



Call for Papers for the Special Session on

MODERN TRENDS IN ELECTRIC DRIVE CONTROL, POWER CONVERTER TOPOLOGIES, AND RENEWABLE ENERGY SYSTEMS

Organized and co-chaired by

Dr. Mahmoud F. Elmorshedy, Renewable Energy Laboratory,
College of Engineering, Prince Sultan University, Saudi Arabia

mahmoud.elmorshedy@f-eng.tanta.edu.eg

Dr. Kotb M. Kotb, IRC for Sustainable Energy Systems,
King Fahd University of Petroleum and Minerals, Saudi Arabia

kotb.baldam@kfupm.edu.sa

Dr. Dhafer J. Almakhles, Renewable Energy Laboratory, College
of Engineering, Prince Sultan University, Saudi Arabia

dalmakhles@psu.edu.sa

Prof. Mohamed A. Abido, IRC for Sustainable Energy Systems,
King Fahd University of Petroleum and Minerals, Saudi Arabia

mabido@kfupm.edu.sa

Technical Outline of the Session and Topics

This advanced technical session will provide a comprehensive platform for exploring state-of-the-art control strategies and their applications. Topics include recent advancements in Field-Oriented Control (FOC), Direct Torque Control (DTC), artificial intelligence (AI)-based control, and Model Predictive Control (MPC) for high-performance electric drives. The session will also cover innovations in Pulse Width Modulation (PWM), Modified Space Vector Modulation (SVM), and multilevel inverter control for power converters, as well as advanced approaches such as Maximum Power Point Tracking (MPPT), DC-link voltage stabilization, and energy management strategies for renewable energy systems. Furthermore, participants will gain insights into emerging areas, including fault detection and fault-tolerant control, real-time digital control implementation, and the coordination of hybrid renewable energy systems within microgrid architectures. By emphasizing the efficiency, reliability, and performance improvements enabled by these control techniques, the session aims to bring together researchers and practitioners to foster innovation and collaboration in next-generation energy and drive systems.

Topics of the session include, but are not limited to:

- Advanced Control Strategies for Electric Drives (FOC, DTC, MPC, and AI-based control)
- Sensorless Control Techniques for Electric Drives
- Innovations in PWM, Space Vector Modulation, and Multilevel Inverter Control
- Modeling, Control, and Optimization of Power Converters
- Digital Control Implementation in Power Converters
- Coordinated Control of Hybrid Renewable Systems and Microgrid Architectures
- Advanced Control Strategies for Renewable Energy Systems
- Energy Storage Integration in Renewable Energy Systems
- Any other related topics