologies:** The audience was introduced to cutting-edge solutions such as ADMS, smart meters, and microgrid controllers, and how these technologies contribute to modern grid systems.

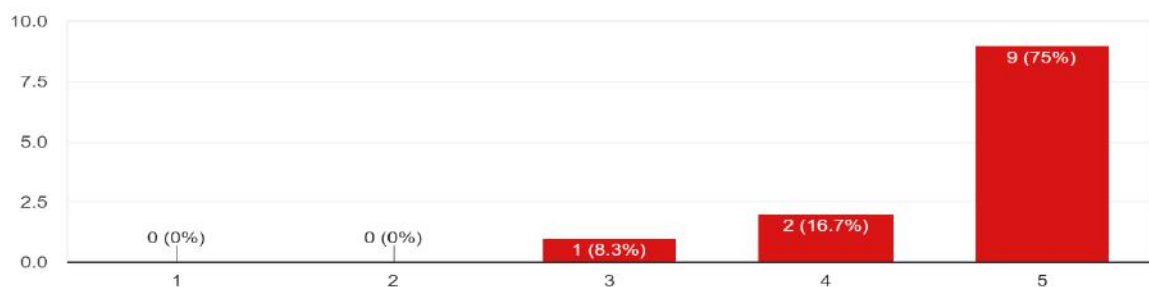
**Insights into Real-world Deployments:** The case studies and examples provided by the speaker offered participants a real-world perspective on the challenges and opportunities involved in grid modernization.

**Inspiration for Future Research and Development:** The session sparked interest in research areas such as distributed generation, renewable energy integration, and data management for grid optimization.

## Feedback

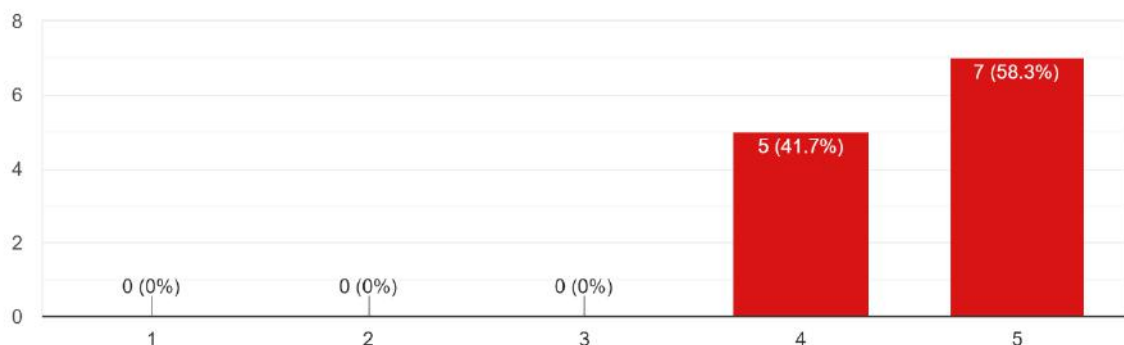
1. The interactive session was scheduled at a suitable time

12 responses



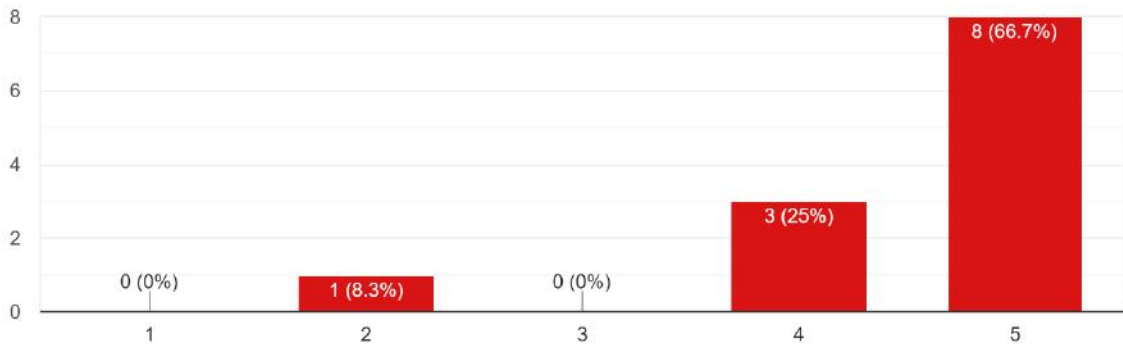
2. The interaction was useful and resource person explanation.

12 responses



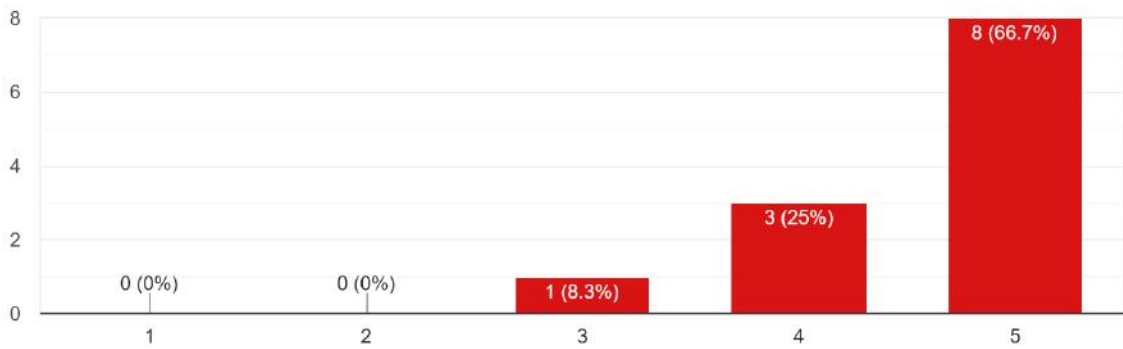
3. The information in the interaction was presented in a clear and organized manner.

12 responses



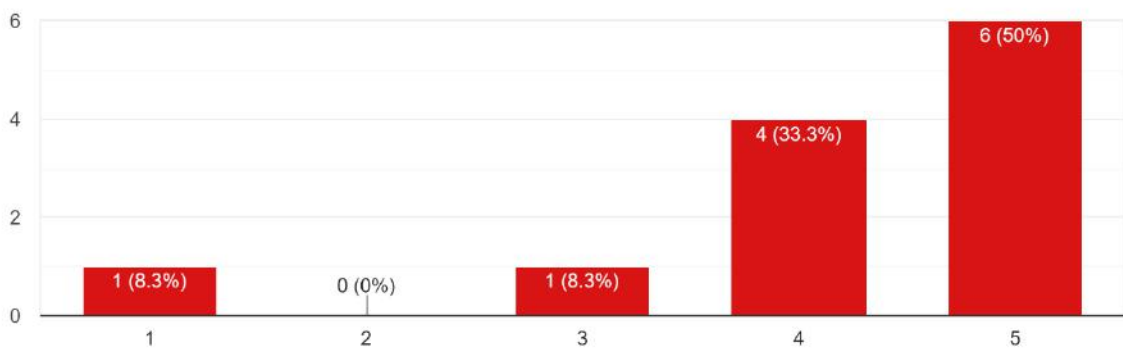
4. The presenter responded to questions in an informative, appropriate and satisfactory manner.

12 responses



5. your impression of facilities provided by the institute for interaction.

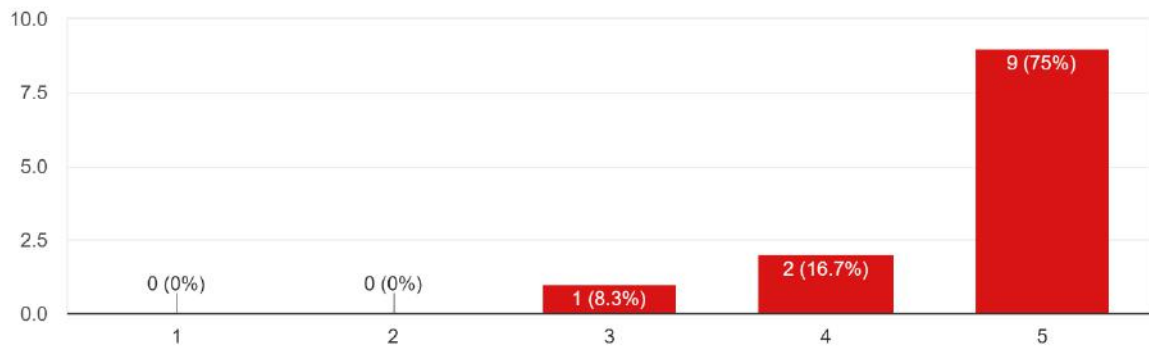
12 responses





6. Overall, the session was informative and valuable.

12 responses



With regards,

Dr. Vineet Kumar

Assistant Professor, Department of EEE & Department IEEE/ISTE coordinator,  
MITS, Madanapalle.