

EPE 2023 ECCE Europe

September 4th – 8th, 2023
Aalborg, Denmark

The 25th European
Conference on Power
Electronics and
Applications



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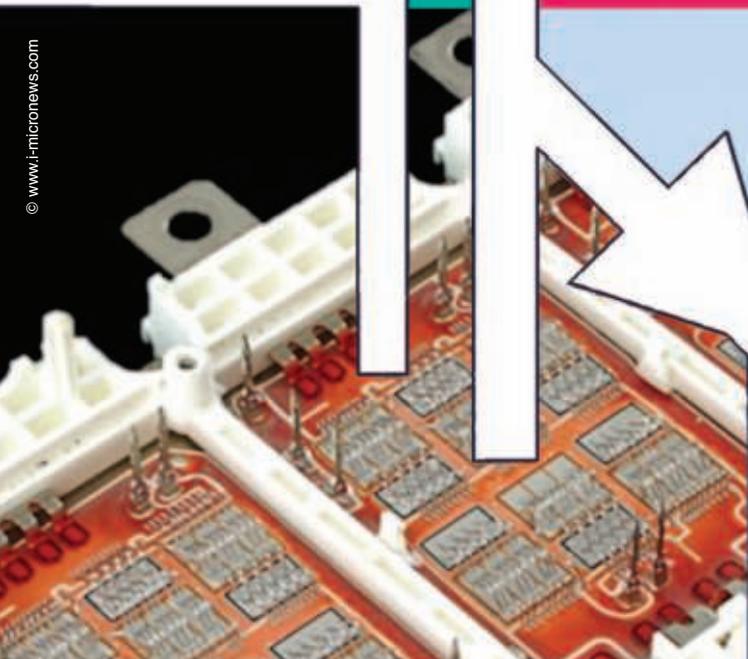
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CALL FOR PAPERS

Important dates

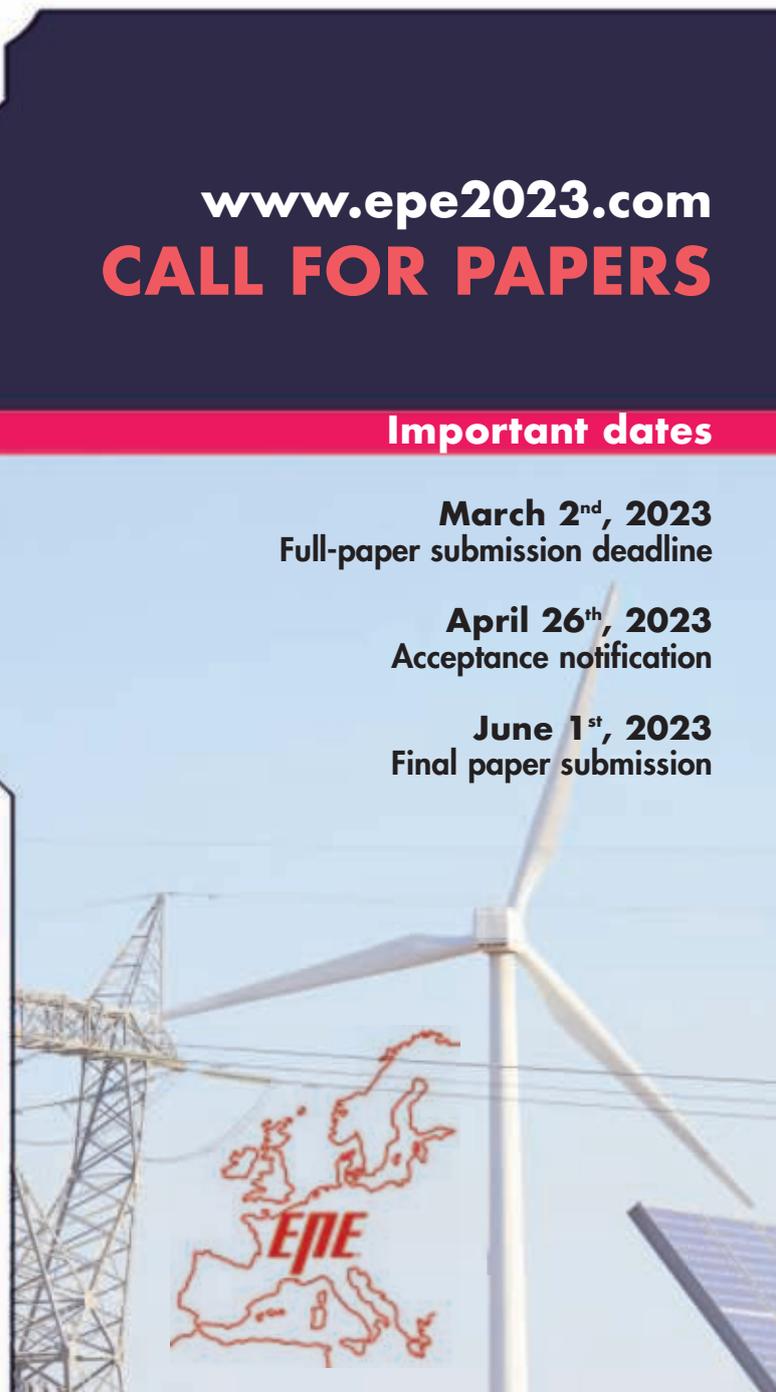
March 2nd, 2023
Full-paper submission deadline

April 26th, 2023
Acceptance notification

June 1st, 2023
Final paper submission



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Organization and Venue

Welcome back to the land of wind and green energy! After a successful EPE ECCE Europe conference in 2007, the Power Electronics community will gather again in Aalborg, Denmark, from September 4 to 8, 2023, to exchange views on research progress and technological developments in the various topics described hereunder. On Monday, September 4th, several tutorials will be organized, and some exciting technical visits are planned for Friday, September 8th.

The 25th Conference on Power Electronics and Applications (and Exhibition), EPE '23 ECCE Europe (Energy Conversion Congress and Expo Europe) is co-sponsored by the [EPE Association](#) and the IEEE Power Electronics Society (PELS).

The conference will take place at the AKKC – The Aalborg Congress and Culture Center, in Aalborg, Denmark. (Info at <http://akkc.dk>)

Aims of the Conference

The EPE ECCE Europe conference is one of the largest in the world, attracting around eight hundred experts from numerous countries every year. Aiming at exchanging experience among fellow professionals and academics, and bearing in mind the present and future role of power electronics in the big energy transition the world is looking forward to, the EPE ECCE Europe conference is the privileged place to achieve this goal. EPE'23 ECCE Europe in Aalborg will provide the opportunity to discuss hot topics through the lecture- and poster sessions, the exhibition, the industrial forums and the tutorials.

Topics

Electrification of society is progressing fast, also pushed by the recent demands at the environmental level, both in terms of reduction of CO₂ emissions and energy-production sustainability. Novel battery systems are being developed not only for drones, passenger cars and heavy-duty vehicle applications, but also for stationary storage applications. For vehicle applications, high-power charging stations are being developed to reduce charging time. Bi-directional V2X charging systems allow for better grid management and, when combined with smart charging, for an increased share of renewables in the electricity mix. Power electronics interfaces, with their emerging wide bandgap (WBG) technologies, such as SiC and GaN, are a key element in these developments towards high energy-efficiency systems. The reliability aspect has become more and more crucial in these and many other applications. Alternatives to fossil fuels are being planned in Power-to-X plants where 100's of MW power electronic systems are needed for running the plants. All the above challenges lead to a complex scenario, where expertise at different levels, from materials to management and optimization, are heavily demanded.

On top of the tutorials, lecture and dialogue sessions and technical visits, the organising committees will propose several discussion sessions within the industrial forums as well as special sessions of power electronics related trends. The conference will specifically focus on the following challenging topics:

Tuesday, September 5th: **Energy Islands
(Renewable Energy Systems and Power-to-X, Energy Islands)**

Wednesday, September 6th: **Energy Storage
(Energy-Storage Technologies, Electric Vehicles)**

Thursday, September 7th: **Digital World in Energy
(Cyber Security in Power Electronics,
Reliability and Artificial Intelligence in Power Electronics)**

I POWER ELECTRONICS COMPONENTS AND CONVERTERS

Topic 1: DEVICES, COMPONENTS, PACKAGING AND SYSTEM INTEGRATION

- 1.a. Passive Components
- 1.b. Active Devices and Components (Si)
- 1.c. Active Devices and Components (Wide Bandgap and other New Materials)

- 1.d. Components and Devices for Specific Applications, including for Pulsed Power
- 1.e. System Integration, Packaging & Thermal Management
- 1.f. Reliability & Life-Time

Topic 2: POWER CONVERTERS TOPOLOGIES

- 2.a. Modular Multilevel Converters
- 2.b. Solid State Transformers
- 2.c. Grid Connected Converters
- 2.d. Resonant Converters
- 2.e. HF Power Converters
- 2.f. Wide-Band Gap Power Electronics

Topic 3: CONVERTER MODELLING, DESIGN AND LOW-LEVEL CONTROL

- 3.a. Converter Design and Optimisation
- 3.b. Converter Modelling and Low-level Control, including Gate-Drives
- 3.c. EMI/EMC in Power Electronics including HF Phenomena

Topic 4: MEASUREMENT, SUPERVISION AND CONTROL FOR POWER CONVERTERS

- 4.a. Standard and Advanced Modulation Techniques
- 4.b. Standard and Advanced Current / Voltage / Synchronization Control Techniques
- 4.c. Estimation, Identification and Optimisation Methods
- 4.d. Measurement Techniques, Sensors and State Observers
- 4.e. Condition Monitoring and Life-Time Prediction

II POWER ELECTRONICS APPLICATIONS

Topic 5: ELECTRICAL MACHINES AND DRIVE SYSTEMS

- 5.a. Electrical Machines and Actuators
- 5.b. Adjustable-Speed Drives and Converter-Machine Interactions
- 5.c. Design, Optimisation and Control of Electric Drives
- 5.d. Condition Monitoring and Life-Time Prediction

Topic 6: RENEWABLE ENERGY POWER SYSTEMS

- 6.a. Wind-Energy Systems
- 6.b. Solar-Energy Systems
- 6.c. Energy Storage Systems for Renewable Energy
- 6.d. Energy Management Systems
- 6.e. Energy Harvesting
- 6.f. Power-to-X
- 6.g. Other Renewable-Energy Systems

Topic 7: POWER ELECTRONICS IN TRANSMISSION AND DISTRIBUTION SYSTEMS

- 7.a. HVDC, FACTS, Solid State Transformers and Hybrid Circuit Breakers
- 7.b. Smart Grids
- 7.c. AC and DC Distribution and Micro Grids, including Fault Coordination and Protection
- 7.d. Power Quality Issues and Power Factor Correction Techniques
- 7.e. Charging Power Stations, Bidirectional V2G
- 7.f. Energy Harvesting, Energy Storage Systems and Renewable Diurnal and Seasonality Issues
- 7.g. Smart and Energy Efficient Buildings
- 7.h. Real-Time Simulation and Hardware in the Loop

Topic 8: E-MOBILITY

- 8.a. Electric Drive Trains for Passenger and Light Duty Vehicles
- 8.b. Electric Drive Trains for Heavy Duty Vehicles and Buses
- 8.c. Electric Drive Trains for Rail Vehicles
- 8.d. Electric Drive Trains for Aerospace Applications (Aircrafts, Drones)
- 8.e. Electric Drive Trains for Marine Applications (Offshore, Subsea and Ships)
- 8.f. On-Board Power Converters, WBG Technology as well as On-Board DC-Voltage Networks
- 8.g. Vehicle Battery Chargers: On-Board (Wired and Inductive) and Stationary (Ultra) Fast Chargers
- 8.h. Smart Charging and Vehicle to Grid Interaction
- 8.i. Batteries: Management Systems (BMS), Monitoring and Life-Time Prediction
- 8.j. Fuel Cells: Converters, Control, Diagnostics and System Integration

Topic 9: POWER SUPPLIE AND INDUSTRY-SPECIFIC APPLICATIONS

- 9.a. Wireless Power Transfer Systems
- 9.b. Applications for Electrolyzers and Fuel Cells
- 9.c. Applications in Hydrogen Storage and Transmission
- 9.d. Low Voltage DC Power Supplies
- 9.e. High Voltage DC Power Supplies
- 9.f. Distributed Power Supplies
- 9.g. Uninterruptible Power Supplies (UPS)
- 9.h. Lighting: Solid-State Lighting and Electronic Ballasts
- 9.i. Industry-Specific Applications (Cement, Steel, Paper, Textile, Mining, etc...)
- 9.j. Applications in Physics Research and Related Areas

Topic 10: DATA ANALYSIS, ARTIFICIAL INTELLIGENCE AND COMMUNICATION

- 10.a. Data Analysis applied to Power Electronics and Drive Systems
- 10.b. Application of Artificial Intelligence to Power Electronics and Drive Systems
- 10.c. Communication for Power Electronics and Drive Systems
- 10.d. Wireless Control of Power Electronics Systems
- 10.e. Diagnostics of Power Electronics Systems
- 10.f. Digital Twin of Power Electronic Converters and Systems
- 10.g. Big Data and Artificial Intelligence in Energy Conversion

Presentation of Papers

The accepted contributions to EPE'23 ECCE Europe will be presented either as a lecture presentation or as a dialogue presentation. A manuscript must be submitted in English in both cases for inclusion in the Conference Proceedings (electronic version only). Papers for lecture sessions will be strictly limited and selected on the basis of wide audience appeal, ease of understanding and potential stimulation of broad ranging discussion. No lecture session will be organized during the dialogue session timeslots.

Contents of Provisional Full Papers

The provisional full papers should consist of a 6 to 8 page anonymous summary, including an abstract with no more than 50 words; topic number and indication of the preference for dialogue or lecture presentation (to be clearly mentioned), key diagrams and a references list. The provisional full papers must be submitted through the conference official website. A link to the site will be available from <http://www.epe2023.com/>, as well as from <http://www.epe-association.org>. Detailed information and guidelines can be downloaded from the conference website to help you prepare the needed material for submitting a provisional full paper. The site will open for upload in the autumn. Authors of papers provisionally selected for presentation will receive a notification and can download the instructions for preparing the dialogue papers and/or the lecture papers from the website. Final selection will be based on the full paper. The paper will only be included in the Conference Proceedings after receipt of one full registration fee per paper in due terms. Student registration fee is only valid for student participants, not for authors. One single author may not present more than two (2) papers. The publication date of the accepted conference papers will be two weeks before the conference. The conference proceedings will be included into the IEEE Xplore® digital library.

Tutorials – Call for Proposals

Several tutorials will be held prior to the conference. Scholars and experts willing to propose a tutorial at EPE'23 ECCE Europe are invited to send a proposal to the scientific secretariat (EPE Association, c/o VUB-IrW-ETEC, Pleinlaan 2, B-1050 Brussels, Belgium, e-mail: epe-association@vub.be) before **January 11th, 2023**. The proposal consists of a three-page summary including tutorial title, name and affiliation of the lecturer(s), tutorial objectives and audience, topical outline and provisional schedule of the tutorial. The tutorials will be organized on **Monday 4 September 2023**. Tutorial proposals related to all conference topics are welcome.

Deadlines

Intending authors should note the following deadlines:
Provisional Full Paper submission deadline: **2 March 2023**
Acceptance notification: **26 April 2023**
Final paper submission deadline: **1 June 2023**

Working Language

The working language of the conference is English, which will be used for all printed material, presentations and discussions.

Programme and Registration

The provisional programme and registration form will be available from the Internet site early summer 2023. Additional information will be available on: <http://www.epe2023.com>

Venue

The conference will take place at the AKKC – The Aalborg Congress and Culture Center. The conference venue is at walking distance from the main railway station and the city center of Aalborg and at about a 20-minute drive from Aalborg airport. The conference venue offers facilities and services of international quality meeting standards. Hi-speed Wi-Fi access will be freely available for attendees, everywhere in the congress center.

Exhibition

As with previous editions, an industrial (and scientific) exhibition will be part of the event.

Detailed information will be available at www.epe2023.com
You can also contact us via e-mail to epe-association@vub.be

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The overall management of the Congress is conducted by the Coordination Committee to ensure consistency in strategy, scope and content of the Conferences from year to year. The committee issues a Call for future locations of the Conferences, and forwards its recommendations to the EPE Executive Council as well as to the IEEE-PELS Administrative Committee for final approval.

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