Guest Lecture: 1

Date: 30th July 2024

Title of the Guest Lecture: "Hybrid Energy Storage System for DC Micro Grid"

Resource Person:
Dr. Nalin Behari Dev Choudhury
Professor, Department of Electrical Engineering
National Institute of Technology (NIT), Silchar

Organized by:
Department of Electrical & Electronics Engineering
Annamacharya Institute of Technology and Sciences, Rajampet (Autonomous)
In association with ISTE (Indian Society for Technical Education)

Objectives of the Guest Lecture:

1. To introduce students and faculty to the concept of **hybrid energy storage systems** (HESS) and their significance in modern power systems.
2. To provide insights into **DC microgrids** and their integration with renewable energy sources.
3. To explore the **design, control, and optimization techniques** used in HESS for enhancing energy reliability and efficiency.
4. To encourage research interest in the field of **renewable energy and smart grid technologies**.

Outcomes of the Lecture:

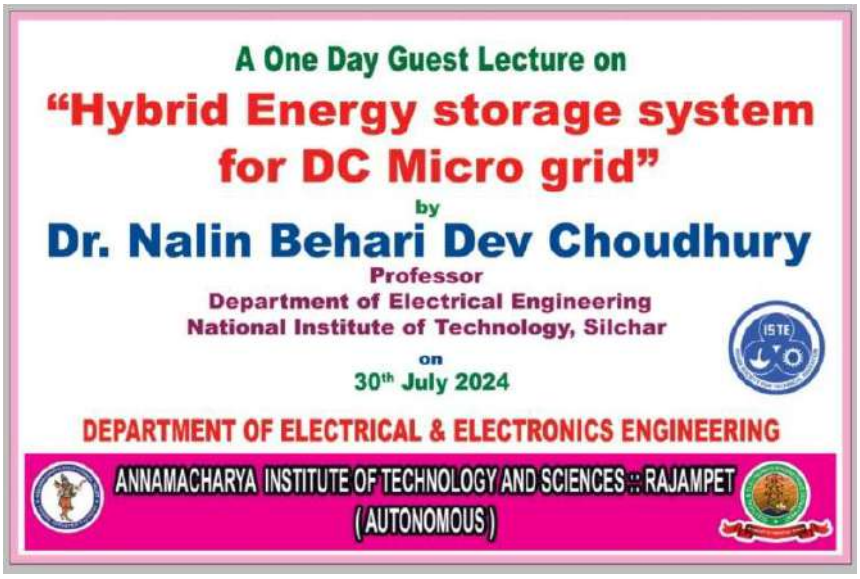
- Participants gained **awareness of the latest trends** in hybrid energy storage technologies.
- Enhanced understanding of how **DC microgrids** function and how storage systems can stabilize such networks.
- Exposure to **real-world case studies and applications** shared by an expert from NIT Silchar.
- Students showed increased interest in **project work and research** in energy storage and microgrid systems.

Summary of the Session:

The Department of Electrical & Electronics Engineering at AITS, Rajampet, organized a one-day guest lecture on **30th July 2024** titled "*Hybrid Energy Storage System for DC Micro Grid*". The session was delivered by **Dr. Nalin Behari Dev Choudhury**, a distinguished professor from NIT Silchar. The event aimed to bridge the academic curriculum with cutting-edge industry and research developments in the domain of smart energy systems.

Dr. Choudhury began by highlighting the **growing need for efficient energy storage systems** due to the rising penetration of renewable energy. He explained the concept of **hybrid systems** that combine batteries, supercapacitors, and other technologies to enhance energy management. Emphasis was placed on **DC microgrids**, their advantages over traditional AC systems, and the role of intelligent storage systems in maintaining grid stability.

The lecture concluded with an interactive Q&A session where students and faculty discussed **research directions and career opportunities** in this emerging field. The session proved to be highly beneficial and was appreciated by all attendees.



Guest Lecture: 2

Date: 03rd August 2024

Title of the Guest Lecture: "PMU Applications in Smart Grid"

Resource Person:
Dr. M. Jaya Bharata Reddy
Professor, Department of Electrical Engineering
National Institute of Technology (NIT), Tiruchirappalli

Organized by:
Department of Electrical & Electronics Engineering
Annamacharya Institute of Technology and Sciences, Rajampet (Now Annamacharya University)
(Autonomous Institution)

Objectives of the Guest Lecture:

1. To introduce the concept and operation of **Phasor Measurement Units (PMUs)**.
2. To explore the **importance of PMUs in monitoring and controlling smart grids**.
3. To understand the role of PMU-based data in **real-time grid stability, fault detection**, and grid resilience.
4. To expose students to the **latest trends, technologies, and applications** of PMUs in modern power systems.

Outcomes of the Lecture:

- Participants understood the **fundamental principles and architecture** of PMUs.
- Gained knowledge of **how synchrophasor technology** contributes to real-time grid observation and decision-making.
- Developed insights into **smart grid applications** enabled by PMU data, such as wide-area monitoring and control.
- Motivated students to explore **research areas** in smart grids, synchrophasors, and intelligent energy systems.

Summary of the Session:

On **03rd August 2024**, the Department of Electrical & Electronics Engineering at Annamacharya Institute of Technology and Sciences, Rajampet (Now Annamacharya University), conducted a guest lecture on "*PMU Applications in Smart Grid*". The expert speaker was **Dr. M. Jaya Bharata Reddy**, Professor from the Department of Electrical Engineering at **NIT Tiruchirappalli**.

Dr. M. Jaya Bharata Reddy explained the role of **Phasor Measurement Units** in enhancing the **observability and reliability of power systems**. He emphasized how PMUs, by providing high-speed synchronized measurements, are revolutionizing **fault location, grid health monitoring, and load forecasting**.

The session covered real-world deployment challenges and successful implementations across global utilities. Interactive discussions were held on **wide-area monitoring systems (WAMS)** and the **future of smart grid technology** in India. Students and faculty benefited immensely and expressed keen interest in exploring this emerging field further.

Guest Lecture: 3

Date: 20th September 2024

Title of the Guest Lecture: "Novel Supercapacitor for Energy Storage Applications"

Resource Person:
Dr. Anusuya Bhattacharyya
Associate Professor,
Department of Electrical & Electronics Engineering,
VIT Vellore

Organized by:
Department of Electrical & Electronics Engineering
Annamacharya Institute of Technology and Sciences, Rajampet (Now Annamacharya University)

Objectives of the Guest Lecture:

1. To introduce students to **supercapacitor technology** and its **importance in modern energy storage systems**.
2. To explore **novel materials, designs, and applications** of supercapacitors in renewable energy and electric mobility.
3. To highlight the **advantages and limitations** of supercapacitors compared to batteries.
4. To expose students to **ongoing research and future trends** in energy storage technologies.

Outcomes of the Lecture:

- Students acquired in-depth knowledge of **supercapacitor structure, functioning, and applications**.
- Gained exposure to **cutting-edge research** on materials and nanotechnology in energy storage.
- Increased interest in **project-based learning and research** in the field of energy storage.
- Faculty and students discussed **interdisciplinary collaboration opportunities** in materials science and electrical engineering.

Summary of the Session:

The Department of Electrical & Electronics Engineering at **Annamacharya Institute of Technology and Sciences, Rajampet** (now Annamacharya University) hosted a guest lecture on **20th September 2024** titled *"Novel Supercapacitor for Energy Storage Applications"*. The resource person, **Dr. Anusuya Bhattacharyya**, Associate Professor from **VIT Vellore**, is an expert in advanced energy materials and electrical energy systems.

Dr. Bhattacharyya began with an introduction to **supercapacitor fundamentals**, including double-layer capacitors and pseudo capacitors. She explained the **importance of high-power density, fast charging/discharging cycles, and extended lifespan** for supercapacitor use in electric vehicles and smart grid systems. Real-world examples and current research initiatives were shared with the audience.

The lecture was well-received, especially by students interested in **energy research, green technology, and electrical design innovation**. It concluded with an interactive session that fostered curiosity and technical engagement among attendees.

Guest Lecture: 4

Date: 20th September 2024

Title of the Guest Lecture: "Supercapacitors"

Resource Person:
Dr. Anusuya Bhattacharyya
Associate Professor
Department of Electrical Engineering,
VIT Vellore

Organized by:
Department of Electrical & Electronics Engineering
Annamacharya Institute of Technology and Sciences, Rajampet (Autonomous)
(Now Annamacharya University)

Objectives of the Guest Lecture:

1. To introduce students to the **fundamentals and advanced concepts of supercapacitors**.
2. To explore **material science, design, and applications** of supercapacitors in modern electrical systems.
3. To bridge the academic understanding of **energy storage technologies** with their real-world relevance in **power electronics, renewable energy, and electric vehicles**.
4. To motivate students towards **research and innovation** in next-generation energy systems.

Outcomes of the Lecture:

- Students gained comprehensive insights into **the working principle of supercapacitors**, types, characteristics, and distinctions from traditional capacitors and batteries.
- Learnt about **hybrid capacitor technologies**, materials (like graphene), and emerging use-cases in **smart grids and EVs**.
- Understood the **advantages such as high-power density, long life cycles, and fast charge-discharge capabilities**.

- The lecture enhanced interest among students to pursue **projects and higher studies** in the areas of **energy storage, power electronics, and renewable integration**.

Session Highlights:

On **20th September 2024**, the Department of Electrical and Electronics Engineering of **Annamacharya Institute of Technology and Sciences (Autonomous)**, now transformed as **Annamacharya University**, hosted a guest lecture on **"Supercapacitors"**. The speaker, **Dr. Anusuya Bhattacharyya**, an expert from **VIT Vellore**, delivered an insightful session focused on the **evolution of energy storage systems** with an emphasis on **supercapacitor technologies**.

The speaker elaborated on the **electrochemical mechanisms**, **charging dynamics**, and **applications in electronics and energy systems**. The lecture also emphasized **recent trends in high-capacity energy storage** and the **synergy between supercapacitors and batteries**.

The event was well-received by students and faculty, followed by an interactive Q&A session. It concluded with a note of appreciation for the resource person and encouragement for students to dive deeper into the topic through **research and innovation**.

Guest Lecture: 5

Date: 14th October 2024

Title of the Guest Lecture: "The Art of Maintaining a Maintenance-Free Transformer for Nuclear Applications"

Resource Person:
Mr. B. Sreenivasula Reddy
Scientific Officer, BARC, Kalpakkam, Chennai

Organized by:
Department of Electrical & Electronics Engineering
Annamacharya Institute of Technology and Sciences, Rajampet
(Now Annamacharya University)

Objectives of the Guest Lecture:

1. To educate students on the **design and operational strategies** for achieving maintenance-free transformers, especially in **nuclear environments**.
2. To understand the **critical role of reliability and safety** in nuclear-grade electrical systems.
3. To gain knowledge about **practical challenges and solutions** in maintaining transformers under strict nuclear regulations.
4. To inspire students to pursue **advanced fields** such as **nuclear power systems and high-reliability equipment**.

Outcomes of the Lecture:

- Students learned about **special transformer technologies** suited for nuclear power stations.
- Enhanced understanding of **preventive maintenance strategies**, insulation techniques, and cooling methods.
- Gained insights into **nuclear standards** and practices in handling high-reliability equipment.
- Sparked interest in **career and research opportunities** in atomic energy engineering roles.

Summary of the Session:

On **14th October 2024**, the Department of Electrical & Electronics Engineering at Annamacharya Institute of Technology and Sciences, Rajampet (Now Annamacharya University), conducted a guest lecture titled *"The Art of Maintaining a Maintenance-Free Transformer for Nuclear Applications"*. The session was delivered by **Mr. B. Sreenivasula Reddy**, Scientific Officer from **BARC, Kalpakkam, Chennai**.

Mr. B. Sreenivasula Reddy provided a comprehensive explanation of **transformer reliability enhancement methods**, including **oil quality monitoring, hermetic sealing, advanced insulation systems**, and **remote condition monitoring**. He highlighted how these techniques are crucial in nuclear power facilities where human intervention is limited, and **system integrity is paramount**.

The session was interactive, with students asking about **thermal modeling, condition-based monitoring, and failure prevention**. Mr. Reddy's industry experience and technical depth inspired attendees and created awareness about **nuclear-grade electrical systems**, a niche and significant field in electrical engineering.

Guest Lecture: 6

Date: 24th March 2025

Title of the Guest Lecture: "Overview of an EHT Substation"

Resource Person:
Mr. S.V. Mahesh Babu
Executive Engineer, A.P. TRANSCO

Organized by:
Department of Electrical & Electronics Engineering
Annamacharya University, Rajampet,
Annamayya District
(In association with ISTE)

Objectives of the Guest Lecture:

1. To provide students with a practical understanding of **Extra High Tension (EHT) substations** and their working.
2. To explain the **components, layout, and protection systems** used in EHT substations.
3. To enhance student knowledge about **real-world power transmission infrastructure**.
4. To bridge the gap between **academic learning and field operations** through expert insights.

Outcomes of the Lecture:

- Students gained detailed knowledge of **substation operation, components (CBs, PTs, CTs, Isolators, LA, etc.)**, and power flow control.
- Understood the **importance of safety measures, SCADA integration**, and automation in EHT substations.
- Increased awareness of **career opportunities** in transmission corporations like A.P. TRANSCO.
- Encouraged students to consider **site visits, internships, and project work** related to high-voltage systems.

Summary of the Session:

On **24th March 2025**, the Department of Electrical & Electronics Engineering at **Annamacharya University, Rajampet**, organized a one-day guest lecture titled *"Overview of an EHT Substation"*. The lecture was delivered by **Mr. S.V. Mahesh Babu**, Executive Engineer from **A.P. TRANSCO**, an expert with hands-on experience in power transmission systems.

Mr. Mahesh Babu explained the **layout and functional sections** of an EHT substation, including bus bars, switchgear, relays, transformers, and circuit protection systems. He described real-time operational challenges and the **importance of redundancy, fault isolation, and automation** in substations.

The session was highly beneficial for final-year and pre-final-year students who are preparing for **GATE, PSU jobs**, or **industrial placements**. The event concluded with a Q&A session where students asked about grid connectivity, smart substations, and current trends in power systems.

Guest Lecture: 7

Date: 04th April 2025

Title of the Guest Lecture: "Career Opportunities After Graduation (GATE / IES / PSU)"

Resource Person:
Mr. V.R.D.M. Kausik Agastya Raj
ACE Engineering Academy, Hyderabad

Organized by:
Department of Electrical & Electronics Engineering
Annamacharya University, Rajampet, Annamayya District
(In association with ISTE)

Objectives of the Guest Lecture:

1. To guide students on **various competitive career paths** available after graduation such as **GATE, IES, and PSU recruitment**.
2. To create awareness on the **syllabus, preparation strategies, and timelines** for major competitive exams.
3. To motivate students to **plan their career paths early** with a focused approach.
4. To provide **practical tips, success stories**, and **resource materials** to succeed in the exams.

Outcomes of the Lecture:

- Students gained **clarity on various career options** available after completing their engineering degree.
- Participants understood the **exam patterns, eligibility, and selection process** for GATE, IES, and PSU jobs.
- Increased student interest in **higher education and government job preparation**.
- Encouraged students to begin **structured preparation and time management** for competitive exams.

Summary of the Session:

On **04th April 2025**, the Department of Electrical & Electronics Engineering at **Annamacharya University, Rajampet**, organized a one-day guest lecture on "*Career Opportunities After Graduation (GATE / IES / PSU)*". The session was delivered by **Mr. V.R.D.M. Kausik Agastya Raj** from **ACE Engineering Academy, Hyderabad**, a well-known institution for competitive exam coaching.

The resource person provided detailed insights into the **scope and importance** of pursuing GATE for higher studies, IES for engineering services, and PSU recruitment for public sector careers. He outlined the **subject-wise preparation strategies, recommended books**, and **effective planning techniques** to crack these exams.

The session included a Q&A segment where students clarified doubts about **exam attempts, mock tests, coaching resources, and time management**. The lecture was highly informative and boosted the confidence of aspiring graduates planning to pursue competitive exams.