



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Report on

Guest Lecture On “The Next Generation of Electrical Power Transmission Systems”

Event Type : The Next Generation of Electrical Power Transmission Systems”

Event Date / Duration : 29-09-2025, 10:00 AM to 12.00PM

Resource Person : Mr.Ch, Amareswara Nagaraju, DEE, AP-Transo.

Name of Coordinator : Mr.J.V.Pavan Chand

Name of the convenor : Dr.P.Sobharani, Professor & HOD

Target Audience : III B.Tech Students of EEE Department.

Total no of Participants : 140

Introduction of the event : A guest lecture on "The Next Generation of Electrical Power Transmission Lines" was conducted to provide insights into the latest advancements and future trends in power transmission technology. The lecture aimed to educate students and professionals about innovative approaches that enhance the efficiency, reliability, and sustainability of electrical power transmission.

Key topics covered included:

1. **High-Temperature Superconducting (HTS) Cables** :
The speaker explained how HTS cables significantly reduce resistive losses by operating at very low temperatures, allowing for higher current density and improved efficiency.
2. **HVDC (High Voltage Direct Current) Transmission:**
The advantages of HVDC over traditional AC transmission were discussed, emphasizing lower losses over long distances, better control over power flow, and integration with renewable energy sources.
3. **Monopole towers in transmission line:**
A significant portion of the lecture was dedicated to the use of monopole towers in modern transmission infrastructure. Unlike traditional lattice towers, monopole towers are single-pole structures that offer several advantages:
 - **Space Efficiency:** Monopole towers require a smaller footprint, making them ideal for urban or environmentally sensitive areas.
 - **Aesthetic and Environmental Benefits:** Their slim and sleek design reduces visual impact and can be better integrated into landscapes.
 - **Ease of Installation and Maintenance:** Monopole towers can be erected more quickly and with less ground disturbance compared to lattice towers.
 - **Mechanical Strength and Durability:** Advances in materials, such as high-strength steel and composites, enhance their resilience against wind loads and environmental stresses.

The speaker also discussed the challenges, including higher manufacturing costs and limitations on the maximum height and span compared to traditional towers, but emphasized ongoing innovations aimed at overcoming these.

4. **Advanced Conductors and Composite Materials:**

Innovations in conductor materials, such as carbon nanotube composites and aluminum alloys, were highlighted for their potential to increase strength and conductivity while reducing weight.

5. **Smart Grid Integration:**

The role of digital sensors, real-time monitoring, and AI-based control systems in creating adaptive, resilient power transmission networks was also explored.

6. **Environmental and Economic Benefits:**

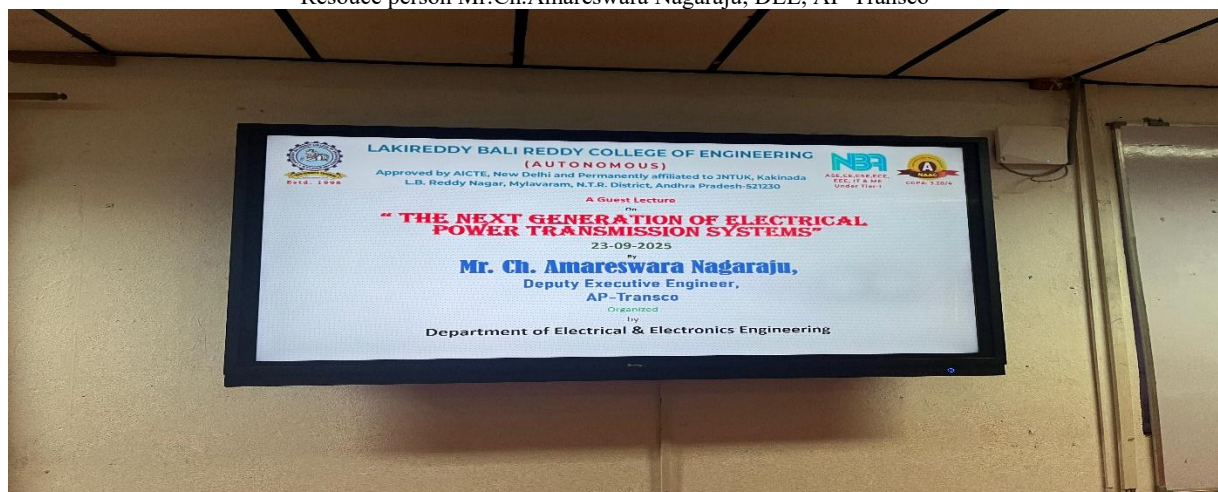
The lecture concluded with a discussion on how these advancements contribute to reducing the carbon footprint of power systems, improving grid stability, and lowering operational costs.

Conclusion:

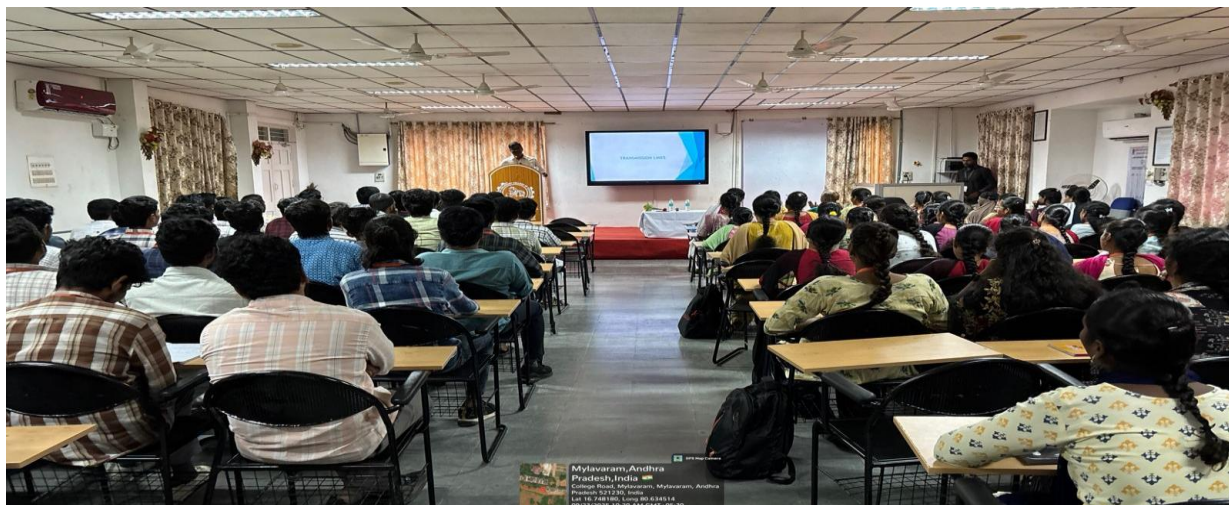
- Next-generation transmission lines will rely heavily on new materials and technologies to address current limitations.
- Monopole towers present a modern alternative to lattice towers, offering benefits in urban integration and environmental impact.
- Integration of smart technologies will transform power grids into more flexible and efficient systems.
- HVDC and superconducting cables are crucial for long-distance and high-capacity power transmission.
- Sustainable practices in power transmission will be essential for meeting global energy and climate goals.



Resource person Mr.Ch.Amareswara Nagaraju, DEE, AP-Transco



Participants



HOD/EEE

Dr.P.Sobharani