PSG Institute of Technology and Applied Research, Coimbatore

Department of Electrical and Electronics Engineering

IEEE Technically sponsored Second International conference on Sustainable Electric and Communications Systems 2025

October 9-10, 2025

🎯 Key Takeaways from Expert Sessions: Robotics, Automation, and Smart Energy @ PSG iTech | ITECH SECOM 2025

The **Department of Electrical and Electronics Engineering, PSG Institute of Technology and Applied Research, Coimbatore**, hosted impactful **Pre-Conference Expert Sessions** on ***"Robotics, Automation, and Smart Energy"*** as part of the IEEE-sponsored ITECH SECOM 2025.

🍗 The **Inauguration of ITECH SECOM 2025** began with an air of anticipation and enthusiasm as faculty, industry professionals, and students gathered to celebrate innovation in engineering. The session served as a curtain-raiser to a series of impactful expert talks and workshops focused on future technologies.

🤖 **Dr. Santhakumar** from IIT Palakkad and **Dr. Hemavathi** from CSIR–CECRI led the sessions, highlighting the twin pillars shaping the future of technology—**Automation for Industry 4.0** and **Smart Energy Systems for Global Electrification and Decarbonization.**

🌐 Dr. Santhakumar traced the industrial journey from mechanization (Industry 1.0) to intelligent, remotely controlled systems defining **Industry 4.0.** His session emphasized the role of **Robotics, AI, and Digital Twins** in enabling smart manufacturing, with real-world examples such as **marine robots, solar cleaning robots,** and **autonomous maintenance systems.** He also discussed the growing importance of **Edge AI, Agentic AI, and XAI** in advancing industrial control and predictive operations.

🔒 Addressing the challenges of digital transformation, Dr. Santhakumar underscored the urgent need for a **skilled workforce** and **robust cybersecurity measures** to protect data integrity in complex, interconnected systems like **smart grids, microgrids, and automated substations.**

🔋 Dr. Hemavathi's session focused on **Smart Battery Management Systems (BMS)** as the "brain of the battery," vital for **EVs and energy storage technologies.** She elaborated on key parameters such as **C-rate, State of Charge (SOC), Depth of Discharge (DOD),** and detailed the importance of **Battery Thermal Management Systems (BTMS)** in preventing **thermal runaway** and maintaining operational safety between **15°C–35°C.**

⚡ Her insights linked BMS innovation directly to the **Global Energy Transition**, emphasizing that safe, high-performance energy storage forms the foundation of sustainable electrification.

💡 Collectively, the sessions illuminated that **Automation in Manufacturing** and **Smart Energy Systems** are converging through intelligent control technologies. The experts concluded that the success of this transition depends on **continued R&D**, **cross-disciplinary innovation**, and the **development of a digitally skilled workforce** ready to power the next era of industrial transformation.


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