# EPE '13 – ECCE Europe LILLE, France

## 15th European Conference on Power Electronics and Applications

## 3–5 September 2013

*Main theme: Power electronics for sustainable transportation systems*

http://www.epe2013.com

Conference in a carbon care philosophy

**Digest deadline:**
1 December 2012

**Notification deadline:**
1 March 2013

**Final paper deadline:**
1 June 2013

Photo: OT Lille

# CALL FOR PAPERS

## Organization and Venue

The European Power Electronics and Applications community will gather in Lille, France, from 3 to 5 September 2013 to exchange views on research progresses and technological developments in the various topics described hereunder. The EPE '13 ECCE (Energy Conversion Congress and Expo) Europe event is co-sponsored by the EPE Association and IEEE PELS and will be held in Lille Grand Palais. Lille is located at the crossroads of Paris, Brussels and London, in an area renowned for its industrial background, its university life and the warm welcome of its inhabitants.

## Aims of the Conference

EPE ECCE Europe 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 2020 is approaching, the hardware aspects of implemented policies towards the European Commission's Action Plan, also called 20-20-20, i.e. reduction of greenhouse gases by at least 20%, reduction of energy consumption by 20% and increase to 20% the share of renewable energies in energy consumption by 2020, are becoming visible. The share of renewable energies in the total electrical energy production is increasing with as consequence an increased stress on the transmission and distribution grids. Inadequacy between the produced and used electrical power is starting to affect energy pricing and negative prices have been observed on the market. Electrical power balancing and energy storage will be key issues in the coming years and power electronics as part of Energy Conversion and Conditioning Technologies (ECCT) will keep and even increase its key-enabling characteristic.
New solutions to accommodate increasingly high amounts of electrical energy from renewable and variable (and not adjustable!) electrical power sources in the grids will need to be developed.
Electric transportation systems and electric vehicles are technologies at the crossroad of a true carbon care policy. Electric transportation is offering a sustainable solution and the batteries of electric vehicles are starting being considered as an electrical energy storage capacity.
To fit these new challenges, the EPE '13 ECCE Europe event will address a full list of topics, especially highlighting (smart) grids, energy efficiency in the industry and transportation. The motto of this year's conference will be "Power Electronics and Adjustable Speed Drives for Sustainable Transportation Systems!"

### 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. Communication 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
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
12d. Reliable and fault-tolerant drives

### II. APPLICATIONS RELATED ISSUES

#### E. ENERGY EFFICIENT SYSTEMS

**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

## F. 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

## G. 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

## H. 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. Infrastructure for charging EV´s
18h. 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

## I. 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 '13 ECCE Europe 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 (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.
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 3 to 5 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. A link to the site will be available from: http://www.epe2013.com, a link from http://www.epe-association.org will be available as well. 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 15 September 2012 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 papers presented at the conference 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 '13 ECCE Europe 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 17 January, 2013. 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 2 September, 2013. The location where the tutorials will take place will be communicated later on via the website http://www.epe2013.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 | 1 December 2012 |
| Notification of provisional acceptance | 1 March 2013 |
| Receipt of full typescript for final review | 1 June 2013 |

## 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.epe2013.com

## Exhibition

There will be an exhibition integrated in the event. If you would like to know more details please go to http://www.epe2013.com or contact us via e-mail to mireille.vankeerberghen@vub.ac.be or info@epe2013.com.

## Venue

The conference will take place in Lille Grand Palais, a mere 5 minutes walk from the two train stations, Lille-Flandres and Lille-Europe. Plenary sessions will be held in the Vauban auditorium (with more than 1000 seats). Poster sessions, exhibition and coffee breaks will be located in the Hall "Lille Métropole", a large open space in the heart of the congress centre. Lunches will be in the room "Jeanne de Flandres", at the top floor, with a fine 180° sight on the city. Wifi access will be free for attendees, everywhere in the congress centre.

## Conference Organizing Committee

Conference Chairperson: Betty Lemaire-Semail, Université Lille1, L2EP, France

Programme Chairperson: Philippe Lataire, Vrije Universiteit Brussel, Belgium

Joint Conference Chairperson: Alain Bouscayrol, Université Lille1, L2EP, France

Joint Conference Chairperson: Philippe Le Moigne, EC-Lille, L2EP, France

Joint Conference Chairperson: Benoît Robyns, HEI, L2EP, France

### Members:

G. Arsov
P. Bauer
A. Benchaib
F. Blaabjerg
F. Bordry
D. Boroyevich
A. Bouscayrol
M. Cacciato
Z. Cerovsky
A. Consoli
R.W. De Doncker
B. de Fornel
K. Jezernik
M. Jufer
V. Katic
R. Kennel
P.C. Kjaer
W. Koczara
J.W. Kolar
P. Lataire
E. Lomonova
L. Lorenz
M. Marchesoni
Ph. Mawby
C. Oates
J. Peracaula
Y. Perriard
L. Ribickis
B. Robyns
A. Rufer
W. Schumacher
B. Semail
A. Sudria
M. Sumner
J.L. Thomas
J. Van Mierlo
E. Dede
B. Ferreira
S. Galceran
L. Harnefors
S. Mircevski
S. Munk-Nielsen
I. Nagy
H.-P. Nee
H. Weiss
P. Wheeler
K. Zawirski

## International Scientific Committee

J. Ahola
H. Akagi
M. Alakula
F. Aldana
P. Aloïsi
M. Alonso
F. Antunes
O. Apeldoorn
G. Asher
S. Azzopardi
D. Ban
R. Bassett
P. Bauer
R. Belmans
A. Benchaib
A. Berthon
A. Binder
F. Blaabjerg
S. Bolognani
F. Bordry
D. Boroyevich
S. Bosga
A. Bouscayrol
M. Braun
G. Buja
H. Buyse
M. Cacciato
D. Casadei
Z. Cerovsky
D. Chatroux
J. Clare
S. Colombi
A. Consoli
G. Coquery
F. Costa
M. Crappe
B. Davat
R.W. De Doncker
B. de Fornel
S. de Haan
E. Dede
F. Dijkhuizen
H.G. Eckel
M. Fasching
V. Fedak
P. Ferraris
B. Ferreira
L. Fragapane
F.W. Fuchs
S. Galceran
J. Gaubert
L. Gertmar
L. Gonthier
H. Güldner
J. Gyselinck
I. Hahn
L. Harnefors
M. Hendrix
W. Hofmann
S.Y.R. Hui
A. Hyde
R.B. Inderka
K. Jezernik
M. Jufer
H. Kabza
S. Kalaschnikow
P. Karlsson
V. Katic
M. Kazmierkowski
R. Kennel
E. Kiel
P.C. Kjaer
W. Koczara
J.W. Kolar
J. Kyyrä
P. Lataire
P. Le Moigne
S. Lefebvre
A. Lelkes
W. Leonhard
E. Levi
A. Lindemann
E. Lomonova
L. Lorenz
R.D. Lorenz
J.P. Louis
J. Lutz
S. Manias
M. Marchesoni
E. Margato da Fonseca
E. Masada
P.A. Mawby
J. Melkebeek
M. Mermet-Guyennet
A. Mertens
R. Meuret
T. Meynard
J. Millan
E. Monmasson
F. Morancho
B. Multon
S. Munk-Nielsen
I. Nagy
H.-P. Nee
J. Niiranen
R. Nilsen
B. Nogarede
C. Oates
B. Orlik
P.R. Palmer
J. Pedersen
J. Peracaula
Y. Perriard
B. Piepenbreier
F. Profumo
Z. Qian
W.F. Ray
J. Reinert
L. Ribickis
F. Richardeau
B. Robyns
M. Rodic
A. Rufer
M. Samotyj
F. Sarrus
U. Schäfer
J.-L. Schanen
U. Scheuermann
H. Schierling
A. Schmidhofer
G. Schröder
M. Schrödl
W. Schumacher
B. Semail
N.Y.A. Shammas
S. Siala
R. Siemieniec
P. Steimer
A. Sudria
M. Sumner
S.M. Tenconi
S. Tennakoon
J.L. Thomas
A. Totterdell
J. Uceda
A. Van den Bossche
J. Van Mierlo
A. Vezzini
H. Weiss
P. Wheeler
K. Zawirski
G. Zetterberg
A. Zobaa

## Local Conference Committee

A. Benabou
C. Cardon
L. Chevalier
X. Cimetière
S. Clénet
P. Ducasse
B. François
F. Gillon
F. Giraud
C. Giraud-Audine
M. Hecquet
T. Henneron
X. Kestelyn
Y. Lemenach
X. Margueron
A. Merdassi
N. Idir
F. Piriou
Ch. Saudemont
E. Semail
M. Tounzi
A. Videt

## Secretariat

EPE secretariat
Philippe Hamacher
EPE Association
c/o VUB - IrW - ETEC
Pleinlaan 2 - B-1050 Brussels
Belgium
Tel.: +32 (0)2 629 28 00
Fax: +32 (0)2 629 36 20
e-mail: phamache@vub.ac.be

Local secretariat
Claire Cardon
L2EP, Université Lille1
Cité scientifique
59655 Villeneuve d'Ascq cedex
France
Tel: +33-(0)3-20-43-42-35
Fax: +33-(0)3-20-43-69-67
e-mail: info@epe2013.com