

9.00 – 9.15 Official Opening of the PCIM 2003 Conference

9.15 – 10.00 **Key-Note Paper for all Participants**

Variable Speed Motion: A Key to Global Energy Savings - From the State of the Art to Future Trends

Ph. D. Alexander Lidow, CEO International Rectifier, USA
(see introduction page 30)

10.10 – 12.30 **Session PE 1 – Parallel running to Session 2 and Session 3**

High Power Conversion

Chairman: Alfred Rufer, EPFL, SWITZERLAND

PE 1-1 **A DSP-Controlled Four-Quadrant Converter for Power Conditioning of Distributed Energy from Renewable Sources**

D. Schulz, R. Fabis, R. Hanitsch, Technical University Berlin, GERMANY

PE 1-2 **Sparc Converter: A Solution to reduce by a Factor Ten of Mass and Volume on On-Board Multi Input Voltage Converter in Railway Applications**

T. Lequeu, D. Magnon, Ecole d'Ingenieurs de Tours, G. Kalvelage, P. Aubin, Faiveley Transport, FRANCE

11.10 – 11.30 Coffee Break

PE 1-3 **A Steady-State Comparison of the 2-Switch Harmonic Injection and 3-Switch/Level (VIENNA I) Boost-Type Three-Phase Rectifiers**

T. Viitanen, J. Hautamaki, H. Tuusa, Tampere University of Technology, FINLAND

PE 1-4 **600V-IGBT3-Technology in New Low Cost Modules for Consumer Applications**

P. Kanschä, T. Stolze, Th. Passe, eupec, H. Rütting, F. Umbach, Infineon Technologies, GERMANY, O. Hellmund, Infineon Technologies, AUSTRIA

10.10 – 12.30 **Session PE 2 – Parallel running to Session 1 and Session 3**

Passive Components

Chairman : Josef Lutz, Technical University Chemnitz, GERMANY

PE 2-1 **Analysis of Embedded Passives Integrated Circuits for Power Converters**

M. Albach, S. Schuh, University Erlangen-Nürnberg, GERMANY

PE 2-2 **Winding Design of Ultra Thin High Frequency Planar Inductors and Transformers**

E. Waffenschmidt, Philips Research Aachen, GERMANY

11.10 – 11.30 Coffee Break

PE 2-3 **A Comparative Study of Inductors Applying Area Product Formulation**

P. Wallmeier, P. Ide, J. Kunze, B. Margaritis, ASCOM Energy Systems, GERMANY

PE 2-4 **A Low Cost Current Sensor on the High Side**

J. Rupp, Siemens, GERMANY

10.10 – 12.30 **Session PE 3 – parallel running to Session 1 and Session 2**

Thermal Management

Chairman: Uwe Scheuermann, Semikron, GERMANY

PE 3-1 **Developments in Natural Graphite Heat Spreaders and Heatsinks for Power Electronics Applications**

J. Norley, G. Chen, M. Smalc, G. Shives, J. Capp, D. Flaherty, G. Getz, Graftech, USA

PE 3-2 **New MATLAB Program for creating an RC Thermal Model for Power Transistors**

G. Di Liberto, G. Bazzano, F. Di Giovanni, STMicroelectronics, ITALY

 11.10 – 11.30 Coffee Break

 PE 3-3 **Electro-Thermal-Fluidic Simulation Approach in Power Electronics**
 H. Feral, J.-P. Fradin, F. Richardeau, P. Ladoux, J. Vallon, EPSILON Ingenierie, FRANCE

 PE 3-4 **Development of New Thermally Conductive Materials**
 T. Mitsunaga, H. Sawa, M. Kawano, Denki Kagaku Kougyo, JAPAN

 12.30 – 1.30 Lunch, Restaurant CCN West 1st floor

 1.30 – 2.30 **Poster/Dialogue Sessions PE D-1, CCN West 2nd floor**

Chairman: Rüdiger Bürkel, LEM, SWITZERLAND

 PE D1-1 **Properties, Applications and Technical Perspective of Advanced Insulated Metal Substrates**
 Y. Tsujimura, N. Yonemura, T. Saito, K. Yashima, K. Kato, Denki Kagaku Kogyo, JAPAN

 PE D1-2 **High Power, Air-Cooled Subsystems with Forced Internal Convection**
 M. Checchetti, micrOptronics, ITALY

 PE D1-3 **A New Solution for Electronic Switches for changing Power Value of the Resonance Inverters with Energy Dosing**
 N. D. Madzharov, T. S. Todorov, Technical University o Gabrovo, BULGARIA

 PE D1-4 **Analysis of Resonant Inverters with Improved Output Characteristics, Working with Zero-Current Switching**
 N. Gradinarov, N. Hinov, D. Arnaudov, Technical University Sofia, BULGARIA

 PE D1-5 **Current-Source Inverter with Improved Output Characteristics**
 T. Todorov, N. Madzharov, Technical University of Gabrovo, N. Gradinarov, N. Hinov, D. Arnaudov, Technical University Sofia, BULGARIA

 PE D1-6 **Boost Converters for Power Factor Correction controlled by Microcontrollers**
 I. Merfert, Otto-von-Guericke-Universitiy Magdeburg, GERMANY

 PE D1-7 **Method for Calculating the Static and Dynamic Behavior of Large Heat Sinks with Temperature Dependent Heat Sources**
 B. Jaeschke, Lorch Schweisstechnik, H. Mecke, Universität Magdeburg, GERMANY

 PE D1-8 **Two-Quadrant Frequency Converter Having Rectifier with Near Sinusoidal Input Currents**
 D. Alexa, I.V. Pletea, T. Goras, C. Vinatoru, E. Lupea, V.Palaginiuc, Technical University of Iasi, ROMANIA

 PE D1-9 **Thermal Performance of ISODRAIN Package**
 M. Pürschel, Infineon Technologies, GERMANY

 PE D1-10 **A Simple Active Method to Avoid the Balancing Losses of DC Link Capacitors**
 H. Ertl, T. Wiesinger, F. Zach, Technical University Vienna, AUSTRIA, J.W. Kolar, ETH Zürich, SWITZERLAND

 PE D1-11 **ZVS-Classe-De Series Resonant Inverter for Heating Application**
 D. Dankov, M. Simeonov, Technical University of Gabrovo, BULGARIA

 PE D1-12 **Thermal Characterization of Aluminium Heat Sink with Bonded Copper Inlays**
 A. Zaghlol, R-Theta, CANADA

 PE D1-13 **Design of an IGBT Module for Full-Bridge-Configured and Half-Bridge-Operated ICH Cooking System**
 K.-Y. Jang, B.-S. Suh, T.-H. Kim, Fairchild Semiconductor, KOREA

 PE D1-14 **A New Burst Technique Method in the stand-by operation of Power Supply**
 J.-H. Choi, Fairchild Semiconductor, KOREA

PE D1-15 **An FPGA-Based Rapid Charger for Li-Ion Batteries**
J.-H. Teng, Y.-H. Liu, C.-C. Lin, Y.-H. Liu, Y.-S. Huang, I-Shou University, TAIWAN

2.30 – 5.30 **Session PE 4 – parallel running to Session 5 and Session 6**

High Voltage Transistors

Chairman: Brian Taylor, BrightOne Consultancy, UK

PE 4-1 **Silicon Carbide Questions the Settled Hierarchy of Converter Topologies**
I. Zverev, Infineon Technologies, T. Reimann, J. Petzoldt, Technical University Ilmenau, GERMANY

PE 4-2 **LightMOS - IGBT with Integrated Diode for Lamp Ballast Applications**
E. Griebel, O. Hellmund, M. Herfurth, H. Hüsken, M. Pürschel, Infineon Technologies, GERMANY

3.30 – 4.00 Coffee Break

PE 4-3 **A High Current Dual Inline Packaged Trench MOSFET Three Phase Full Bridge as Contribution to Automotive System Integration**
A. Lindemann, IXYS Semiconductor, GERMANY

PE 4-4 **Dynamic Testing of Power MOSFET Body Diode**
J. Jordán, E.J. Dede, V. Esteve, C. Cases, GH Electrotermia and University of Valencia, SPAIN

2.30 – 6.30 **Session PE 5 – parallel running to Session 4 and Session 6**

DC/DC Conversion

Chairman: Serge Bontemps, Advanced Power Technology, FRANCE

PE 5-1 **High-Power Density Bi-Directional DC/DC Converter Topology for Future Automobiles**
J. Walter, R.W. De Doncker, RWTH-Aachen, GERMANY

PE 5-2 **New Gate Control Unit for Automotive Synchronous Rectifiers**
S. Rees, U. Ammann, University Stuttgart, GERMANY

3.30 – 4.00 Coffee Break

PE 5-3 **Accurate Calculation of Power Losses for High-Frequency DC/DC Converters in Buck Topology**
D. Lindenmeyer, A. Kiep, Infineon Technologies, GERMANY, A. Diaz Valdivieso, University of Granada, SPAIN

PE 5-4 **Comparative Study of Topologies for Bi-Directional, Non-Isolated DC/DC Converters in Automotive Applications**
P. Ide, P. Wallmeier, J. Kunze, B. Margaritis, ASCOM Energy Systems, GERMANY

PE 5-5 **Test Equipment for 12V and 42V Components in Automotive Applications**
R. Kennel, R. Roesner, G. Nicastro, Wuppertal University, R. Rohlfing, HELBAKO, GERMANY

PE 5-6 **Active Snubber Circuit**
I. D. Jitaru, Ascom Rompower, USA

PE 5-7 **A Quasi-Resonant SPICE Model Eases Feedback Loop Designs**
C. Basso, J. Turchi, ON Semiconductor, FRANCE

2.30 – 6.00

Session PE 6 – parallel running to Session 4 and Session 5**Low Power Conversion**

Chairman: Ionel Dan Jitaru, Ascom Rompower, USA

PE 6-1

The Application of Current Multiplying Rectifiers to Non-Isolated Buck Regulators
B. Carsten, Bruce Carsten Associates, USA

PE 6-2

42V/1kW Battery Charger Module uses Novel Single-Switch Isolated Converter Operating at Near-Unity P
V. Agarwal, V.P. Sundarsingh, Indian Institute of Technology, INDIA, S. Bontemps, A. Calmels, D. Grafham, Advanced Power Technology, FRANCE

3.30 – 4.00

Coffee Break

PE 6-3

Knowledge Based Fast Commutation in Converters
M. Ziegler, W. Hofmann, S. El-Barbari, Chemnitz University of Technology, GERMANY

PE 6-4

Adaptation of a Non-Linear Current Control Algorithm for a Single Phase Five Level Cascaded Inverter
M. Calais, Murdoch University, L.J. Borle, University of Western Australia, AUSTRALIA, V.G. Agelidis, University of Glasgow, UK

PE 6-5

Automatic Rated Capacity Identification Method for Lithium Ion Battereis
Y-H. Liu, J.-H. Teng, C.-H. Lee, Y.-C. Lin, C.-C. Lin, I-Shou University TAIWAN

PE 6-6

Low Cost LC_ Resonant Inverter as a Power Source for HPS Lamp Ballast Applications
C. Branas, F.J. Azcondo, S. Bracho, University of Cantabria, SPAIN