

EPE 2011 Birmingham UK

14th European Conference on Power Electronics and Applications

30 August to 1 September 2011

Power Electronics and Adjustable Speed Drives: Towards the 20-20-20 Target!

Call for papers

Deadline for Abstracts

Notification

Final Papers

www.epe2011.com

1 November 2010

1 March 2011

1 June 2011



IEEE POWER
ELECTRONICS SOCIETY
Powering a Sustainable Future



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CALL FOR PAPERS

Organization and Venue

The European Power Electronics and Adjustable Speed Drives community will gather in Birmingham, United Kingdom, from 30 August to 1 September 2011 to exchange views on research progresses and technological developments in the various topics described hereunder. The EPE 2011 conference is co-sponsored by the EPE Association and IEEE-PELS and will be held in the International Convention Centre (ICC). Birmingham has been central to industry and the arts since the start of the industrial revolution, so it is an ideal place to learn more about the latest developments in the power electronics' field.

Aims of Conference

EPE is the place for specialists in power electronics, systems and components, to present papers and attend sessions on state-of-the-art technology in this challenging and evolutionary sector. The conference aims to be a meeting forum for researchers, developers and specialists from the industry. Papers are encouraged on all topics described hereunder for interdisciplinary discussions of new ideas, research, development, applications and the latest advances in the field of power electronics and adjustable speed drives.

Topics

As from the European Commission's Action plan, the aim of energy policy seeks to enable the European Union to reduce greenhouse gases by at least 20 %, to reduce energy consumption by 20 % and increase to 20 % the share of renewable energies in energy consumption by 2020 (compared to the respective values in 1990). The demand for electricity is continuously growing and will continue to do so at a much faster rate than other energy sources. Today more than 20% of final energy consumption in the EU is electrical energy, but this is predicted to grow significantly in the next few decades. Efficient energy usage and increased generation of electricity from renewable sources are the main concerns for today's society. Power electronics systems and adjustable speed drives, also referred to as Energy Conversion and Conditioning Technologies (ECCT) are the enabling and often only possible technologies to help us facing those challenges. All fields of the electrical world will be affected by the needed change, starting from the generation of clean, CO₂-neutral electrical energy, up to the most remote applications, in industry, households, transport systems and portable applications. To fit this changing environment, the EPE 2011 conference will address a full list of topics, especially highlighting smart grids and the integration of renewable energy, the automotive industry and the aerospace industry. The motto of this year's conference will be "Power Electronics and Adjustable Speed Drives: Towards the 20-20-20 Target!"

I. COMPONENTS AND SYSTEMS RELATED ISSUES A. DEVICES, PACKAGING AND SYSTEM INTEGRATION

Topic 1: Active devices

- 1a. MOS controlled silicon power devices (e.g. IGBT, MOSFET)
- 1b. Silicon power diode and thyristor devices
- 1c. Monolithic integration, system on chip
- 1d. Wide bandgap power semiconductor devices (e.g. SiC, GaN, GaAs)
- 1e. Simulation, modelling and virtual prototyping
- 1f. Control and protection of power devices

Topic 2: Passive components, system integration & packaging

- 2a. Passive components and integrated passive components
- 2b. Materials and interconnection technologies
- 2c. Cooling, thermal management and thermal design
- 2d. Multichip module packaging technologies
- 2e. Reliability of components and integrated subsystems
- 2f. Simulation and modelling of integrated components and subsystems

Topic 3: Power system integration

- 3a. Modularity and standardization of converters
- 3b. Power electronic system integration methodology

- 3c. Stability and reliability of cascaded converters
- 3d. Integrated applied power systems
- 3e. EMC/EMI issues for integrated power systems, reliability issues

B. POWER CONVERTERS TOPOLOGIES AND DESIGN

Topic 4: Soft switching converters and control

- 4a. Soft switching converters: resonant, ZVS, ZCS
- 4b. Soft switching converters: circuits and control

Topic 5: Hard switching converters and control

- 5a. High power multilevel converters and voltage regulator modules
- 5b. Matrix converters
- 5c. Emerging topologies
- 5d. Failure tolerant systems or converters

C. MEASUREMENT AND CONTROL

Topic 6: Modulation strategies and specific control methods for static converters

- 6a. Converter control sets and modulation strategies
- 6b. Converter control, current/voltage control

Topic 7: Application of control methods to electrical systems

- 7a. Optimal control, robust control, non-linear control
- 7b. Fuzzy control, neuronal control
- 7c. Open and closed loop system control, fault handling strategies

Topic 8: Measurements and sensors

- 8a. Sensors and transducers
- 8b. Measurement methods and techniques
- 8c. Software for measurements and virtual instruments
- 8d. Estimation techniques
- 8e. System diagnoses

D. ELECTRICAL MACHINES AND DRIVE SYSTEMS

Topic 9: Motion control, robotics, special drives, haptics, communication in drive systems

- 9a. Servo drives; stepping and linear drives
- 9b. Electro-active systems
- 9c. Robotics and haptics
- 9d. Communications systems for drives, integration of MC, NC and PLC in drive systems
- 9e. Modelling, simulation and design methods of motion control systems

Topic 10: Electrical machines

- 10a. Synchronous, permanent magnet synchronous and brushless d.c. motor
- 10b. Induction machines
- 10c. Switched reluctance machines
- 10d. Linear machines
- 10e. Integrated electrical machines

Topic 11: Adjustable speed drives

- 11a. General purpose a.c. and d.c. drives
- 11b. Converter machine/mains interactions
- 11c. Adjustable speed drive systems, reliable and fault-tolerant drives
- 11d. Combined multi-motor drive systems

Topic 12: High performance drives

- 12a. DTC and other modulation strategies for high performance drives
- 12b. Advanced control and other high performance drive systems issues
- 12c. Sensorless techniques

Topic 13: Energy efficiency, energy saving issues in system components

- 13a. Energy efficiency, energy saving issues in power electronics components
- 13b. Energy efficiency, energy saving issues in electrical machines and drives
- 13c. Special developments to achieve energy efficiency, energy savings

II. APPLICATIONS RELATED ISSUES

E. APPLICATIONS OF POWER ELECTRONICS IN GENERATION OF ELECTRICAL ENERGY, RENEWABLE ENERGY SYSTEMS, WIND, PV, TIDAL, WAVE, ETC...

Topic 14: Converters for rotating and linear generators

- 14a. Doubly fed generator control
- 14b. Full power generator converter control
- 14c. Fault ride through methods
- 14d. Excitation systems and their control
- 14e. Simulation and emulation of generator systems
- 14f. Reliability issues

Topic 15: Non-rotating power generation and storage systems

- 15a. Fuel cell converters and their control
- 15b. Photovoltaic converters and their control
- 15c. Converters for energy storage and their control
- 15d. Reliability issues

F. APPLICATIONS OF POWER ELECTRONICS IN TRANSMISSION AND DISTRIBUTION OF ELECTRICAL ENERGY

Topic 16: Power electronics in transmission and distribution

- 16a. Microgrid control
- 16b. HVDC transmission
- 16c. FACTS (Incl. STATCOM, SVC) and distribution FACTS
- 16d. Active filtering and other advanced grid side converter control
- 16e. Low frequency harmonics and EMC (less than 9 kHz) mitigation
- 16f. Power electronic protection devices for transmission and distribution
- 16g. Reliability issues

G. APPLICATIONS OF POWER ELECTRONICS IN USERS DEVICES/PROCESSES

Topic 17: Power supplies

- 17a. Uninterruptible Power Supplies (UPS)
- 17b. DC Power Supplies (hard & soft switching)
- 17c. Distributed Power Supplies
- 17d. Voltage Regulated Modules (VRM)
- 17e. EMI & over-voltage protection
- 17f. Electronic ballasts and solid state lighting
- 17g. High power density system design
- 17h. Contactless Power Supply
- 17i. Power Factor Correction (PFC)

Topic 18: Electrical systems in road vehicles

- 18a. Electric propulsion systems for electrified vehicles
- 18b. Control strategies in hybrid vehicles
- 18c. Power converters for electrified vehicles
- 18d. On-Board energy management: generation (f.e. fuel cells), storage, components, systems and control
- 18e. Communications and data transmission
- 18f. EMC related phenomena
- 18g. Modelling, simulation and design methods, reliability issues

Topic 19: Electrical systems in aerospace, space, surface and marine transport (not road)

- 19a. Power electronics in aerospace and space applications
- 19b. Rail vehicles
- 19c. Marine applications (Offshore and ships)
- 19d. On-Board energy management: generation (f.e. fuel cells), storage, components, systems and control
- 19e. Communications and data transmission
- 19f. EMC related phenomena
- 19g. Modelling, simulation and design methods, reliability issues

Topic 20: Industry specific energy conversion and conditioning technologies

- 20a. Energy conversion and conditioning technologies in the industry (cement, steel, paper, textile, mining, etc...)
- 20b. Power electronics and drives in buildings and household applications, including lighting and professional devices
- 20c. Power electronics and drives for low cost applications
- 20d. Electroheat and power electronics
- 20e. Reliability issues, diagnostics

Topic 21: Energy conversion and conditioning technologies in physics research and related applications

- 21a. Power converters for particle accelerators
- 21b. Application of power electronics to pulsed power (f.e. nuclear fusion research, microwaves, etc...)
- 21c. Other related applications

H. EDUCATION IN ELECTRICAL ENGINEERING

Topic 22: Education in electrical engineering

- 22a. Education methodology
- 22b. Education tools and e-learning
- 22c. Simulation software and design tools
- 22d. Education policy in Europe

Presentation of Papers

Contributions to EPE 2011 must 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 (CD-ROM). 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. Dialogue presentation will take place in the afternoon. No lecture session will be organized during the dialogue sessions.

Content of Synopses

The synopses should consist of a 2 to 3 pages anonymous **summary**, including an **abstract** with no more than 50 words; topic number and indication of the preference for dialogue or lecture presentation; these must be clearly mentioned; key diagrams and a references list.

The synopses will be submitted using the host of the conference on the internet. Links to the site will be available from:

<http://www.epe2011.com> and <http://www.epe-association.org>. Detailed information and guidelines can be downloaded from the site to help you preparing the needed material for submitting a synopsis. The site will be open for upload from **1 September 2010** onwards.

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 internet site. 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. In that case, the fee to present the two papers will be 150% of the registration fee.

A selection of outstanding conference papers will be published afterwards in the EPE Journal, which is an ISI registered journal. The conference papers will also be registered in IEEEXplore.

Tutorials - Call for Proposals

Several tutorials will be held prior to the conference. Authors willing to propose a tutorial at EPE 2011 are invited to send a proposal to Brigitte Sneyers at the scientific secretariat (EPE Association, c/o VUB-IrW-ETEC, Pleinlaan 2, B-1050 Brussels, Belgium, e-mail: bsneyers@vub.ac.be) before January 17, 2011. The proposal will consist 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 August 29th, 2011. The location where the tutorials will take place will be communicated later on via the website <http://www.epe2011.com>. Tutorial proposals are particularly welcome in the following topics, although other topics may be proposed as well:

- New Devices/Topologies for Sustainable Energy Applications
- Understanding the Electrical Grid Behaviour and Management
- Building and Connecting of Renewable Energy Sources
- Connecting Fuel Cells to the Electrical Applications
- ECCT for Clean Road Transport and Aerospace
- Application of Drives
- Storage of Electrical Energy
- Education issues, and more...

Deadlines

Intending authors should note the following deadlines:
Receipt of synopses **1st of November 2010**
Notification of provisional acceptance **1st of March 2011**
Receipt of full typescript for final review **1st of June 2011**

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 a few months before the conference. Access to the full papers will be given with password to all registered participants, 1 or 2 weeks before the conference to allow attendees to prepare their participation.
Additional information: <http://www.epe2011.com>

Exhibition

There will be an exhibition integrated in the conference. If you would like to know more details please go to <http://www.epe2011.com> or contact us via e-mail: info@epe2011.com or Jessica.schmid@vub.ac.be

Venue

The venue is Birmingham which lies at the heart of England. The city is the UK's second most populous urban area. Birmingham has developed into a national commercial centre and is a vibrant international hub for conferences, retail and events along with an established high technology, research and development sector, supported by three universities. The climate in Birmingham is moderate with average maximum temperatures in summer (July) being around 20°C.

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