



ENERGY CONVERSION CONGRESS & EXPO



2024

2-6 September, Darmstadt



Call for Work in Progress Paper

Aim of the Conference

Power electronics is one of the key technologies to tackle the key challenges of mankind: climate change and sustainability. Therefore, we will move into an electric age, where more and more processes will be electrified, and the use of renewable energy will be the fundament of our future energy backbone.

The ECCE series of power electronics conferences are among the largest in the world, and ECCE Europe claims to become the flagship conference in Europe for power electronics, attracting many hundred experts from Europe and other regions of the world.

ECCE Europe 2024 is aimed at exchanging ideas and experience among senior professionals, young scientists, PhD candidates and researchers from industry and academia in all areas of power electronics. During ECCE Europe 2024 in Darmstadt there will be opportunities to converse about topics in our wonderful area of work, through lecture- and dialogue sessions, industrial forums and exhibition, technical tours and tutorials.

Organization and Venue

Commencing in 2024, IEEE PELS is embarking on a new collaboration with the European Center for Power Electronics (ECPE) for the PELS flagship conference in Europe: IEEE ECCE Europe 2024.

The conference will take place at the Darmstadtium Conference Center in Darmstadt, Germany (<https://www.darmstadtium.de>)

The conference language is English in all presentations, discussions, and materials.

Further and up-to-date information can be obtained from the website www.ecce-europe.org



Important Dates



17 June 2024 (hard deadline)
Submission of preliminary results (4p)



22 July 2024
Notification of acceptance



2 September 2024
Submission of final full paper (max. 8p)

General Chairs

Prof. Gerd Griepentrog, Technical University Darmstadt
Prof. Oscar Lucia, University of Zaragoza

Technical papers are solicited on any subject pertaining to the scope of the conference including, but not limited to, the following major topics:

I Converter Components

1. **Power Devices, Components and Packaging**
 - a) Passive Components
 - b) Active Devices and Components (Si)
 - c) Active Devices and Components (Wide Bandgap and other New Materials)
 - d) Components and Devices for Specific Applications
 - e) System Integration, Packaging & Thermal Management
 - f) Gate Drives
2. **Power Converters Topologies**
 - a) Modular Multilevel Converters
 - b) Solid State Transformers
 - c) Grid-Tie Converters
 - d) Resonant Converters
 - e) HF Power Converters
 - f) Wide-Band Gap Power Electronics
 - g) EMI/EMC including HF Phenomena
3. **Converter Modelling, Simulation and Design**
 - a) Converter Design and Optimization
 - b) Converter Modelling
 - c) Standardized Data Model for Components / Electronic Data Sheets
4. **Measurement, Supervision and Control for Power Converters**
 - a) Advanced Modulation Techniques
 - b) Advanced Current / Voltage / Synchronization and Control Techniques
 - c) Estimation, Identification and Optimization Methods
 - d) Measurement Techniques, Sensors, and State Observers
5. **Data Analysis, Artificial Intelligence and Communication**
 - a) Data Analysis Applied to Power Electronics and Drive Systems
 - b) Application of Artificial Intelligence to Power Electronics and Drive Systems
 - c) Communication for Power Electronics and Drive Systems
 - d) Wireless Control of Power Electronics Systems
 - e) Diagnostics of Power Electronics Systems
 - f) Digital Twin of Power Electronic Converters and Systems
 - g) Big Data and Artificial Intelligence in Energy Conversion
6. **Sustainability of Power Converters**
 - a) Energy and Carbon Footprint Estimation of Converter Manufacturing and Life Cycle Analysis (LCA)
 - b) Estimation of Efficiency and Power Losses during Operation
 - c) Recycling Capability and Methods
 - d) Efficient Use of Material, esp. Rare Materials
 - e) Circular Economy
 - f) Condition Monitoring, Reliability & Life-Time Prediction

II Converter Applications

7. **Electrical Machines and Drive Systems**
 - a) Electrical Machines and Actuators
 - b) Adjustable-Speed Drives and Converter-Machine Interactions (dv/dt, Bearing Currents)
 - c) Design, Optimization and Control of Electrical Drives
 - d) Condition Monitoring and Life-Time Prediction of Drives
8. **Renewable Energy Power Systems**
 - a) Wind Energy Systems
 - b) Solar Energy Systems
 - c) Energy Storage Systems for Renewable Energy
 - d) Energy Management Systems
 - e) Energy Harvesting
 - f) Power-to-X
 - g) Other Renewable Energy Systems
9. **Power Electronics in Transmission and Distribution Systems**
 - a) HVDC, FACTS, Solid State Transformers and Hybrid Circuit Breakers
 - b) Grid Supporting and Grid Forming Converters
 - c) Smart Grids
 - d) AC and DC Distribution and Micro Grids, including Fault Coordination and Protection
 - e) Power Quality Issues and Power Factor Correction
 - f) Stationary Charging Power Stations and Stationary (Ultra) Fast Chargers, Bidirectional V2G
 - g) Smart and Energy Efficient Buildings
 - h) Real-Time Simulation and Hardware in the Loop
10. **E-Mobility and Propulsion Systems**
 - a) Electric Drive Trains for Passenger and Light Duty Vehicles
 - b) Electric Drive Trains for Heavy Duty Vehicles and Buses
 - c) Electric Drive Trains for Rail Vehicles
 - d) Electric Drive Trains for Aerospace Applications (Aircrafts, Drones)
 - e) Electric Drive Trains for Marine Applications (Offshore, Subsea and Ships)
 - f) On-Board Chargers (wired)
 - g) Wireless Power Transfer Systems
 - h) On-Board DC-Voltage Networks
 - i) Smart Charging and Vehicle to X (Home, Load) Interaction
 - j) Batteries: Management Systems (BMS), Monitoring and Lifetime Prediction (SOC, SOH)
 - k) Fuel Cells: Converters, Control, Diagnostics and System Integration
 - l) Power Electronics for Vehicle-Integrated PV (VIPV)
11. **Power Supplies and Industry-Specific Applications**
 - a) Stationary Battery Systems, Electrolyzer and Fuel Cells
 - b) DC Power Supplies
 - c) Distributed Power Supplies
 - d) Data Centers
 - e) Uninterruptible Power Supplies (UPS)
 - f) Solid-State Lighting and Electronic Ballasts
 - g) Industry-Specific Applications (Cement, Steel, Paper, Textile, Mining, etc.)
 - h) Applications in Physics Research and Related Areas
 - i) Home Appliances (Inductive Heating, HVAC and Heat Pumps)
 - j) Biomedical Applications
 - k) DC-Grids in Industrial Applications
 - l) Pulsed Power for Manufacturing



Further information on scientific/program and the organizing committees as well as latest updates on tutorials, program, etc. can be accessed on the conference website.