

8.30 – 9.15

**Key-Note Paper for all Participants**

Electronics for enabling distributed resources in electrical system -  
**From the State of the Art to Future Trends**

Benoit Jacquemin, Director System Innovations, Schneider Electric, FRANCE  
 (see introduction page 31)

9.20 – 12.40

**Session PE 7 – parallel running to Session 8, 9, 10****Advanced Product Design - Part I**

Chairman: Ulrich Kirchenberger, STMicroelectronics, GERMANY

PE 7-1

**New Low-Loss and Small-Sized 1700V IGBT Module with Advanced IGBT Chip**

N. Iwamuro, Y. Hoshi, Y. Miyasaka, S. Yoshiwatari, T. Miyasaka, Fuji Hitachi, JAPAN

PE 7-2

**Thermal Management in PCs: An Innovative Solution to Adapt the Ventilation to the Cooling Demand and Reduce Acoustic Noise**

I. Bimbaud, STMicroelectronics, FRANCE

PE 7-3

**High-Power Modules with Soft-Punch-Through IGBT Technology for Traction Applications**

M. Rahimo, A. Kopta, R. Schnell, U. Schlapbach, R. Zehringer, S. Linder, ABB Semiconductors, SWITZERLAND

10.50 – 11.10

Coffee Break

PE 7-4

**2nd Generation of MDmesh™: Extension to 200V Results in Unsurpassed Gate Charge for Isolated DC-DC Converters. New Series of 500V and 600V Sets a New Worldwide Record in Both Static and Dynamic Performance**

M. Saggio, F. Di Giovanni, M. Melito, G. Belverde, STMicroelectronics, ITALY

PE 7-5

**A New Flexible Low-Cost Power Module for Home Appliances**

N. Keskar, M. Battello, P. Wood, A. Guerra, M. Hezi, International Rectifier, USA

PE 7-6

**An Integrated Power Factor Correction Module with Dual In-Line Package**

M. Iwasaki, M. Seo, M. Fukunaga, X. Kong, G. Majumdar, Mitsubishi Electric, JAPAN, E. Thal, Mitsubishi Electric, GERMANY

9.20 – 10.50

**Session PE 8 – parallel running to Session 7, 10****Low Voltage IC**

Chairman: Pierre Aloisi, Consultant, FRANCE

PE 8-1

**Improving the Performance of Power MOSFETs by Tailoring the Driver to the Specific MOSFET Gate Requirements**

J. Brown, Vishay Siliconix, UK

PE 8-2

**New Low Cost Monolithic Emitter-Switching Power Bipolar Transistor**

S. Buonomo, G. Gullotta, C. Ronsisvalle, F. Saya, R. Scollo, STMicroelectronics, ITALY

PE 8-3

**Simplifying and Improving the Performance of Synchronous Rectifiers in Isolated Power Supply Topologies**

H.P. Yee, S. D. Meyer, SRMOS, M. Birch, Microsemi, A. N. Alderman, Anageneis, USA

10.50 – 11.10

Coffee Break

11.10 – 12.40

**Session PE 9 – parallel running to Session 7, 10****High Voltage IC**

Chairman : Enrique Dede, University of Valencia, SPAIN

PE 9-1

**A Compact IGBT Driver for High Temperature Applications**

S. Zeltner, M. Billmann, M. März, Fraunhofer Institute, E. Schimanek, Consulting Engineers, GERMANY

PE 9-2 **Coreless Transformer a New Technology for Half Bridge Driver IC's**  
M. Münzer, W. Ademmer, eupec, B. Strzalkowski, K.T. Kaschani, Infineon Technologies, GERMANY

PE 9-3 **Design and Characteristics of HVIC-Used Gate-Driven IGBT Inverters**  
B.-C. Cho, B.-H. Choo, B.-S. Suh, Fairchild Semiconductor, KOREA

9.20 – 11.40 **Session PE 10 – parallel running to Session 7, 8, 9**

### Magnetics and Ferrites

Chairman: August L. Sisco, International Magnetics Association, USA

PE 10-1 **Recent Developments of Mn-Zn Ferrites for EMC Applications**  
J. Wrba, EPCOS, GERMANY

PE 10-2 **Designing High Temperature Magnetics**  
M. Swihart, Magnetics, USA

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10.20 – 10.40 Coffee Break

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PE 10-3 **Low Profile Inductor Design using Miniature Powder Cores**  
M. Swihart, Magnetics, USA

PE 10-4 **New Materials with High Usable Flux for 120C Operation**  
G.E. Schaller, Ceramic Magnetics, B. Miklavcic, Iskra Feriti, USA

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12.40 – 1.40 Lunch, Restaurant CCN West 1<sup>st</sup> floor

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1.40 – 2.40 **Poster/Dialogue Sessions PE D-2, CCN West 2<sup>nd</sup> floor**

Chairman: Michael Bairanade, ON Semiconductor, FRANCE

PE D2-1 **Smart Power MOSFET with Configurable Component Array**  
A. Finney, G. Chisango, P. Blair, Zetex PLC, ENGLAND

PE D2-2 **Influence of Copper Area Connected to Integrated Power Devices in SO-Packages on Output Power**  
W. Frank, Infineon Technologies, GERMANY

PE D2-3 **Failures of Power MOSFET Transistors in A Series Generator for Induction Heating**  
J. Jordán, E.J. Dede, V. Esteve, C. Cases, GH Electrotermia and University of Valencia, SPAIN

PE D2-4 **Modeling and Analysis of an Off-Line Battery Charger for Single Cell Lithium Batteries**  
W. Zhang, R. Martinez, D. Skelton, P. Rogers, M. Hamlett, Texas Instruments, USA

PE D2-5 **Series of Fast Thyristors with Controllable Reverse Recovery Charge and Technological Complex of Proton Irradiation used for Control of their Switching Characteristics**  
A.Y. Semenov, Proton-Electrotex, V.S. Stolbunov, Institute of Theoretical and Experimental Physics, A.M. Surma, All-Russian Electrotechnical Institute, RUSSIA A.M. Kovrov, Estel Elektroonika, ESTONIA

PE D2-6 **New Trench Technology for Power Devices: 1.7 kV NPT V-Groove Clustered IGBT**  
O. Spulber, M. Sweet, K. Vershinin, N. Luther-King, N. Moguilnaia, E.M. Sankara-Narayanan, M.M. De Souza, De Montfort University, UK, D. Flores, J. Millan, Centro Nacional de Microelectronica, SPAIN

PE D2-7 **A New Twin Toroidal Current Controllable Variable Inductor for High Frequency Converters**  
R. Weger, NMB-Minebea Europe P.E. Centre, GERMANY

- PE D2-8 **Improving the Reliability of Power Semiconductor Diodes operated above 150 °C - 175 °C Junction Temperature**  
K. I. Nuttall, V.V.N. Obreja, Liverpool University, UK
- PE D2-9 **IGBT Circuit Operation and Switching Frequency Limits by Saber Simulation**  
X. He, Y. Liu, Q. Ding, Zhejiang University, CHINA
- PE D2-10 **Power Semiconductors replace Thyratrons and other Switching Devices in Pulsed Power Applications**  
A.W. Dunlop, Dynex Semiconductor, UK
- PE D2-11 **A Revised MOSFET Model with Dynamic Temperature Compensation**  
A., Laprade, S. Pearson, S. Benczkowski, G. Dolny, F. Wheatley, Fairchild Semiconductor, USA
- PE D2-12 **Selection of Semiconductor Models in Power Electronics Simulation**  
P. van Duijsen, Simulation Research, P. Bauer, Delft University of Technology, THE NETHERLANDS
- PE D2-13 **State-of-the-Art of Current Sensing Technologies**  
H. Blanchard, E. Favre, C. Gudel, W. Teppan, LEM, SWITZERLAND
- PE D2-14 **Determination of Device Junction Temperatures in Water Cooled Semiconductor Stack**  
G. Li, W. Findlay, A. Golland, F. Wakeman, Westcode Semiconductors, UK

2.40 – 6.00 **Session PE 11 – Parallel running to Session 12**

**Low Voltage Transistors**

Chairman: Leo Lorenz, Infineon Technologies, GERMANY

- PE 11-1 **Effects of MOSFETs Parasitic Inductances on Switching Performance of Synchronous Buck Converters**  
A. Elbanhawy, Fairchild Semiconductor, USA
- PE 11-2 **SiC-JFET-Cascode: State-of-the-Art, Performance and Application**  
T. Reimann, ISLE, J. Petzoldt, Technical University Ilmenau, I. Zverev, Infineon Technologies, P. Friedrichs, H. Mittlehner, SICED, GERMANY

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3.40 – 4.00 Coffee Break

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- PE 11-3 **Low Qgd 60V Trench Power MOSFETs with Robust Gate for Automotive Applications**  
T. Yamazaki, T. Nishimura, T. Tsutsumi, Y. Onozawa, H. Tanaka, K. Horiuchi, T. Shimato, T. Hosen, T. Fujihira, Fuji Hitachi, JAPAN
- PE 11-4 **STripFET™ III Achieves an Optimal Trade-Off between on-Resistance and Gate Charge Setting a New Efficiency Benchmark in DC-DC Converters for Telecom and Computer Applications**  
G. Belverde, F. Di Giovanni, M. Melito, A. Magri, STMicroelectronics, ITALY
- PE 11-5 **Novel Trench Gate Structure Developments Set the Benchmark for Next Generation Power MOSFET Switching Performance**  
G. Moxey, S. January, Vishay Siliconix, UK
- PE 11-6 **Understanding the Effect of Power MOSFET Package Parasitics on VRM Circuit Efficiency at Frequencies above 1MHz**  
M. Pavier, A. Woodworth, A. Sawle, International Rectifier, UK, R. Monteiro, C. Blake, J. Chiu, International Rectifier, USA

2.40 – 5.30 **Session PE 12 – parallel running to Session 11**

**High Power Transistors - Part I**

Chairman: Martin Hierholzer, eupec, GERMANY

PE 12-1 **Reduction of IGBT Switching Losses with a New High Voltage Busbar Design**  
S. Duchesne, D. Roger, J.F. Brudny, University d'Artois, FRANCE

PE 12-2 **Characterization of Novel 1700 V CAL HD Diodes for High Power Applications**  
K. Häupl, B. König, Semikron International, GERMANY

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3.40 – 4.00 Coffee Break

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PE 12-3 **Parallel Operation of LoPak Modules**  
R. Schnell, U. Schlapbach, K. Haas, G. Debled, ABB Semiconductors, SWITZERLAND

PE 12-4 **Bidirectional Stacked Flyback Converter for Energy Efficient Pulsed High-Voltage Power Supply**  
J.P. Kaerst, Philips Medical Systems, GERMANY

PE 12-5 **SKiM® Power Modules with AlN-Substrate: Higher Currents and Extended Lifetime**  
U. Scheuermann, Semikron Elektronik, GERMANY