

Opening of the Conference 9.00 am

KEY-NOTE Paper (PC, IM and PQ participants)
9.15 am - 9.55 am

Chairman: Ted Hopper, MACCON, GERMANY

K 1 POWER SYSTEMS AND EVOLUTION FACTORS - FROM THE STATE-OF-THE-ART TO FUTURE TRENDS
M. Jufer, EPFL, SWITZERLAND

Power electronic systems and electric drives are often considered as out-of-date techniques, no more evolving. As most techniques, electrotechnics would disappear without evolution. Many factors influence this evolution and will be developed:

- the demand ; when the electric power system becomes the weakest point in a machine, it becomes automatically the key factor for the performances;
- the electronic components;
- the control systems and devices;
- the communication systems;
- the materials (ferrites, permanent magnets);
- the design optimization according to the applications
- the integration of the power system components and the integration into the global systems.

An example in the field of contactless energy transmission for electric vehicles will illustrate this presentation.

Session PC 1 (parallel session)

NEW ASPECTS IN POWER SEMICONDUCTORS
10.00 am - 11.40 am

Chairman: Alfred Rufer, EPFL, SWITZERLAND

PC 1.1 MICRO CHANNEL WATER COOLED POWER MODULES
J. Schulz-Harder, K. Exel, A. Meyer, curamik electronics, T. Licht, M. Loddenkötter, eupec, GERMANY

PC 1.2 COMPACT INNOVATION IN LOW POWER IGBT MODULES
T. Stolze, R. Jörke, H. Hellbrück, W. Ademmer, eupec, GERMANY

PC 1.3 A NEW IGBT CONCEPT WITH OPTIMIZED DIODE
L. Lorenz, Infineon Technologies, GERMANY

PC 1.4 A NEW RANGE OF WAFER LEVEL PACKAGED HEXFET[®] DEVICES
T. Sammon, International Rectifier, UK

Session PC 2 (parallel session)

ELECTROMAGNETICS IN SYSTEMS
10.00 am - 11.40 am

Chairman: Franck Sarrus, FERRAZ SHAWMUT, FRANCE

PC 2.1 WHAT METHOD FOR BUSBAR ELECTRICAL MODELING?
E. Clavel, J.L. Schanen, J. Roudet, Laboratoire d'Electronique de Grenoble, M. Piton, Alstom, FRANCE

PC 2.2 REDUCTION OF INDUCTIVE CROSSTALK IN POWER ELECTRONIC CIRCUITS BY MEANS OF PRINTED CIRCUIT BOARD LAYOUT TECHNIQUES
G. Sauerländer, Philips Research Laboratories, GERMANY

PC 2.3 FAST CALCULATION METHOD OF THE NEAR FIELD RADIATED BY A POWER CONVERTER LOOP IN ORDER TO OPTIMISE THE POSITION OF THE ASSOCIATED SENSITIVE CARD
C. Pasquier, P. Levron, J.L. Cocquerelle, LR2EP - IRESTE, FRANCE

PC 2.4 COMMON MODE DISTURBANCES IN FORCE CONTROLLED RECTIFIER SYSTEMS
L.L.Erhart, Technical University Vienna, AUSTRIA

Dialogue Session

11.40 am - 12.40 am

Chairman: Josef Lutz, SEMIKRON, GERMANY

- D 1 HIGH CAPABILITY, HIGH RELIABILITY ULTRA-SLIM DIODE FOR WELDING APPLICATIONS**
C. Crovetto, P. Bigatti, F. Fasce, M. Pasqualetti, M. Portesine, R. Scicolone, Ansaldo Trasporti, ITALY
- D 2 NEW INTELLIGENT POWER MODULES R-IPM AND R-IPM MINI SERIES WITH T_J DETECTING FUNCTION**
H. Takubo, M. Watanabe, S. Kobayashi, H. Shigekane, Fuji Electric, JAPAN
- D 3 A NEW DUAL-IN-LINE PACKAGE INTELLIGENT POWER MODULE USING 4TH GENERATION PLANAR IGBT**
H. Iwamoto, M. Iwasaki, Mitsubishi Electric, JAPAN, N. Wheeler, Mitsubishi Electric, GERMANY
- D 4 PSPICE MODELING OF POWER MOSFET THERMAL IMPEDANCE FOR NONRECTANGULAR POWER PULSES**
J.W. Worman, Intersil, USA
- D 5 A 6kV, 4kA SYMMETRICAL GCT FOR CURRENT SOURCE INVERTER APPLICATIONS**
H. Iwamoto, K. Satoh, M. Yamamoto, Mitsubishi Electric, JAPAN, E. Thal, N. Wheeler, Mitsubishi Electric, GERMANY
- D 6 RATINGS OF HIGH POWER IGBT MODULES FOR PWM INVERTERS FOR TRACTION APPLICATIONS**
D. Chamund, F. Avertin, B. Findlay, Mitel Semiconductor, UK
- D 7 A NEW HIGH PERFORMANCES SWITCHING BUCK CONVERTER IC**
S.V. Capici, A. D'Arrigo, F. Marino, STMicroelectronics, ITALY
- D 8 AN ADVANCED PUSH - PULL CURRENT MODE CONTROLLER FOR THE TELECOMMUNICATION INDUSTRY**
L. Burgyan, E. Yang, S. Gurram, J. Guo, Semtech Corporation, USA
- D 9 NEW DRIVER SOLUTION FOR ECONOPACK+ AND 6.5 KV IGBTs**
H. Rüedi, CT-Concept Technologie, SWITZERLAND
- D 10 ENHANCEMENT IN LOW POWER AC LOADS ON / OFF CONTROL**
L. Gonthier, STMicroelectronics, FRANCE
- D 11 NEW POWER MOSFETs FOR HIGH-VOLTAGE HIGH-POWER FULL-BRIDGE PHASE-SHIFTED ZVS CONVERTER**
M.J. Zhou, T. Wu, C. Blake, K. Wagers, International Rectifier, USA
- D 12 MICROCONTROLLERS USE TRIACS TO CONTROL SMART APPLIANCES**
K. Berringer, Motorola, UK
- D 13 DESIGN CHALLENGES FOR BATTERY OPERATED POWER MANAGEMENT SYSTEMS**
G. Moxey, Vishay Siliconix, UK
- D 14 INNOVATIVE DEVELOPMENTS IN POWER PACKAGING TECHNOLOGY IMPROVE OVERALL DEVICE PERFORMANCE**
A. Sawle, A. Woodworth, International Rectifier, UK
- D 15 EVALUATION OF NEW HIGH VOLTAGE MDmesh[™] VERSUS STANDARD MOSFETs: APPLICATION RESULTS IN 360W POWER SUPPLY**
M. Laudani, R. Scollo, F. Di Giovanni, STMicroelectronics, ITALY

Time for lunch and visiting the exhibition

Session PC 3 (parallel session)

INTELLIGENT POWER MODULES AND IGBTs EVOLUTION

3.30 pm - 6.00 pm

Chairman: Leo Lorenz, Infineon Technologies, GERMANY

- PC 3.1 SOFT PUNCH THROUGH (SPT) - SETTING NEW STANDARDS IN 1200V IGBT**
S. Dewar, S. Linder, C. von Arx, ABB Semiconductors, SWITZERLAND
- PC 3.2 ECONOPACK+: THE STANDARD PLATFORM FOR MODULAR INVERTER DESIGN**
M. Loddenkötter, M. Münzer, J. Thureau, eupec, GERMANY
- PC 3.3 COMPACT INTELLIGENT POWER MODULE (COMPACT IPM) FOR POWER ELECTRONIC APPLICATIONS**
K. Murakami, Microelectronics Center Toshiba, JAPAN, G. Tchouangue, Toshiba Electronics Europe, GERMANY
- PC 3.4 APPLICATION ASPECTS OF TRENCH GATE IGBT MODULES**
H. Iwamoto, M. Tabata, Mitsubishi Electric, JAPAN, N. Wheeler, E. Thal, Mitsubishi Electric, GERMANY
- PC 3.5 PRESSURE CONTACT IGBT, TESTING FOR RELIABILITY**
F. Wakemann, D. Hemmings, W. Findlay, G. Lockwood, Westcode Semiconductors, UK
- PC 3.6 A ROBUST 1200V TRENCH INSULATED GATE BIPOLAR TRANSISTOR**
D. Chamund, P. Waind, Mitel Semiconductor, UK

Session PC 4 (parallel session)

AUTOMOTIVE IN THE FUTURE 3.30 pm - 6.25 pm

Chairman: Brian Taylor, Brightone Consultancy, UNITED KINGDOM

- PC 4.1 NEW DC/DC CONVERTER TOPOLOGY OF RESISTOR - EMULATING INPUT AND OUTPUT DEDICATED TO THE AUTOMOBILE 42/14V POWERNET**
R. Blümel, DaimlerChrysler, GERMANY
- PC 4.2 THE 42V CAR OF THE FUTURE**
J. Carter, R. Frank, P. Bernard, ON Semiconductor, USA
- PC 4.3 HOW TO DEVELOP TRADITIONAL TECHNOLOGIES TO PENETRATE THE AUTOMOTIVE MARKET**
L. Colombel, LEM Instruments, FRANCE
- PC 4.4 INTEGRATED CHARGER AND DISCONNECT SWITCH UNIT FOR 42 V POWERNET IN FUTURE CAR GENERATIONS**
S. Buller, J. Hu, M. Zimmer, R. W. De Doncker, Aachen University of Technology, GERMANY
- PC 4.5 NEW POWER MOSFET TECHNOLOGY WITH EXTREME RUGGEDNESS AND ULTRA LOW RDSON QUALIFIED TO Q101 FOR AUTOMOTIVE APPLICATIONS**
A. Murray, H. Davis, J. Cao, K. Spring, T. McDonald, International Rectifier, UK
- PC 4.6 SAPFET-2: A POWER MODULE FOR POWER CONVERTERS**
L.A. de Groot, Philips Semiconductors, UK
- PC 4.7 NEW POWER IC's FOR AUTOMOTIVE APPLICATIONS USING BCD, HYBRID AND SURFACE MOUNT TECHNOLOGY RESPOND TO NEW DEMANDS FOR HIGH VOLTAGE, HIGH TEMPERATURE OPERATION**
J. Bansaku, Sanken Electric, JAPAN



KEY-NOTE Paper (PC, IM and PQ participants)

8.30 am - 9.10 am

Chairman: Thierry Meynard, ENSEEIHT, FRANCE

K 2 PROPERTIES AND APPLICATIONS OF SUPERCAPACITORS - FROM THE STATE-OF-THE-ART TO FUTURE TRENDS

A. Schneuwly, R. Gallay, montena components SA, SWITZERLAND

Electrochemical double-layer capacitors, also known as supercapacitors or ultracapacitors, are electrical storage devices, which have a relatively high energy storage density simultaneously with a high power density. Recent developments in basic technology, materials and manufacturability have made supercapacitors an imperative tool for short-term energy storage in power electronics. With much higher energy density than today's capacitors and none of the problems associated with conventional battery technology, supercapacitors give an access to new power electronic and industrial storage applications.

The paper presents basic supercapacitor technology, component specific properties as well as state-of-the art products applications. The problematic nature of capacitors series connection for higher voltage applications is touched on. The review also deals with an energy storage system, which is based on the hybridization of rechargeable batteries and supercapacitors, with a suitable designed electronic interfacing arrangement in order to obtain a very high energy density device with a high power performance and a long lifetime. Finally, an overview over future trends regarding the supercapacitor technology as well as application scenarios, mainly in the tradition domaine, is given.

Session PC 5 (parallel session)

POWER SEMICONDUCTOR IMPROVEMENTS

9.15 am - 11.45 am

Chairman: Eric Carroll, ABB Semiconductors, SWITZERLAND

PC 5.1 NEW 500V LINEAR MOSFETs FOR A 120 kW ACTIVE LOAD

R. Frey, D. Grafham, APT, T. Mackewicz, TDI Dynaload, USA

PC 5.2 ELECTRICAL PERFORMANCE OF A FAST SWITCHING CoolMOS TRANSISTOR

L. Lorenz, Infineon Technologies, GERMANY

PC 5.3 CHARACTERISTICS OF HIGH SPEED TRENCH GATE POWER MOSFET FOR DC / DC CONVERTERS

H. Matsuki, T. Yoneda, K. Suzuki, Microelectronics Center Toshiba, JAPAN

PC 5.4 NEW SOLUTIONS TO OPTIMISE DIODE RECOVERY IN PFC BOOST CONVERTER

B. Rivet, STMicroelectronics, FRANCE

PC 5.5 REVERSE BLOCKING IGBTs FOR CURRENT SOURCE INVERTERS

A. Weber, T. Dalibor, P. Kern, B. Oedegard, ABB Semiconductors, SWITZERLAND

PC 5.6 COMBINING THE FEATURES OF MODULES AND DISCRETES IN A NEW POWER SEMICONDUCTOR PACKAGE

A. Lindemann, IXYS Semiconductor, GERMANY

Session PC 6 (parallel session)

PASSIVE COMPONENTS

9.15 am - 11.45 am

Chairman: Enrique Dede, G.H. ELECTROTERMIA, SPAIN

PC 6.1 MAGNETORESISTIVE CURRENT SENSOR MICROSYSTEM WITH FULL DIGITAL CALIBRATION

A.P. Friedrich, J. Kunze, SENSITEC, GERMANY

PC 6.2 MEASUREMENT OF POWER LOSS WITH DC-BIAS - THE DISPLACEMENT FACTOR

G. Niedermeier, M. Esguerra, EPCOS, GERMANY

PC 6.3 FEEDBACK ISOLATION BY PIEZOELECTRIC TRANSFORMERS: A FEASIBILITY STUDY

S. Lineykine, S. Ben-Yaakov, Ben-Gurion University of the Negev, ISRAEL

PC 6.4 ANISOTROPIC GRAPHITE HEAT SPREADERS FOR ELECTRONICS THERMAL MANAGEMENT

J.J.-W. Tzeng, B.S. Fedor, D.W. Krassowski, UCAR Carbon Company, USA

PC 6.5 INVESTIGATE OF THE STRENGTH OF COMPOUNDED CERAMIC RESISTORS AND CAPACITORS

V. Royzman, Technological University of Podillia, UKRAINE

PC 6.6 NEW ALUMINUM ELECTROLYTIC CAPACITORS WITH LOW INDUCTANCE ALLOW ADVANCED FREQUENCY CONVERTER DESIGN

J. Roumen, EPCOS, GERMANY

Dialogue Session

PASSIVE COMPONENTS

11.45 am - 12.45 am

Chairman: Ulrich Kirchenberger, International Rectifier, GERMANY

D 16 ULTRACAP DOUBLE LAYER CAPACITOR - A NEW ENERGY STORAGE DEVICE FOR PEAK POWER APPLICATIONS

N. A. Fries, EPCOS, GERMANY

D 17 C-CLASS ULTRA FAST RECOVERY DIODES FOR HIGH SPEED SWITCHING APPLICATIONS

M.T. Rahimo, S.R. Jones, Semelab, UK

D 18 MODELLING THE MECHANICAL BEHAVIOUR OF LARGE-AREA SOLDER JOINTS

M.H. Poech, FhG ISIT, R. Eisele, Danfoss Silicon Power, GERMANY

D 19 HEAT PIPE THERMAL BEHAVIOUR FROM FROZEN START

C. Tantolin, Atherm, FRANCE

D 20 CAPACITANCE MODEL FOR FLYBACK TRANSFORMERS

T. Duerbaum, Philips Research Laboratories, GERMANY

D 21 LOW-INDUCTIVE FUSES IN DC-LINK INVERTER APPLICATIONS

F. Blaabjerg, C. Klumpner, Aalborg University, H. Rasmussen, K. Ries, Cooper Bussmann, DENMARK

D 22 TRANSDUCER LAS 50

T. Hanser, LEM Instruments, SWITZERLAND

D 23 MAGNETIZATION CONTROL OF TRANSFORMERS FED BY INVERTERS WITH TURN-OFF DEVICES

P. Pichler, P. Ebner, H. Weiss, University of Leoben, AUSTRIA

- D 24 A PIEZOELECTRIC COLD CATHODE FLUORESCENT LAMP DRIVER OPERATING FROM A 5 VOLT BUS**
S. Ben-Yaakov, M. Shvartsas, G. Ivensky, Ben-Gurion University of the Negev, ISRAEL
- D 25 PARTIAL DISCHARGE STABILITY OF A 150C GLASS TRANSITION TEMPERATURE INSULATING MATERIAL**
L. Ng, H.J. Fick, The Bergquist Company, J. Zirnheld, W.J. Sarjeant, State University of New York, USA
- D 26 INTEGRATING MAGNETIC COMPONENT DESIGN AND OPTIMIZATION INTO CIRCUIT SIMULATOR SIMPLORER**
P. Wallmeier, D. Hahm, P. Munding, N. Fröhleke, University of Paderborn, GERMANY

Session PC 7

NEWS AND SPECIAL APPLICATIONS

3.30 pm - 6.00 pm

Chairman: Jean-Marie Peter, SEE, FRANCE

PC 7.1 KEY-NOTE Paper:

THE DATA SHEET FOR THE FUTURE - FROM THE STATE-OF-THE-ART TO FUTURE TRENDS

P. Tuerkes, SIEMENS, W. Schulz, Infineon Technologies, GERMANY

Currently, the process of circuit design is changing rapidly, because of new simulation tools. This process is accelerated by establishment of physics based models of electronic devices. The frame of the most advanced devices simulation models cover not only the pure electrical behaviour, but also the thermal feedback of self heating to the electric's. Many of the power device manufactures have published models for their devices as well on CD's as on the web. These models are thus readily available for the design engineers. The detailed device physics included in power device simulation models allow their use as an extension of common data sheet. Using simulation models as an extension to the data sheet is of advantage for the analysis of critical circuit configurations, or operating points and also of the temperature evolution of the devices under consideration. In summary, the design phase of new circuits is accelerated and costs are reduced. In future, it is desirable to extend the current models for the use at operating conditions closed to the edges of the safe operating area. This would be a further step to higher accuracy of the circuit design and to a increase in design efficiency.

PC 7.2 KEY-NOTE Paper:

POWER SEMICONDUCTOR PACKAGING - A PROBLEM OR A RESOURCE? - FROM THE STATE-OF-THE-ART TO FUTURE TRENDS

T. Stockmeier, SEMIKRON, GERMANY

This paper will give an introduction to the requirements for today's power semiconductor packages in terms of electrical, mechanical, and thermal properties and will discuss some mutual trade-offs. The complexity of the components ranging from monolithically integrated power conversion solutions to single switch discrete components will be reviewed by showing packages for voltage from 30 V to 8500 V and currents from 10 A to 3000 A. Novel packaging solutions for power modules and discretes will be presented to highlight important trends towards higher voltages, higher currents, higher temperatures, increased functionality, environmental friendly materials, and reduced packaging size, weight, and cost.

PC 7.3 1.6 MW / 150 KHZ INVERTER FOR WELDING APPLICATIONS

H. Rüedi, CT-Concept Technologie, SWITZERLAND, H.G. Matthes, Elotherm, GERMANY

PC 7.4 A DC HYBRID CIRCUIT BREAKER WITH ULTRA FAST CONTACT OPENING AND INTEGRATED GATE-COMMUTATED THYRISTORS (IGCT)

J.-M. Meyer, A. Rufer; Swiss Federal Institute of Technology Lausanne, SWITZERLAND

PC 7.5 SHORT CIRCUIT OF A HIGH VOLTAGE HIGH CURRENT MOSFETs MATRIX SWITCH

D. Chatroux, Y. Lausenaz, J.F. Villard, CEA VALRHO, L. Garnier, Centralp Enertronic, D.Lafore, CEGEMA ESIM, FRANCE



GET - TOGETHER - PARTY
for all conference participants and exhibitors,
Exhibition Hall 12

6.00 pm - approx. 8.30 pm

KEY-NOTE Paper (PC, IM and PQ participants)

8.30 am - 9.10 am

Chairman: Franz Zach, Technical University Vienna, AUSTRIA

K 3 FACTS IN THE LIBERALIZED MARKET - FROM THE STATE-OF-THE-ART TO FUTURE TRENDS

G. Brauner, Vienna University of Technology, AUSTRIA

Liberalization in the electricity supply utilities has led to a bundling into transmission, distribution, generation and energy trade. The transmission and distribution networks are forced to gain their money by transit tariffs.

Due to the need for economic efficiency in the future, there will be lower investments into the transmission and distribution networks. Together with generation scheduling mainly due to the market rules but not to technical needs, the available transmission capacity will decrease. For maintaining a sufficient margin of available transmission capacity will decrease.

For maintaining a sufficient margin of available transmission systems systems in future, there will be an increased use of FACTS in form of SVC (Statistic Voltage Group) and UPFC (Universal Power Flow Controller). Both are shown in their technical principles.

For real transmission, their application will be shown and possible improvements in available transmission capacity and power quality is compared.

Session PC 8

IMPROVED CONVERTERS

9.15 am - 11.45 am

Chairman: Denis Grafham, APT, USA

PC 8.1 A 3kW SOFT SWITCHING DC-DC CONVERTER

I. D. Jitaru, Rompower, USA

PC 8.2 CLAMPING TOPOLOGY WITH DIVIDED DC SOURCES IN RESONANT DC LINK INVERTER

S. Iida, K. Fukuma, S. Masukawa, Tokyo Denki University, JAPAN

PC 8.3 DESIGN OF A SENSOR TO IMPROVE SAFETY AND SHORT-CIRCUIT TOLERANCE OF A FLYING CAPACITOR MULTILEVEL INVERTER

F. Richardeau, Ph. Baudesson, T. Meynard, Laboratoire d'Electrotechnique et d'Electronique Industrielle, FRANCE

PC 8.4 HIGH POWER FACTOR DOUBLY DISCONTINUOUS CONDUCTION MODE THREE-PHASE CUK STRUCTURE

P. Banuelos-Sanchez, D. Sadarnac, SUPELEC, FRANCE

PC 8.5 DESIGN AND EXPERIMENTAL ANALYSIS OF A 10kW 2x400V / 48V DUAL TWO -TRANSISTOR DC / DC CONVERTER BEING SUPPLIED BY A VIENNA RECTIFIER I

J. Miniböck, J. W. Kolar, Technical University Vienna, AUSTRIA

Dialogue Session

11.45 am - 12.45 am

Chairman: Mick Lovell, Allegro Microsystems, FRANCE

D 27 STORED ENERGY OPTIMIZATION IN AC-DC CONVERTER. APPLICATION TO FLYBACK

K. Berrouche, J. P. Keradec, Y. Lembeye, R. Perret, Laboratoire d'Electrotechnique de Grenoble (LEG), FRANCE

D 28 DOUBLE DC-DC CONVERTERS WITH LOW INPUT CURRENT RIPPLE

S. Birca-Galateanu, I.U.F.M., FRANCE

D 29 DESIGN-ORIENTED ANALYSIS OF SWITCHING REGULATORS WITH INPUT FILTERS

A. Kislovski, SWITZERLAND

D 30 HIGH VOLTAGE, HIGH CURRENT THYRISTORS MATRIX

Y. Lausenaz, D. Chatroux, CEA VALRHO, L. Garnier, CENTRALP ENERTRONIC, FRANCE

D 31 A NEW QUASI-RESONANT ZERO-VOLTAGE-SWITCHING SYNCHRONOUS BUCK-CONVERTER

C. Grünwald, University of Kaiserslautern, GERMANY

D 32 AUXILIARY SWITCHED RESONANT SNUBBER FOR PWM INVERTER

P. Flajzik, D. Maga, V. Racek, Slovak Technical University, SLOVAK REPUBLIC

D 33 INVESTIGATION OF THE AUTONOMOUS INVERTERS WITH ENERGY DOSING AND PLL CONTROL SCHEME FOR ELECTROTHERMICS

N. Madgarov, T. Todorov, Technical University of Gabrovo, BULGARIA

D 34 SLIDING MODE CONTROL OF A DC - DC DUAL CHANNEL RESONANT CONVERTER

I. Nagy, J. Hamar, I. Dénes, Technical University of Budapest, HUNGARY

D 35 QUASI-RESONANCE SINGLE-ENDED INVERTERS WITH PLL CONTROL FOR INDUCTION HEATING

M. Simeonov, D. Dankov, Technical University Gabrovo, BULGARIA

D 36 THE HIGH-FREQUENCY MATCHING TRANSFORMER INFLUENCE ON THE RESONANT BEHAVIOUR OF THE SERIES-PARALLEL RESONANT CONVERTER

A. Hedes, I. Sora, University „Politehnica“ of Timisoara, ROMANIA

D 37 A NEW TWO STEPS COMMUTATION POLICY FOR LOW COST MATRIX CONVERTERS

M. Ziegler, W. Hofmann, Technical University of Chemnitz, GERMANY

D 38 A NEW SINGLE-PHASE PFC RECTIFIER WITH WIDE OUTPUT VOLTAGE CONTROL RANGE AND HIGH EFFICIENCY

Y. Nishida, Nihon University, JAPAN

D 39 DOUBLE HALF BRIDGE CONVERTER FOR WIDE INPUT RANGE FROM 200V UP TO 1400V

M. Schlenk, H. Hofmann, NMB-Minebea, GERMANY

D 40 SOFT SWITCHING THREE-PHASE RECTIFIER WITH HIGH EFFICIENCY AND A NONLINEAR VOLTAGE CONTROLLER

J. Pacas, H. Siebel, University of Siegen, GERMANY

D 41 COMPARATIVE EVALUATION OF THE SWITCHING FREQUENCY HARMONIC DISTORTION OF THE MAINS CURRENTS OF THE VIENNA RECTIFIER II

M. Baumann, U. Drogenik, J. W. Kolar, Technical University Vienna, AUSTRIA

D 42 A CURRENT CONTROL FOR 3 - LEVEL IGBT INVERTER

B.-S. Lee, Korea Railroad Research Institute, KOREA

D 43 LOW-FREQUENCY CONVERTER FOR THE DRYING OF SOLID INSULATION OF POWER TRANSFORMERS COILS

Z. Caha, M. Brichac, J. Dolezal, L. Fejfar, P. Pytelka, ETS-C, CZECH REPUBLIC

D 44 DESIGN RULES FOR APERIODIC BOOST CONVERTERS

O. Woywode, H. Güldner, A.L. Baranovski, W. Schwarz, Technical University of Dresden, GERMANY

D 45 ANALYSIS OF A MULTI-LEVEL MULTI-CELL SWITCH-MODE POWER AMPLIFIER

H. Ertl, J.W. Kolar, F.C. Zach, University of Vienna, AUSTRIA

D 46 A SIMPLE HIGH-POWER-FACTOR FLYBACK CONVERTER WITH RIPPLE FREE INPUT CURRENT

D. Lascu, „Politehnica“ University Timisoara, ROMANIA, P.J. van Duijsen, Simulation Research, NETHERLANDS

D 47 A COMPARATIVE STUDY OF ECONOMICAL LOW POWER PFC CONCEPTS

R. Redl, ELFI SA, SWITZERLAND, M. Lovell, Allegro Microsystems, FRANCE

Session PC 9

APPLICATION AND IMPROVED CONVERTERS

3.00 pm - 4.40 pm

Chairman: Ional D. Jitaru, Rompower, USA

**PC 9.1 STUDY OF THREE-PHASE AC-SIDE SOFT
COMMUTATED RESONANT POLE PWM CONVERTERS**

A. Radan, Technical University of Munich, GERMANY

**PC 9.2 INVESTIGATION OF THE CURRENT BALANCE AND
POWER LOSS DISTRIBUTION OF PARALLEL
CONNECTED IGBTs DURING ACTIVE VOLTAGE
CLAMPING**

T. Reimann, R. Krümmer, J. Petzoldt, Technical University of
Ilmenau, GERMANY

**PC 9.3 DEVELOPMENT AND TEST OF THE POWER
MULTILEVEL CONVERTER FOR AIRCRAFT POWER
SYSTEM**

S.I. Volsky, SpecRemont, A. Rahhal, Scientific Studies
Research Center, RUSSIA, E.A. Lomonova, Delft Technical
University of Technology, NETHERLANDS

**PC 9.4 ANALYZING IGBT LOSSES BY TRANSLATING
EMPIRICAL DATA INTO SPICE BEHAVIOURAL MODELS
and CHARACTERIZING IGBT LOSSES FOR SWITCHED
MODE OPERATION**

A. Laprade, A. Craig, Intersil, R.H. Randall, Contractor, USA

