Conference Program PCIM Europe 2024

Tuesday,11 June 2024

08:30 **Community Coffee**

Stage: Brüssel 1

09:00 **Opening / Award Ceremony**

Stage: Brüssel 1

09:45 **Keynote**
AI between Hype and Industrial-Grade
Rolf Hellinger, Siemens, DE
Chairperson: Leo Lorenz, ECPE, DE

10:30 **Coffee break**

Stage: Brüssel 1
GaN Ruggedness
Chairperson: Andreas Lindemann, Otto-von-Guericke-University Magdeburg, DE

11:00 **An Improved Ultrafast Desaturation-Based Protection Scheme for GaN HEMT**
Juncheng Lu, Infineon Technologies, CA

11:20 **The Performance of a GaN eMode HEMT in Surge Current Scenarios such as the Active Short Circuit**
Dominik Nehmer, University of Bayreuth, DE

11:40 **Gate Resistance Effect on Short-Circuit Robustness of p-GaN HEMTs**
Mohamed Lemine Dedew, IRT Saint-Exupéry, FR

Stage: Brüssel 2
Advanced Packaging Technologies
Chairperson: Peter Kanschat, Infineon Technologies, DE

11:00 **Neural Network Assisted Numerical Simulation Benchmarking for Electric Vehicle Thermal Management System**
Ekin Alp Bicer, BMW, DE

11:20 **Relationship Between Porosity in Cu Sintered Bonding and Bonding Reliability**
Hideo Nakako, Resonac, JP

11:40 **High Thermal Durability of Thin Copper Die-attach Layers and Finite Element Model Simulation**
Takaai Eyama, Kao, JP

Stage: München 1
Thermal Cycling Reliability
Chairperson: Uwe Scheuermann, Friedrich-Alexander-University Erlangen-Nuremberg, DE

11:00 **Thermal Shock Test Lifetime Improvement with Optimized Adhesive Strength between Epoxy Resin and Copper**
He Kangjia, Hitachi Power Semiconductor Device, JP

11:20 **Power Cycling Reliability and Failure Mode Analysis of POL**
Kenichi Koi, Shinko Electric Industries, JP

11:40 **Accelerated Power Cycling of GaN HEMTs using Switching Loss and Fast Temperature Measurement**
Wing Tai Leung, University of Bristol, UK

Stage: München 2
High Power Converters
Chairperson: Marc Hiller, Karlsruhe Institute of Technology, DE

11:00 **Control of an MMC-Based Hybrid Transformer with Star-Point Voltage Injection**
Rui Wang, Eindhoven University of Technology, NL

11:20 **Protection and Control of a Dual MMC Medium Voltage Supply**
Max Dupont, EPFL, CH

11:40 **A Novel LVDC Distribution Grid Substation Converter with High Thermal Endurance to Pole-to-Pole Short Circuits**
Frédéric Reymond-Laruina, EDF, FR

Stage: Mailand
Gate Drivers
Chairperson: Mark M. Bakran, University of Bayreuth, DE

11:00	**Suppression of Oscillations in a SiC Bridge-Leg using a Custom Single-Chip Digital Active Gate Driver with 2×255 Strength Levels** Qilei Wang, University of Bristol, UK
11:20	**SiC MOSFET Short-Circuit Protection: A Faster Soft Shut Down Method for Gate Drivers** Julien Weckbrodt, Safran, FR
11:40	**Compensate Power Transistor Tolerances by Using Gate Sensor in Advanced Gate Driver Integrated Circuit** Christopher Wille, Robert Bosch, DE

Stage: Athen
Advanced Control Techniques on Electrical Drives I
Chairperson: Eric Favre, IMI Precision Engineering, CH

11:00	**An Innovative High-Speed Track Range Restart Strategy for Permanent Magnet Synchronous Motor** Anna Corbitt, University of Arkansas, US
11:20perei	**Steady-State Error Reduction of Reinforcement Learning Based Indirect Current Control of Permanent Magnet Synchronous Machines** Tobias Schindler, Nuremberg Institute of Technology, DE
11:40	**Performance Evaluation of a Finite Control Set Model Predictive Current Control Implementation for Permanent Magnet Synchronous Machines at 400 kHz Sampling Frequency** Michael Hoerner, Nuremberg Institute of Technology, DE
12:00	**Lunch Break**
13:00	**Poster/Dialogue Session & Coffee Time (Hall 10.1)**

High Voltage Switches
Chairperson: Nando Kaminski, University of Bremen, DE

A01 - 9PBK6JLNX6	**A 4.5 kV Fast Recovery Diode Platform for High-Current IGBTs** Jan Vobecky, Hitachi Energy, CZ
A01 - RLY50M9BLJ	**6.5 kV Innovative Silicon Power Device (i-Si) Module with High Power Density and Low Loss by Stored Carrier Control** Takashi Hirao, Hitachi, J
A01 - ZX7LQ6MP8R	**High Current Density 4.5kV PressPack IGBTs Push SOA Limits** Hossein Davoodi, Littelfuse, D
A01 - WV689ZRNVR	**2.5kV IGBT Module with High Reliability for Renewable Applications** Akiyoshi Masuda, Mitsubishi Electric, J
A01 - 7BAAMKYJBL	**New Generation 4.5kV IGCT and Fast Recovery Diode for Railway Power Supply Applications** Umamaheswara Reddy Vemulapati, Hitachi Energy, CH
A01 - KVBWJ7L9DR	**Next Generation 4.5 kV IGBT-Only StakPak Module with Reduced Losses and High Temperature Capability** Jeremy Jones, Hitachi Energy, CH

Thermal Modelling and Simulations
Chairperson: Peter Wallmeier, AEG Power Solutions, D

B04 - RLA0PZY5BX	**Finite Element Analysis of the upscaling of Warpage and Bifurcation Hysteresis Loops: from Cu/Si Die to Large Wafers** Vincenzo Vinciguerra, STMicroelectronics, IT
B04 - YBLYDW54NG	**Comparison of Short-Term Over-Current Capability of SiC Devices Using Microchannel Cooling Below and on Top of the Chip** Soundhariya G S, KTH Royal Institute of Technology, SW
B04 - 4VY6PJKRNP	**Maximum Junction Temperature Simulation and Validation for the Hot Spot in Multi-Chip SiC Power Module** Wonjin Dylan Cho, onsemi, RK
B04 - NMJ8ZWY0MB	**Integration of CFD-Simulation Results in PLECS Using Lookup Tables** Simon Cepin, University of Applied Sciences and Arts Ostwestfalen-Lippe, DE
B04 - 0ZWNW0P5JP	**PCB Only Thermal Management Techniques for eGAN FETs in a Half-Bridge Configuration** Adolfo Herrera, Efficient Power Conversion, US
B04 - AMXVWZNLMQ	**Short Duration Over-Current Capability of SiC Devices with Heat Absorbing Materials** Shubhangi Bhadoria, KTH Royal Institute of Technology, SW

High Power Density Designs
Chairperson: Daniel Chatroux, CEA-LITEN, FR

D01 - 49KMAN689M	**From 4x to 3x STPAK – Optimization for a More Compact EV Traction Inverter Solution** Vittorio Giuffrida, STMicroelectronics, IT
D01 - 5JVVW06DJG	**A Multi-objective Structural Optimization Method Based on Multi-Physics Simulations for Power Module** Baihan Liu, Huazhong University of Science and Technology, CN
D01 - KY08V5KJY9	**Holistic Approach to Maximize Lifetime and Power Density in High Power Semiconductor Modules** Martin Schulz, Littelfuse, DE
D01 - 5V9WDQAKVJ	**High Efficiency High Density Regulated Switch Capacitor Topology** Pierrick Ausseresse, Infineon Technologies, DE
D02 - X5DXYN4V5D	**Silicon Interposer as a Substrate for Power Modules with High Power Density and Superior Thermal Performance** Ahmed Ammar, Lotus Microsystems, DK

Special Converter Applications
Chairperson: Klaus Marahrens, SEW-EURODRIVE, DE

F04 - P0BZ9XY70N	**Analytical Modeling and Stability Characterization of a Damped VSCC CM Active EMI Filter for Single- and Three-Phase AC-DC Applications** Timothy Hegarty, Texas Instruments, US
F05 - 6R0KY864P8	**An Active Bridge Circuit with High Ability to Withstand Surge for Outdoor Lighting Application** Liang Shi, Signify, CN
F06 - VJZ6WKG9JZ	**A Repetitive High Voltage Nanosecond Pulse Generator: First Prototype Design and Test Results** Serge Gavin, University of Applied Sciences of Western Switzerland, CH
F07 - ANXYD5R6L5	**Talkative Differential Frequency Shift Keyed Dual Side Control of Inductive Power Transfer** Hamzeh Beiranvand, Kiel University, DE
F03 - QZLB4LWAZL	**Study of a Multi-Active Bridge Converter for a Domestic Electrical Grid** Abdennour Merrouche, University of Perpignan, FR

Integration Technologies and Reliability Design
Chairperson: Elison Matioli, POWERlab, EPFL, CH

D02 - MGN789P6B5	**Fabrication Development for Gate Driver Embedded Double-Sided Cooling SiC Power Module for Electric Vehicle Application** Yuyang Wang, University of Arkansas, US

D02 - VX9QG0W8XR	**Printed Circuit Embedding of Prepackaged 150V Power MOSFETs in a Portable Welding Application** Thomas Gebhard, Infineon Technologies, AT
D02 - BXPB596QXJ	**Process Challenges and Progress Towards Direct Connection of Automotive Power Modules (TMM) to Heatsink** Indrajit Paul, STMicroelectronics, DE
D02 - 7NKWXPB5N9	**Optimizing PCB Stackups for Enhanced GaN Transistor Performance in High-Power Applications** Philipp Czerwenka, Reutlingen University, DE
D03 - RW794KL7WK	**New Generation Ceramic Substrates – Key Components for Power Electronic Applications: Processing and Characterization** Stefanie Schindler, CeramTec, DE
D03 - 8V65LW4RK4	**AI-Enhanced Vacuum Reflow Oven: Precision Control for Reliable Large-Area Soldering** Chih Hui Lee, Mustec, CN
D03 - JZB64LR0ZL	**High Voltage Challenges in Wafer-Level Burn-in Testing of Wide Band Gap Power MOSFETs** John Pioroda, Aehr Test Systems, US
D03 - J0PQX79R68	**Corrosion-Compatible Drive Electronics for Electric Vehicles and Industrial Power Modules – Large Area Sintering On Liquide Coolers** Tom Petzold, University of Applied Sciences Kiel, DE
D03 - 0X7VR8LPNA	**Evaluating the Package Safety Isolation of Integrated Power Devices** Thomas Anthony Capobianco, Power Integrations, US

Control Methods I
Chairperson: Ulrich Kirchenberger**,** STMicroelectronics, DE

E01 - 86XWZKG4JP	**Flexible Control System for Modular One-Phase Interleaved GaN-based Totem Pole PFC Using Real-Time Hardware** Oleksandr Solomakha, University of Stuttgart, DE
E01 - JQJNK8WDQD	**A Peak Current Mode Control Method for PFC** Sean Yu, Texas Instruments, US
E01 - G8QVQA69BQ	**Adaptive Control of a Three-Phase PFC Converter in the On-Board Charge Application** Rami Troudi, Valeo Eautomotive, FR
E01 - 8XJP9WR6XR	**Synthesis of a Field Oriented Control Algorithm by Using two Different Pole-Zero Compensation Approaches** Marco Denk, University of Applied Sciences Coburg, DE
E01 - JYZWXPKDGA	**Comparative Study of DPC and PDPC Controls Applied on Shunt Active Power Filter** Sabir Ouchen, Aalen University of Applied Sciences, DE
E01 - K5LMQVGDRQ	**Average Current Mode Control and Its Loop Design** Niklas Schwarz, Texas Instruments, DE
E02 - RKGYMBR8KM	**Novel Power Feed-Forward Regulation for Dual Stage PFC+DCDC Converters** Alfredo Medina-Garcia, Infineon Technologies, DE

High Power AC-DC and DC-AC Converter
Chairperson: Silvio Colombi**,** ABB, CH

G03 - 9K6DV896KP	**22 kW Wide Output Voltage Range and Bidirectional Wall-Box Charger with SiC MOSFET** Sanbao Shi, Infineon Semiconductors, CN
G03 - YVZLWRMPVZ	**Dynamic Switching Frequency Selection for Efficiency Optimization in On-Board Charger PFC Stage Based on Novel SiC MOSFET Power Module** Giuseppe Aiello, STMicroelectronics, IT
G03 - B5XD498J59	**Design and Optimization of SiC-Based 11kW Motor Drive with High Efficiency** Iris Liu, Wolfspeed, CN
G03 - GD774R60DW	**Model Design Development for False Turn-on characterization in SiC-Based Active T-Type Converter Considering All Parasitics** Amir Babaki, University of Southern Denmark, DK
G03 - VQX4NWGJQ4	**Efficiency Investigations of an Auxiliary Resonant Commutated Pole Inverter** Markus Zocher, Technical University Nuremberg Georg Simon Ohm, DE

G03 - RJDPB4R5JZ	**A Novel Hybrid Two-Stage AC-DC Converter with Soft-Switched CCM PFC Stage for EVs Charging Applications** Lei Wang, University of Sydney, AU
G03 - AQ7LJMV90Y	**A Method for Tuning Leakage Inductance in Transformers** Rosemary O'Keeffe, Bourns Electronics, IE
G03 - GLQPXBYNJA	**Low Cost High Density 300W/20V AC-DC Converter Enabled by GaN Power ICs** Tom Ribarich, Navitas Semiconductor, US
G03 - Z7YLQ6JDRJ	**25kVA Grid-Tied Bi-Directional T-Type Inverter with High-Efficiency and High-Power Density Using SiC MOSFETs** Tamanna Bhatia, Wolfspeed, US
G03- KYLZBLMPYW	**Cost-Effective Efficiency Enhancement in AC-DC Converters: A Study Across the Full Load Cycle** Sebastian Gick, University of Bayreuth, DE

E-Mobility Traction I
Chairperson: Robert Plikat, Volkswagen, DE

H01 - LY0MLW57PA	**Next Generation Power Module with Parallel Connected SiC MOSFETs for BEV Traction Inverters** Kohei Tanikawa, ROHM, JP
H01 - VAN65V7XAR	**High Density 3D Controlled POL Technology based Power Modules in Easy 1B / 2B size compatible packages** Erno Temesi, Coherent, HU
H01 - B80J6RA78V	**Investigation of Common Source Feedback in SiC Power Modules regarding Performance and Short Circuit Robustness** Dominik Ruoff, Robert Bosch, DE
H01 - X7NW8MX0A8	**HybridPACK Drive Power Modules with SiC-MOSFET's and Monolithic RC-Snubber Chips for Optimized Power Density** Andre Uhlemann, Infineon Technologies, DE
H01 - DQP5RADLJN	**Robust Auxiliary Power Supply for EVs Based on Innovative STi2GaN 650V IC** Federica Cammarata, STMicroelectronics, IT
H01 - 9JVP96WYJ6	**Impact of Various Silicon Diodes on the Hybrid Switch Inverter** Michael Walter, University of Bayreuth, DE
H02 - 6YAGWKD4Y0	**Advanced Pulse Sequence for Saliency-Based High-Accurate Rotor Position Estimation of Railway Traction Locomotive Motors** Markus Vogelsberger, ALSTOM, AT

Control Techniques
Chairperson: Michael Hartmann, Graz University of Technology, AT

A01 - MQAKLYP8QL	**Optimized Half-Bridge Gate-Drive with Low Time-Skew for RC-IGBTs and SiC-MOSFET Dead-Time Control** Jan Fuhrmann, University of Rostock, DE
H07 - WG09RZVLPK	**Design of a Traction Inverter Based on PCB-Embedded GaN Devices** Maurizio Tranchero, Ideas&Motion, IT
H07 - Z7AP0M4BJM	**Optimizing Electric Vehicle Performance with GaN Design** Andrew Patterson, Silvaco, UK
J01 - RND9YAM64Q	**Fast Analytical Calculation of the Magnetic Field in Permanent Magnet Synchronous Machines with Flux Barriers Including Saturation** Martin Ackermann, Bundeswehr University Munich, DE
J01 - X9A0QKR56G	**Statistical Variations in the Parasitic Capacitance of a Coil** Kevin Talits, HELLA, DE
J01 - DABDN9VKA0	**Modeling and Control of LCL filtered 3L-VSCs in Interleaved Topology** Adeel Jamal, Technical University of Darmstadt, DE
J06 - R8DQV97LYM	**Performance Comparison of Using Shunt-based and Integrated Current Sensing for Sensorless Field-Oriented Control** John Emmanuel Tan, Power Integrations, RP
K03 - 9W9LRQY8PV	**Enhancing Safety and Efficiency for Isolated PLC I/O Designs with SPI Daisy Chain** Travis Lenz, Skyworks Solutions, US
K06 - 9AZK698NWK	**Cost-Effective Method to Discharge DC Link Capacitors with SiC Power Modules** Paul Kanatzar, Wolfspeed, US

Power Quality
Chairperson: Jacques Laeuffer**,** Dtalents, F

O04 - DQ0R6XNAQ8
A Study on Circulation Current in Parallel Operation of Transformer less UPS
Koji Kato, GS Yuasa International, JP

O07 - VJPKW85ZB4
Design Challenges and Considerations for Gate Drivers of SiC MOSFETS and their Testing
Niranjan Hegde, Tektronix, IN

O07 - 8BKMWZ9PBZ
A Portable Efficiency Characterization Setup for Technology Demonstration of Power Modules
Sebastian Tengvall, Lotus Microsystems, DK

O07 - 985L4ZKRWG
Fast EME Characterization of Bare-Die SiC MOSFETs
Robert Kragl, Robert Bosch, DE

O07 - GZVYKD6B7W
Theoretical Comparison of Component-Related Measurement Methods of Photovoltaic Inverters for Long-Term Testing
Niclas Reitz, Fraunhofer IEE Institute, DE

O07 - 7WAJ0ZDK8N
Power Cycling Test Optimization Toward Reliability Assessment of Sintered Power Modules
Robert Graham, Macdermid Alpha Electronic Solutions, US

O08 - 5VLLKY79V9
Real-Time Estimation and Sensitivity Analysis of Parasitic Capacitances in Electric Drive Systems
Mohammadreza Bagheribavaryani, Braunschweig University of Technology, DE

Modelling and Testing
Chairperson: Marco Liserre, Christian-Albrechts-University of Kiel, DE

P01 - DMLGZJ9Y40
Parasitic Component Effects of Internal and External Package Level on Switching Performance of SiC Power Module
Nguyen Nghia Do, PowerX Semiconductor, CN

P01 - 4GZ06QW7GD
A Multi-Physics Iterative Approach for Temperature Estimation in SiC Power Module for Electric Vehicle
Stefano Orlando, STMicroelectronics, IT

P01 - WAWZ96NM8V
Voltage Balancing Method for Series Connection of 50 SiC MOSFETs
Antoine Philippe, CEA, FR

P01 - QYA7VP6MYN
A Laboratory-Scale MMC-Based DC System with RCP and PHiL Simulation Capabilities
Marc René Lotz, Ostfalia University, DE

P01 - AVBKG94L6G
Reliability and Simulation of Film Capacitors with the Support of CLARA Web Tool
Fernando Aunon, TDK Electronics, DE

P01 - V65AKVGB6M
Accuracy Evaluation and Proposed Dynamic Tuning Procedure of a Compact SiC SPICE Model
Brian DeBoi, Wolfspeed, USA

P01 - 568WVMJD9Y
Investigation of Use-Case-Dependent Modeling Approach for Switched-Mode Power Converter for LVDC Grid Evaluation
Melanie Lavery, Friedrich-Alexander-University Erlangen-Nuremberg, DE

P01 - Q4YNAQLVBR
Averaged Model with Blocking Capability for Solid-State Transformers
Ahmed Meligy, Schneider Electric, FR

I01 - VNRWDGXY9L
Optimising a Power Module for Electrical and Thermal Performance and Symmetry Using EDA Tools
Wilfried Wessel, Siemens EDA, DE

Advanced Components
Chairperson: Thomas Ebel, University of Southern Denmark, DK

R01 - ZN5X7YGW8G
Interface Engineering of Nanoparticles for Nanocomposite Film Capacitors
Bartosz Gackowski, University of Southern Denmark,DK

R02 - 8P44K78BPB
Increasing Energy Storage Capabilities of Powder Cores by Adapting the Winding and the Use of Fringing Flux
Paul Winkler, Acal Bfi, DE

R02 - GB0WMZ6DPQ
PEEC-Based Thermal Modeling of Passive Components
Sascha Langfermann, BLOCK Transformatoren-Elektronik, DE

R02 - N0LVYP4D07
Galvanically Isolated Power Supply for Gate Drivers in High Voltage Applications
Priyanka Ghosh, Helmut-Schmidt-University, DE

R03 - R7XXL64N7L
Fabrication Technic for Novel Nanocrystalline Cores with High Saturation Polarization and Low Losses
Merlin Thamm, Fraunhofer Institute IFAM, DE

R03 - Y7D4Z56J7M
Excitation-Dependent Temperature Behavior of the Quasi-Static Hysteresis Loss Energy Density of N87 Ferrite Material
Jeremias Kaiser, Friedrich-Alexander-University Erlangen-Nuremberg, DE

R03 - 0ZJXL5WDZ6
Power Losses, HF-Impedances, and Saturation of Fe-Based Nanocrystalline Cores
Tobias Trupp, MAGNETEC, DE

R04 - KXR8ZDPAXQ
Passive Methods Limiting Leakage Current in Metal-Oxide Varistor as Voltage Clamping Device used DC Low Voltage Power Electronics-Based Circuit Breakers
Kenan Askan, Eaton Industries, AT

Stage: Brüssel 1
GaN Converters
Chairperson: Eckart Hoene, Fraunhofer IZM, DE

14:30	**Design of High-Power Inverter with 12 Parallel GaN Devices** Takashi Swada, Nagoya University, JP
14:50	**Over 99.7% Efficient GaN-Based 6-Level Capacitive-Load Power Converter** Stefan Mönch, Fraunhofer Institute IAF, DE
15:10	**Cascaded Primary-Side-Only Control of a Compact 2 MHz 500 W Wireless Power Transfer System** Tim Krigar, TU Dortmund University, DE

Stage:Brüssel 2
Advanced Materials and Technologies
Chairperson: Frank Osterwald, Gesellschaft für Energie und Klimaschutz Schleswig-Holstein, DE

14:30	**Power Module Evaluation Using Ultra High Heat Dissipation and High Heat Resistance Resin Sheet Containing Card House Type Boron Nitride Filler** Ayano Imai, Mitsubishi Chemical, JP
14:50	**Investigating Temperature Dependent Warpage in Metal Ceramic Substrates for Power Electronics Devices** Benjamin Fabian, Heraeus Electronics, DE
15:10	**Degradation Mode Analysis of Different Bonding Technologies of SiC Power Semiconductors Stressed by Active Power Cycling** Rasched Sankari, Robert Bosch, DE

Stage: München 1
Charging Station Technology
Chairperson: Pavol Bauer, Delft University of Technology, NL

14:30	**Implementation and Verification of a 50kW Opportunity Wireless Charger Design** tba Carlos Costas Sos, Fundacion CIRCE, ES
14:50	**Performance Evaluation of Silicon-Based 3-Level Vienna Rectifier in SMPD Package** Karsten Haehre, Littelfuse, DE
15:10	**Performance Analysis of a 25-kW SiC-Based Dual Active Bridge Converter Based on Parallel-Connected Devices** Francesco Porpora, University of Cassino and Southern Lazio, IT

Stage: München 2
Modelling and Monitoring
Chairperson: Christina DiMarino**,** Virginia Tech, USA

14:30	**Semiconductor Chip Models are the Key for Enabling Virtual Design and Optimization Workflows of Power Electronic Systems** Stefan Haensel, Siemens, DE
14:50	**Improved Resonant Frequency-Based Parasitic Inductance Estimation Method for SiC MOSFET Half-Bridge Circuit** Hongpeng Zhang, Karlsruhe Institute of Technology, DE
15:10	**Fast Simulator with Inverter Temperature Estimation for Traction eDrives in Vehicles Subjected to Driving Cycles** Iustin Radu Bojoi, Polytechnic University of Turin, IT

Stage: Mailand
Solid State Transformers
Chairperson: Peter Steimer, Hitachi Energy Switzerland, CH

14:30	**A New Family of Three-Phase-Unfolder-Based MVAC-LVDC Solid-State Transformers** Jonas Huber, ETH Zurich, CH
14:50	**Voltage Balancing of a Split-Capacitor IGCT 3L-NPC Leg for the Resonant DC Transformer** Renan Pillon Barcelos, EPFL, CH
15:10	**Comparative Analysis of Unidirectional High Step-Up Converters for Medium Voltage Applications** Stefan Subotic, EPFL, CH

Stage: Athen
Advanced Control Techniques on Electrical Drives II
Chairperson: Manfred Schrödl, Vienna University of Technology, AT

14:30	**Startup Behavior of Harmonic Suppression in Electrical Machines Using Iterative Learning Control and Neural Networks** Annette Mai, Fraunhofer Institute IISB, DE
14:50	**tba** tba
15:10	**Analytical Approach of the Vector Current Control Flux-Weakening Strategy for Permanent Magnet Synchronous Machines** Oriol Subirats Rillo, CITCEA-UPC, ES
15:30 – 17:00	**Poster/Dialogue Session & Coffee Time (Foyer)**

GaN Devices and Applications
Chairperson: Christina DiMarino**,** Virginia Tech, US

A06 - 9MQB9KJGDX	**ESD solutions for 650V Normally-off AlGaN/GaN HEMTs** PHUNG Thanh Hai, Wise-Integration, FR
A06 - DAX6JPM9AM	**A Simulative Study of Measurement Errors During Double Pulse Testing of GaN Devices** Severin Klever, RWTH Aachen University, DE
A06 - NGYK0YPRG4	**Parallel Connection of GaN FETs in Low-Voltage Inverter Topology for Motor Drive Applications** Marco Palma, Efficient Power Conversion, IT
A06 - L9PGYLW5R4	**Repetitive Short Circuits on 650 V GaN HEMT** Adrien Lambert, STMicroelectronics, FR
A06 - R8XAR6VJNW	**Comparison of Switching Losses and Dynamic on Resistance of 600 V-Class GaN HEMTs** André Thönnessen, RWTH Aachen University, DE
A06 - B6LGMNB7ZX	**Performance Evaluation of Deadtime and Gate Resistance for Parallel Connected GaN HEMTs** Junhyeok Jegal, KERI, RK
A06 - NRJBMZ6WRY	**Reaching Beyond 1200V: Lateral GaN HEMTs for High-Reliability EV and Industrial Applications** Kamal Varadarajan, Power Integrations, US

SiC Devices and Technologies
Chairperson: Josef Lutz**,** Chemnitz University of Technology, DE

A05 - 5RYDZ98JB6	**SmartSiC 150 & 200mm Engineered Substrate: Increasing SiC Power Device Current Density up to 30%** Eric Guiot, SOITEC, FR
A05 - NJZPNDX7JL	**Dynamic Transients in High-Voltage Silicon and 4H-SiC NPN Bipolar Junction Transistors** Mana Hosseinzadehlish, University of Bristol, UK
A05 - Y6AZ84PJ7Q	**An Advanced Multi-Aspect Performance Analysis of Planar-gate 1.2 kV SiC Power MOSFETs** Anja Katerina Brandl, ETH Zurich, CH
A05 - K64LWXG46Y	**SiC MOSFET Die Sorting and Parallel for Optimal Module Design** Zhong Ye, Inventchip Technology, CH
A05 - AL44Q0YVLW	**Simulation Approach for Radiated Electro-Magnetic Fields Estimation on Acepack Drive SiC Power Module** Andrea Cusumano, STMicroelectronics, IT

Control Methods II
Francisco Javier Azcondo**,** University of Cantabria, ES

E01 - 8VZXA0NLVX	**Exact Analysis of Control-to-Output Transfer Functions of PWM-Converters - A Comparison of Two Methods** Daniel Breidenstein, Friedrich-Alexander-University Erlangen-Nuremberg, DE
E01 - V9QLYV8RNJ	**3-Level Flying Capacitor Multilevel Topology with Delta-Sigma Modulation** Jannik Maier, Reutlingen University, DE
E01 - M6LX8YWA60	**Model Based Controlled Power Converter Test Platform** Dawid Koczy, University of Bremen, DE
E01 - RL7ZB8GA678	**Educational Hardware Trainer for Teaching the Dual Active Bridge in a DC Grid** Peter van Duijsen, The Hague University of Applied Sciences, NL
E01 - G8WQV9RA8X	**Study of the Operating Performance of a FCS-MPC-Controlled Matrix-Converter for PMSM at Different Frequency Ratios** Robert Zipprich, University of Kassel, DE
E01 - 594V56WR9W	**Enhancing Reactive Power Capacity in Battery-fed Power Conditioning Systems** Lucas Araujo, Norwegian University of Science and Technology, NO
E02 - 0Y4RG8VPYG	**Pulse Sharing: Enabling the World's First Zero Cross-Regulation Multi-Output Flyback Converter IC** Xingda Yan, Power Integrations, UK
E02 - LYW6QRBGKN	**Semiconductors Lifetime Enhancement via Optimized Space Vector Modulation** Amin Rezaeizadeh, University of Applied Sciences and Arts Northwestern Switzerland, CH

Intelligent Power Modules
Chairperson: Marcelo Lobo Heldwein, Munich University of Technology, DE

E05 - M0X9D5Y8Q8	**A Flip-Chip Integrated SiC Power Module with Low Gate Signal Interference** Chenhang Zeng, Huazhong University of Science and Technology, CN
E05 - 4D6RA9J8DJ	**Multispectral Electroluminescence Sensing of SiC MOSFETs for Junction Temperature and Current Extraction** Lukas Ruppert, RWTH Aachen University, DE
E05 - AZ757BNWZ0	**SiC-IPM for Compact and Energy Efficient** JongMu Lee, Alpha and Omega Semiconductor, RK
E05 – 2 8JKW7QXPJ9	**Concept for a GaN-Based Intelligent Motor Controller with Integrated Failure Prediction for the Inverter and the Drive** Christoph Blechinger, Fraunhofer Institute IISB, DE

E05 - AZA87JYQ69
Introducing the New 1200 V CIPOS Maxi IM817 Intelligent Power Module for Motor Drive Applications
Kihyun Lee, Infineon Technologies, RK

E05 - YRLJ78QARX
Thermal Performance of Infineon's New 600 V CIPOSTM Micro IM241 IPM for Low Power Motor Drive Systems Without Heatsink
David Jo, Infineon Technologies, RK

Intelligent Gate Drive Units
Chairperson: Geraldo Nojima, Eaton Corporation, US

E04 - W79QK6LA7R
An Adaptive Dead Time Control Based on Switch Node Voltage Derivative
Lukas Knappstein, Technical University of Dortmund, DE

E04 - 5N408P7ANL
Coupling Coil Design and Positioning Optimization for Power Semiconductor Based Current Sensing
Yannick Dumollard, Alstom, FR

E04 - 8KABM8LQ7Q
Enabling Active Thermal Control via Adaptive Multi-Voltage Gate Driver
Tianlong Albert, RWTH Aachen, D

E04 - G7D5V8RKNZ
Innovative Gate Drive Method TriC3 for Motor
Hisashi Sugie, ROHM, JP

E04 - AMZA5D68Y6
A New Class of Solid State Isolators Enhances the Reliability of Solid State Relays
Wolfgang Frank, Infineon Technologies, DE

E04 - 8YRG7P0BQL
A 3-Level Active Gate Driver Network to Control Switching Slew Rate for SiC MOSFETs
Vin Loong Choo, Technical University of Dortmund, DE

E-Mobility Traction II
Chairperson: Klaus F. Hoffmann, Helmut-Schmidt-University, DE

H01 - WYNMRGA9XA
Practical Layout Techniques and Component Selections for Noise Mitigation in EV Traction Inverters with SiC Modules
Long Nguyen, Skyworks Solutions, US

H01 - LN75YL0JNX
Analysis of Long-Term Reliability of SiC in Traction Inverter Considering Vth Instability
Chi Zhang, Volvo Cars, SW

H01 - 479Z9MA58J
Efficient Mapping of On-Demand Drive Load Profiles on Inverter Stress
Zlatko Bosnjic, Graz University of Technology, AT

H01 - 0QN4MXLRQA
EV Traction Inverter Optimal Design is Dominated by 3-Level ANPC
Timothé Delaforge, Bern University of Applied Sciences, CH

H01 - 7RZPQGL8RM	**Introduction of Power Semiconductor Options for an Exciter of Electrically Excited Synchronous Motor** Yeriel Bai, ON Semiconductor, RK
H01 - X6DJ74RB6P	**A Novel High Power Density Three Phase Traction Inverter Architecture for Electric Vehicle (EV) Applications** Yiyang Yan, Huazhong University of Science and Technology, CN
H01 - RDJA0NB4XB	**A Modular DC-Link Capacitor Solution for the Main Powertrain Inverter of xEV** David Olalla, TDK Electronics, DE
H01 - 5BQK50W8BY	**Revolutionizing the Road: How Are Advanced Automotive Power Modules Shaping the Future of xEVs?** Amine Allouche, YOLE SYSTEMPLUS, FR
H01 - A9V5AN076Z	**Fault Identification Testing Methods for a Commercial Traction Inverter** Anna Corbitt, University of Arkansas, US
H01 - XQ04JZA8QN	**Short Circuit Robustness for Traction Inverters from an Application Point of View** Karl Oberdieck, Robert Bosch, DE

Wednesday, 12 June 2024

Foyer Brüssel **Community Coffee**
08:30

Stage: Brüssel 1

08:45 **Keynote**
Infrastructure Requirements for Electrified Heavy Goods Transport in Germany and the EU
Martin Wietschel, Fraunhofer Institute ISI, DE
Chairperson: Marc Hiller, Karlsruhe Institute of Technology, D

09:30 **Coffee break**

Stage: Brüssel 1
Power Electronics for E-Mobility
Chairperson: Petar J. Grbovic, University of Innsbruck, AT

09:50 **Investigation on Direct Liquid Cooling Design of Power Modules with Flat Baseplate for Automotive Application**
Nobuhide Arai, Fuji Electric, JP

10:10 **A Novel Approach for Affordable Electric Vehicles Based on Dual 48V Battery System with Multi-functional 3-Level Converter**
Radovan Vuletic, Infineon Technologies, DE

10:30 **An Innovative 3-level Solution for Automotive Application**
Pranav Panchal, Semikron-Danfoss, DE

10:50 **Coffee break**

11:10 **Gated Recurrent Units-Assisted State-Space Modeling for Electric Vehicle Temperature Prediction**
Xinyuan Liao, Northwestern Polytechnical University, CN

11:30 **Novel Bidirectional Single-Stage Isolated 600-V GaN M-BDSBased Single/Three-Phase-Operable EV On-Board Charger**
Sven Weihe, ETH Zurich, CH

Stage: Brüssel 2
Encapsulation Materials
Chairperson: Aylin Bicakci, University of Applied Sciences Kiel, DE

09:50	**Application-Specific Investigation of Inorganic Potting Material in Drive Trains** Soenke Fleck, University of Applied Sciences Kiel, DE
10:10	**The Influence of the Glass Transition Temperature of Epoxy Molding Compounds on the Reliability of a Semiconductor Device** Stefan Schwab, Infineon Technologies, DE
10:30	**Corrosion Resistant Packaging for Power Semiconductor Modules - Modified Insulation Materials for Contaminated Environments** Michael Hanf, University of Bremen, DE
10:50	**Coffee break**
11:10	**Investigation of Inorganic Encapsulation Materials in Power Electronic Systems for High Power Density Applications** Stefan Behrendt, Semikron-Danfoss, DE
11:30	**Characterization of Thermally Aged Silicone Gels for Power Semiconductor Modules** Sonja Madloch, Littelfuse, DE

Stage: München 1
Power Quality
Chairperson: Martin März, Fraunhofer IISB, DE

09:50	**A Coordinated Control of Hybrid Single-Phase AC/DC Microgrids Based on the Natural Harmonic Injection Concept** Mehdi Baharizadeh, University of Southern Denmark, DK
10:10	**tba** tba
10:30	**A High-Power Density SiC Based TP PFC with High-Frequency Ripple Cancellation Leg** Serkan Dusmez, Wat Motor Company, TR
10:50	**Coffee break**
11:10	**High Frequency Active Filter for AC-DC High Power Converters** Sarah Sifoune, SATIE, FR
11:30	**Laboratory Setup for Accuracy Investigation of Electricity Meters and Monitors under Industry-Typical Operating Conditions** Matthias Schmidt, Physikalisch-Technische Bundesanstalt, DE

Stage: München 2
Grid Connected Converters
Chairperson: Hans-Günter Eckel, University of Rostock, D

09:50	**Real-Time Evaluation of Weighting Factorless Predictive Control of LCL Filter Equipped Grid-Side Converters using Sorting Networks** Kristof Bandy, Budapest University of Technology and Economics, HU
10:10	**Relaxed Robust Control with Pragmatic Shortage of Passivity for Wind, Storage and PV Power Converters** Sergio de Lopez Diz, Gemesa Elelctric, ES
10:30	**An Effective DC Voltage Regulation of Active Front-End Rectifier through Model Predictive Control** Mobina Pouresmaeil, Aalto University, FI
10:50	**Coffee break**
11:10	**Bi-directional 11kW Multi-Level Active-Neutral-Point-Clamped AC-DC Converter Using 600V/750V Si Super-Junction and SiC MOSFETs for High-Efficiency and High-Density Applications** Mengxing Chen, Infineon Technologies, AT
11:30	**A Study of Grid-Forming Inverter Control Strategy for Fault-Ride-Through Capability** Hirofumi Uemura, Fuji Electric, JP

Stage: Mailand
Passive Components
Chairperson: Thomas Ebel, University of Southern Denmark, DK

09:50	**Film Capacitors for High Temperature AC-DC Inverter Applications** Adel Bastawros, Sabic, US
10:10	**Loss Reduction in HF-Transformers using Laminated Ferrite E-Cores** Lukas Reißenweber, Coburg University of Applied Sciences and Arts, DE
10:30	**Multigap Toroidal Transformer and Inductors for Overcoming Fringing Losses in High Frequency Converters** Pau Colomer, Prax, ES
10:50	**Coffee Break**
11:10	**Study on Sample Geometries for Ferrite Characterisation in the MHz Range** Till Piepenbrock, Paderborn University, DE
11:30	**FEM-Supported and Non-Destructive Magnetic Characterization Method for Non-Laminated Steel** Stefan Tobler, Eastern Switzerland University, CH

Stage: Athen
Drives for High Demanding Applications
Chairperson: Jose Mario Pacas, University of Siegen, D

09:50	**Highly-Compact Bearingless Axial-Flux Motor for a Pediatric Implantable Fontan Blood Pump** Andreas Horat, ETH Zurich, CH
10:10	**A Novel Permanent Magnet Synchronous Motor Drive for Reaction Wheels in Satellites** Baris Colak, TUBITAK UZAY Space Technologies Research Institute, TR
10:30	**Exploring High Frequency Operation of Motor Drives: Practical Insights on Efficiency and Loss** Asantha Kempitiya, Infineon Technologies, US
10:50	**Coffee Break**
11:10	**High Power Density System Design for GaN-based LV Motor Drives** Marco Cannone, Infineon Technologies, AT
11:30	**Design of GaN Transistor based Variable Speed Drive Inverter with Output Voltage Filtering** Kaspars Kroics, Riga Technical University, LV
11:50	**Lunch Break**
13:00	**Poster/Dialogue Session & Coffee Time (Hall 10.1)**

Investigations of Particular SiC Device Phenomenon
Chairperson: Thomas Neyer, Infineon Technologies, DE

A05 - V7K9ZG507P	**The Impact of The Deadtime on The Stability of 1.2kV SiC MOSFET Body Diode Under Hard Switching with Synchronous Rectification** Mohammed Amer Karout, University of Warwick, UK
A05 - K0G7AMYN0B	**RC-DC Snubber Implementation for Suppression of Diode Voltage Peak and Ringing in a Full SiC Half-Bridge Power Module** Emanuela Alfonzetti, STMicroelectronics, IT
A05 - YA5L5BP4QL	**Sub-5 Second Wide-Bandgap Power Device Calorimetric Measurements Utilziing Optical Sensors and Peltier Elements** Ruben Schnitzler, University of Stuttgart, DE
A05 - Y0BLKBY80B	**SiC Trench MOSFETs in Avalanche Mode with RC Snubber Circuit** Sebnem Tuncay, Infineon Technologies, DE
A05 - JAG4ZBJ5PL	**High-Frequency Oscillations in SiC MOSFET Power Modules During Turn-on Switching Transient – Analysis Based on Simulations and Mitigation Methods** Rajani Kumar Thirukoluri, ON semiconductor, DE
A05 - A0GAWZ790Y	**A Dynamic Current Balancing Method Using Full-Coupled Inductors in Paralleled Gate Branches** Jianwei Lv, Huazhong University of Science and Technology, CN
A05 - DP6Z8BDYPK	**Quantitative Performance Comparison of Large-Format SiC MOSFET and Si IGBT Modules** Arthur Boutry, University of Alabama, US

Thermal Management and Advanced Cooling
Chairperson: Katsuaki Saito, Nexperia, JP

B01 - PYRWBXK978	**Solder Preform Technology for Improved Thermomechanical Performance in Molded Power Module Package-Attach** Joseph Hertline, Indium, US
B02 - WGAK7MD5GA	**Design and Evaluation of Concept for Planar Magnetics Enhanced Cooling Realized with Ceramic Inserts** Ismail Recepi, Silicon Austria Labs GmbH, AT
B02 - XQYAPLB4QZ	**Effect of Flip-Chip Die-Attach on the Thermal Behavior of Power GaAs Diodes** Felix Steiner, Karlsruhe Institute of Technology, DE
B02 - NYWRNW7X9P	**Influences of Solder Delamination on the Thermal Performance in Automotive Traction Module** Hansol Seo, onsemi, RK

B02 - 4W8V5Q98WB	**New Integrated Thermosiphon Solution for High-Power IGBT Cooling Applications** Kimmo Jokelainen, CooliBlade, FI
B03 - QXD0KNLBXB	**Development of a Passive Capillary-Pumped Cooling System for High-Performance Electronics** Justin Fey, Frankfurt UAS, DE
B03 - 5DY0Y6GBA4	**Exploring Polymer-Based Impingement Cooling Efficiency: An In-depth Analysis of Junction Temperatures** John Mookken, onsemi, US
B03 - 5677L9R069	**Cold Spray for Electrical Applications** Michael Dasch, Impact Innovations, DE
B03 - W6VBA4Y06Z	**Cold Plate Design for Cooling LV100 Silicon Carbide Power Module Packaging** Wahid Cherief, Mersen, FR
I01 - N0DW6NKGYX	**An Improved Double-Layer Spacer in Double-Sided Cooling Power Module** Linhao Ren, Huazhong University of Science and Technology, CN

Reliability Testing
Chairperson: Shiori Idaka, Mitsubishi Electric Europe, DE

D03 - LXAVGYJQWV	**Power Cycling of 1.7kV Multi-Chip Power Modules – SiC MOSFETs vs Silicon IGBTs** Nick Baker, University of Alabama, US
D03 - BRB6VAWKRK	**Power Cycling Capability of Discrete SiC MOSFET Devices with Different Designs** Luhong Xie, North China Electric Power University, CN
D03 - 7GQPN67MRW	**Model-Based Parameter Tuning of Semiconductor Devices in DC Power Cycling Test** Yi Zhang, Aalborg University, DK
D03 - 9WNB5N8XWZ	**Influence of Transfer Molding on the Reliability of DCM SiC Pow-er Modules** Jacek Rudzki, Semikron Danfoss, DE
D03 - R4KMZ79W4P	**Damp Heat Behavior of High Heat Capacitors for Applications in Electric Vehicles** Adel Bastawros, Sabic, US
D05 - M60MQ9VAGP	**Influence of the Gate Voltage During On-Time on the Power Cycling Capability of SiC MOSFETs** Patrick Heimler, Chemnitz University of Technology, DE
D05 - AGWA6DZLGW	**Investigation of the Temperature Measurement via VSD(T)-Method applied to Paralleled SiC MOSFET Chips during Power Cycling** Kevin Ladentin, Otto-von-Guericke University Magdeburg, DE

D03 - YJPXLWMVJ7
Approaches of Tsep Measurements for Power Semiconductors
Regine Mallwitz, Technical University of Braunschweig, DE

D04 - J5XAWYMV9K
Realtime Junction Temperature Estimation in SiC Power Modules Based on Multiple TSEP Acquisition
Kevin Muñoz Barón, University of Stuttgart, DE

High Voltage WBG Devices
Chairperson: Christof Sihler, GE Power Conversion, FR

A05 - BR65XW4J0P
Enhanced Current Measurement Approach for Non-Isolated 6.5 kV Silicon Carbide MOSFETs
Yue Zhao, University of Arkansas, US

A05 - JLWNDMQWYX
New 2kV SiC-MOS Technology for Application Fields in the Industrial Landscape
Igor Kasko, ROHM Semiconductor, DE

A05 - M5DBZWR75K
High Temperature Experimental Characterizations of COSS of 3.3 kV SiC MOSFET for Medium Voltage PV Applications
Paul Schmidt, CEA, FR

A05 - X78Q6G9WD5
Impact of Gate Control on the Switching Performance of 3.3kV SBD-Embedded SiC-MOSFET
Junya Sakai, Mitsubishi Electric, DE

A05 - RAR4Z87JAJ
Comparative Assessment of Overloadability Potential of 3.3 kV Si-IGBTs and SiC-MOSFET Power Modules
Muhammad Nawaz, Hitachi Energy Research, SW

A05 - MYVQ6DPBNG
Improved Reliability of a 2200 V SiC MOSFET Module with an Epoxy-Encapsulated Insulated Metal Substrate
Hiroshi Kono, Toshiba Electronic Devices & Storage, JP

A05 - Z5XXWG0B5G
Paralleling 3.3-kV/800-A rated SiC-MOSFET Modules – An Optimization Method
Hiroyuki Irifune, Toshiba Electronic Devices & Storage, JP

A05 - NLQW0MV6LX
Performance Assessment of 10 kV SiC MOSFET and PiN Diode in 3L-NPC Converter Topology
Renato Minamisawa, University of Applied Sciences and Arts Northwestern Switzerland, CH

A05 - NG80RV7DGK
Performance Evaluation of CoolSiC 2 kV SiC MOSFET Discrete in 1500 V DC Link Systems
Ajith Kumar Sekar, Infineon Technologies, AT

A05 - 7VK46ZXQN8
A New 2.3 kV Rated SiC MOSFET Module with Low-Inductance High-Power Package HPnC for 1500 VDC Applications
Junya Kawabata, Fuji Electric, JP

Packaging and Interconnection Materials
Chairperson: Jacek Rudzki, Semikron Danfoss, DE

C01 - 8KJX7YGWK6
Reliability of Encapsulation Materials in Power Electronics
Paul Gierth, Fraunhofer IKTS, DE

C02 - NWGQD5AGWP
Mechanism for Improving the Heat-Resistance of Adhesive Interface in Flexible Printed Circuits
Keita Suzuki, NOK Corporation, JP

C03 - RJRAYX659P
A Systematic Comparison Study of Different Bonding Technologies for Substrate Attachment of Power Electronics
Lisheng Wang, University of Twente, NL

C03 - D9AB0GVQJY
Stability of Pressure Sintered Interconnects as a Function of Temperature and Environmental Conditions
Kentaro Yoshioka, MacDermid Alpha Electronics Solutions, JP

C03 - M5JXVWBJ56
The Effect of Nano-Cu Interconnection Materials on the Thermomechanical Properties of SiC Double-Sided Power Modules
Suhang Wei, Huazhong University of Science and Technology, CN

C03 - 5B96MJ8XV6
All-in-One-Sintering: Die-Attach and Substrate-Attach on Bare Copper in a Pressure Assisted Sintering One-Step Process
Battist Rabay, Nano-Join, DE

C05 - 7N565K7YJZ
Sequential Manufacturing of Highly Functionalized Three-Dimensional Ceramic Components for Power Electronics
Lars Rebenklau, Fraunhofer IKTS, DE

C05 - LYABL69PKW
Micrometer Cantilever Beam Measurements in at Joining Interfaces of AMB-Si3N4-Copper Substrates
Axel Rost, Fraunhofer IKTS, DE

C07 - PMPVNJR7MD
Parametric Study of Damage Evolution in Silver Sintered Layers of Double Sided Power Electronics Modules of Electrical Vehicles
Saeed Akbari, Rise Research Institutes of Sweden, SW

DC-DC Converter I
Chairperson: Bernhard Strzalkowski, Analog Devices, DE

F01 - A9PD65AR9L
Tristate Modified Boost Converter
Johannes Gragger, University of Applied Sciences Vienna, AT

F02 - PGJVL6KRGR
Comparative Evaluation of the Center Tapped Boost Converter Topology
Bryan Radix, Texas Instruments, DE

F02 - PR9WQ9YBRN
Comparison of Multi-level Topologies to Reduce the Components Voltage Stresses when Powered from Industrial DC Grids
Katharina Machtinger, Austrian Institute of Technology, AT

F02 - YGRLX6Y4G5
Hard-Switching High-Frequency GaN-based DC-DC Converters with Concomitant Data Transmission Functionality
Abdelmoumin Allioua, Technical University of Darmstadt, DE

F02 - ZX98LP07B8
Efficient Design of High-Current, Low-Output Voltage DC-DC Converters Using Artificial Intelligence-Based Topology Selection and Optimization
Thomas Harmand, 3D PLUS, FR

F02 - XLV0GDPNL7
Cross Regulation of a Leakage-Compensated Multi Output Auxiliary Power Supply
Ziv Gellman, Ben Gurion University, IL

High Power DC-DC Converter I
Chairperson: Klaus F. Hoffmann, Helmut-Schmidt-University, DE

G02 - ALQNM8JQXR
A SiC Based 60kW LLC Converter with Novel Transformer Design for Improving Voltage Balance
Frank Wei, Wolfspeed, CN

G02 - JZGM4QDRZ4
Analysis of Inverter Operation Modes of an IGBT-Based ZCS LLC Converter for a 2 kW Automotive DC-DC Stage
Daniel Urbaneck, Paderborn University, DE

G02 - R6QV0J9KAM
Dual Output Hybrid Converter for 48 V Data Centers: M-HSC
Simone Mazzer, Infineon Technology, AT

G02 - 9KGPGL96AR
3.6kW High Efficiency SiC-based HV/LV DC-DC Converter for EVs
Veera Bharath Chandra Reddy Gandluru, Wolfspeed, US

G02 - PJVZDXMNJA
Bidirectional DC-DC Topologies Comparison for 800 V Automotive Applications Integrating 650 V GaN-on-Si Devices
Ilias Chorfi, STMicroelectronics, FR

G02 - 6PN68BMYP7
Analysis of Phase Shielding Method Based on Δ-Cr-Y Three-Phase Interleaved LLC Converter
Jin Wen, Huazhong University of Science and Technology, CN

G02 - 4GAZNK9VDL
22kW IMS-based Bidirectional DC-DC Converter Using Surface Mount SiC MOSFETs for OBCs
Hamlin Wang, Wolfspeed, CN

I01 - DKJQRWV960
Comparative Analysis of DC-DC Converters for Electrolyzers Using Geometric Programming
Tim McRae, University of Southern Denmark, DK

G02 - KN96WMKP8Q
Design Consideration of Bi-directional CLLLC Resonant Converter in Energy Storage Systems
Sean Yu, Texas Instruments, US

Smart-Grid Technologies
Chairperson: Thomas Brückner, Universität der Bundeswehr München, DE

N01 - 8QARA8WX9V	**Adaptive Fast Charging System with Second Life Batteries - an Overview of a Research Project** Lukas Böhning, Fulda University of Applied Sciences, DE
N05 - N7G8WLAKMZ	**Parallel Operation and Synchronization of Microgrids by Using the Thevenin theorem** Marius Block, University of Bremen, DE
N07 - BV5LM6GD0L	**DC-INDUSTRY Transfer Center as Test Facility for Practical Evaluation of Devices in an Industrial DC Environment** Slavi Warkentin, University of Applied Sciences and Arts Ostwestfalen-Lippe, DE
N07 - ZJGDWVR508	**21 kA Solid State DC Breaker for Supergrid Institute's High Power Test Facility** Christophe Conilh, GE Power Conversion, FR
N07 - L0RZ9D4K0R	**Design and Analysis of a 50kW SiC-Based Active Front End with a Very Small Line Choke for DC-Grids** Raphael Otte, University of Applied Sciences and Arts Ostwestfalen-Lippe, DE
N07 - 06KW9XY86W	**Investigation of Load Transitions Between Loaded and Load Free Conductor Segments in Industrial Conductor Systems** Jan-Niklas Koch, University of Applied Sciences and Arts Ostwestfalen-Lippe, DE
N07 - GAGGB5XWA8	**A Method to Control Voltage and Power Flow in a DC Grid** Peter van Duijsen, The Hague University of Applied Sciences, NL

Energy Storage Systems
Chairperson: Stefan Linder, Alpiq, CH

M01 - ZJ8NBV6KJ9	**Considerations on a High-Cell-Count Converter-Based Battery Storage System with Reduced Communication Effort** Paul Aspalter, Technical University of Vienna, AT
M02 - M8Y4NXB7RY	**Studying Convertors for Voltage Equalization in Energy Storage System with active BMS** Dimitar Arnaudov, Technical University of Sofia, BG
M02 - Y8JVGJK68M	**Challenges of High Side Gate Driver and Disconnect MOSFET for Battery Protection Unit during Start-up, Turn-off and Over Current Events** Niranjan Reddy Suravarapu, Infineon Technologies, AT
M03 - JLNWA79RK7	**Electric Insulation Coordination to Prevent Electric Arcs in Lithiumion Batteries** Daniel Chatroux, CEA-LITEN, FR

M05 - GXNG6NV847 **Energy Storage and Smart Charging for Electric Freight Fleets Charging with Power Capacity Constraints**
Maria Nunez Munoz, University of Sheffield, UK

M06 - YVWDJ754P0 **Battery Charger with Impedance Spectroscopy Capability for Li-Ion Cells**
Christian Branas, University of Cantabria, ES

EMC
Chairperson: Andreas Lindemann, Otto-Guericke-University Magdeburg, DE

H01 - GM06D97VMX **Efficiency, Volume and CO2 Emissions Impact in a PFC Converter with an Active Filter Solution for OBC Application**
Kelly Ribeiro, Valeo, FR

O08 - KD8XP4KWDB **Analytical and Experimental Validation Common Mode Feedback Loop for a Three-Phase_Level Vienna Rectifier**
Daniel San Laureano Igartuburu, Indra, ES

O08 - QWA6YX4PRK **Robustness of Frequency-Domain Terminal Modeling of Electromagnetic Interferences in Static Converters**
Mehyeddine Singer, University of Lille, FR

O08 - QXYMZQP9X7 **Study of EMI Behavior of a 2-Level GaN-Inverter – Simulation and Measurement**
Benedikt Kohlhepp, Technical University of Berlin, DE

O08 - G675WJG86X **Analysis of Common-Mode Noise Generated due to Fast-Switching GaN Devices in Totem-Pole PFCs**
Serkan Dusmez, Wat Motor, TR

O08 - 8MQRB0N959 **Conducted EMI from GaN-based 48V to 12V DC-DC-Converters for Automotive Applications**
Erik Kampert, Helmut-Schmidt-University, DE

Advanced Design
Chairperson: Anton Z. Miric, Heraeus, DE

P02 - JZYKANDRZX **Applied Design Automation for Finding Feasible Designs for High-Frequency Planar Transformers**
Rando Raßmann, University of Applied Sciences of Kiel, DE

P02 - DNL7XD689K **Frequency Dependent Area Product Method**
Alfonso Martínez, Würth Elektronik, ES

P04 - Q6L8JLY465 **Designing a Control Library for Grid-Following and Grid-Forming Power Inverters**
Lars Lindner, Fraunhofer Institute IEE, DE

P05 - GP85JVAX46 **Intelligent Optimisation of a Wind Turbine Digital Twin Model**
René Reimann, University of Bremen, DE

P05 - VJAA6WQBJM
Thermal Transient Digital Twin Modelling for Power Converters
Xianghao Mo, Polytechnical University of Madrid, ES

P05- XDNXLJ9GDW
A Digital Twin Approach Toward Lifetime Analysis and Predictive Maintenance of Power Semiconductors for Railway Application
Emmanuel Batista, Alstom, FR

Inductors
Chairperson: Wolfram Teppan, LEM INTERNATIONAL, CH

R02 - WAZJYLM7AB
Saturable Ferrite Core Inductors in LCL Filters of Three-Phase Voltage Source Inverters
Marius Kaufmann-Bühler, Technical University of Berlin, DE

R02 - XVQ9NDXKVR
2D Copper Loss Analytical Model for Planar Inductor Combining High and Low Permeability Materials
Idriss Nachete, L2EP, FR

R02 - YADDK40NAL
CNC-Manufactured Power Inductors with Excellent Bandwidth for Multi-Megawatt Converters
Thomas Kreppel, Universität der Bundeswehr, DE

R02 - KLY4Y7K8V4
Analytical Evaluation of Differential Model DC EMI Filter Inductors using Material Saturation Coefficient
Lukas Mueller, Micrometals, US

R02 - PY98RPNW7A
Design and Performance Evaluation of Air Core Inductors for Very High Frequency Power Conversion
Florentin Salomez, G2Elab, FR

R02 - 5AXG45LQZN
Optimizing Ferrite Core Filter Inductors: A Comprehensive Finite Element Analysis of Litz and Foil Windings
Khizra Abbas, KTH Royal Institute of Technology, SW

R02 - DZWJMQYR58
Improving Multi-Phase Ferrite Magnetics by Coupling for MV and UPS Converters
Michael Schmidhuber, SUMIDA Components & Modules, DE

Stage: Brüssel 1
IGBT
Chairperson: Thomas Basler, Chemnitz University of Technology, DE

14:30 **The 8TH Generation LV100 IGBT Module with Higher Current Rating**
Daichi Otori, Mitsubishi Electric, JP

14:50 **New Planar 4.5 kV Split-gate (SG) Si-IGBT Device for Improved Switching Characteristics and High Frequency Operation**
Gaurav Gupta, Hitachi Energy, CH

15:10 **4.5 kV Double-Gate Reverse-Conducting Press-Pack IEGT**
Satoshi Yoshida, Toshiba, JP

Stage: Brüssel 2
Device Concepts
Chairperson: Katsuaki Saito, Nexperia, J

14:30 **Evaluation of a 3300V Superjunction GaN HEMT**
Alireza Sheikhan, University of Sheffield, UK

14:50 **More than 1200 V Breakdown and Low Area-Specific On State Resistances by Progress in Lateral GaN-on-Si and GaN-on-Insulator Technologies**
Richard Reiner, Fraunhofer Institute IAF, DE

15:10 **Novel 200 V MOSFET Technology Pushes Motor Drive Inverter Efficiency to an Unprecedented Level**
Mark Thomas, Infineon Technologies, AT

Stage: München 1
Degradation Mechanisms
Chairperson: Jürgen Schuderer, Hitachi Energy Switzerland, CH

14:30 **Moisture Robust Chip Design - Improved Edge-Terminations for High Lifetime under High Humid Conditions**
Michael Hanf, University of Bremen, DE

14:50 **Method for Measuring the Initial State of a Solder Joint Delamination in a 3D PCB Integration Assembly of SiC MOSFETs**
Souhila Bouzerd, University Gustave Eiffel, FR

15:10 **Generic Lifetime Model for Wire Bonds Degradation in IGBT Modules Based on a Fracture Mechanics Parameter**
Merouane Ouhab, Mitsubishi Electric, FR

Stage: München 2
Advanced Conversion Concepts
Chairperson: Ilknur Colak**,** Schneider Electric, FR

14:30	**Modular Coaxial Power Converter for High-Density Integration into Medium-Voltage Cables** Mark Cairnie, Virginia Polytechnic and State University, US
14:50	**Controlled Inductor Based BCM Buck Converters** Ziv Gellman, Ben-Gurion-University, IL
15:10	**Influence of Varying Common Mode Choke Sizes on the Performance and Stability of an Active EMI Filter** Patrick Körner, Vitesco Technologies, DE

Stage: Mailand
Photovoltaic Systems
Chairperson: Steffan Hansen, SMA, DE

14:30	**A High Efficiency Battery Charger with Maximum Power Point Tracking for Magnetic Energy Harvesters** Antonio Miguel Munoz Gomez, CIRCE Foundation, ES
14:50	**Symmetric Flying-capacitor Boost Converter for Medium-voltage Photovoltaic Applications** Luis Alves Rodriues, CEA, FR
15:10	**Comparison of Si IGBT, SiC MOSFET and Adjustable Hybrid Switch PV Inverters for Different Geographical Locations** Tanya Thekemuriyil, University of Applied Sciences and Arts Northwestern Switzerland, CH

Stage: Athen
Model Based System Analysis
Chairperson: Jens Schmenger, Siemens, DE

14:30	**Modeling and Measurement of the Transient Voltage Distribution in a Stator Winding at High dv/dt and Analysis of the Field Stress to the Insulation** Lukas Reißenweber, Coburg University of Applied Sciences and Arts, DE
14:50	**Conductor-Based Modeling of Voltage Distribution along a Single-Tooth Winding of Electrical Machines** Hujun Peng, RWTH Aachen University, DE
15:10	**Reduction of PWM Harmonics with Carrier Phase Shifting in a Dual-Stator PMSM with Magnetic Coupled Windings** Bünyamin Tekir, University of Kassel, DE
15:30 – 17:00	**Poster/Dialogue Session & Coffee Time (Foyer)**

E-Mobility Charging
Chairperson: Giuseppe Tomasso, University of Cassino and South Lazio, IT

H01 - 9A9BJ50QPJ	**22-kW Bidirectional Single-Stage Direct-Ac-Ac Power Conversion On-Board Charger with High-Power-Density Implementation** Oscar Lucia, University of Zaragoza, ES
H01 - 86WWDYVB6M	**Benchmarking DC Fast Chargers: A Comparative Analysis of Power Converter Structures for Wide Voltage Range** Sadik Cinik, Aalborg University, DK
H01 - WYV9DNQVXK	**Performance Optimization of Single-Phase On-Board Chargers with Ripple Port** Davide Gottardo, Hexagon MI, UK
H01 - 5MBAKZLQ6G	**A Reduced-Sensor Modular Dual Active Bridge-Based Battery Charging System for Electric Vehicles Using an Improved Linear Extended State Observer** Marco Portesine, Poseico, IT
H01 - 9QWYR6Z0QX	**Bidirectional Non-Isolated Three-Phase Onboard Charger with a Low-Voltage Lower-Phase Operation Mode** Steffen Frei, Technical University of Darmstadt, DE
H01 - 47XWZ4NKQK	**Control of a Three-Phase Inductive Power Transfer System Based on DD²Q Coil Topology** Nikola Mirkovic, Polytechnic University of Madrid, ES
H06 - KXYGYB64X7	**Comparison of Two Bidirectional 11KW 400V CLLC and CLLLC Resonant Converters for EV Applications** Hasan Mousavi Somarin, Valeo, FR
H06 - NLAAXBWVL5	**Dynamic Wireless Charging System Design for Extra-Urban Areas based on Resonant Inductive Power Transfer** Irene Maria Torres Alfonso, CIRCE, FR
H01 - DLWWNRD7LG	**Bidirectional Isolated 400-12V DC-DC Converter with Improved Power Density and Full-Range Operaion for EV Applications** Hector Sarnago, University of Zaragoza, ES

High Power DC-DC Converter II
Chairperson: Christopher Kocon, iDEAL Semiconductor Devices, US

G02 - 5JP8WGRNJ4	**Gain Optimization Control Method for CLLLC Resonant Converters under Phase Shift Mode** Sean Yu, Texas Instruments, US
G02 - BZDYNWQXL5	**Analysis of Common DC Bus and Split DC Bus based Interleaved H-Bridge Converters for High-Current/Low-Ripple Applications** Bhavana Gudala, University of Bologna, IT

G02 - MXV60MB5X5 **Optimal Frequency Operating Points for Hybrid Switched Capacitor Converters and Lossless Current Sense Method**
Simone Mazzer, Infineon Technology, AT

G02 - ZL0P7VX8LM **Design and Testing of a 250 kW 50 kHz SiC-based Half-Bridge-Series-Resonant-Converter**
Daniel Haake, Fraunhofer IEE, DE

G02 - 76L7PMXNYD **30kW - 97% Efficiency Isolated DC-DC Converter with Large Input Voltage Range Based on a Boost DAB Association**
Jean-Jacques Huselstein, University of Montpellier, FR

G02 - QVW8N057BZ **Analysis of a Full-Bridge Push-Pull Forward Dual Active Bridge DC-DC Converter**
Sandip Guha Thakurta, Technical University of Munich, DE

DC-DC Converter II
Chairperson: Philip C. Kjaer, Vestas Wind Systems, DK

F02 - R6P5AWR9KX **Symmetrical Operation of Four Channel Resonant Boost DC-DC Converters in Continuous Conduction Mode**
Kristóf Bándy, Budapest University of Technology and Economics, HU

F02 - 89ZJ85GD9X **Co-Simulation Design of a GaN-Based Three-Phase LLC Converter with Integrated Three-Phase Magnetics**
Jhih-Cheng Hu, National Taipei University of Technology, RC

F02 - W645WAP79R **Impact of Magnetics Tolerance on the Power Sharing of Parallel Dual-Output Phase-Shift Full-Bridge Converters**
Riccardo Mandrioli, University of Bologna, IT

F02 - 5W5B09LGZQ **A Balancing Converter with Series Connected MOSFETs for +/-700V Bipolar DC Grids**
Sachin Yadav, Delft University of Technology, NL

F02 - YPA58XVWP0 **Optimization and Design of Low-Voltage and High-Current Point-of-Load Converter under 48V Bus Architecture**
Jiajia Guan, Huazhong University of Science and Technology, CN

I01 - GK4GAZD6XQ **Interleaved Boost Converter Efficiency and Power Density Model for Active and Passive Component Design**
Damien Lemaitre, CEA, FR

Novel and Advanced Semiconductor Devices
Chairperson: Josef Lutz**,** Chemnitz University of Technology, DE

A01 - Y0Q9J6DB0X	**Performance Evaluation of Si Trench Clustered IGB and SiC MOSFET Hybrid Power Switch** Alireza Sheikhan, University of Sheffield, UK
A06 - V7VWRAXJ9W	**Contributions for Building Blocks for Normally-off 650V GaN-on-Si Power Integrated Circuits** PHUNG Thanh Hai, Wise-Integration, FR
A07 - DJAANG6ZJM	**New Bidirectional Asymmetric High Voltage TVS (Transient Voltage Suppressor) diode** Boris Rosensaft, Littelfuse, DE
A07 - 0XWDBZP8LJ	**ISO247: High Performance Ceramic based Advanced Isolated Discrete Package to Fully Exploit the Advantages of SiC MOSFET** Sachin Shridhar Paradkar, Littelfuse, DE
A07 - B8B64ZAL8W	**Impact of Current Ripple Reduction Using High Switching Frequencies on PMSM Efficiency** Jannik Fuchs-Gade, Infineon Technologies, US
A07 - BVN9JKGP07	**Fusion Switch: Semi-Analytical Approach to Optimize Inverter Cost-Efficiency for Electric Drivetrains** Matthias Ippisch, Infineon Technologies, DE

Advanced Control
Chairperson: Gianmario Pellegrino**,** Polytechnic University of Turin, IT

E06 - MB6YZDG74V	**Concise and Reliable SiC MOSFET Driver Circuits** Zhong Ye, Inventchip Technology, CN
E07 - RXQG79WAX7	**Artificial Intelligence Enhanced Resolver System for Automotive Traction Inverter Applications Based on AURIX TC4x** David Zipperstein, Infineon Technologies, DE
E07 - XDVVNJ06DW	**Electric Powertrain Functions Grouping Made Possible with OLEA U FPCU Controller Chip** David Fresneau, Silicon Mobility, FR
E08 - V0556DZK0Y	**Multifunctional Grid Manager Topology with Configurable Output** Peter van Duijsen, The Hague University of Applied Sciences, NL
E08 - 6AQLB6WJGB	**Addressing the Power Switch Technology Selection Si/SiC/GaN in ZVS-PFC Resonant Converters** Marco Torrisi, STMicroelectronics, IT
E08 - 6XJZBKL5X0	**CO2 Footprint of Medium Voltage DC Solid State Transformer** Adriana Campos, SuperGrid Institute, FR

SiC MOSFET
Chairperson: Marija Jankovic, ROHM Semiconductor GmbH, DE

A05 - GJ65KBM0RL
Thermo-Electrical Analysis and Performance: A Comparative Study between Modular and Discrete Approaches
Stefano Orlando, STMicroelectronics, IT

A05 - 48QMZ0WQ8W
Impact of Parameter Spread in Parallel-Operated SiC MOSFETs for Hard-Switching Conversion
Andrea Piccioni, Infineon Technologies, AT

A05 - WZ74QD08AK
Assessment of the Rds,on of SiC MOSFET Dies Through Kelvin Wire Connection
Philipp Rehlaender, onsemi, DE

A05 - 5G87VDQ6P0
Challenges in Scaling SiC Single-Chip Measurements to Corresponding Power Modules
Hao Wang, University of Rostock, DE

A05 - 8PW7M4JLP0
Switching Performance Evaluation of High-Power 1.7 kV SiC MOSFET Modules using a Common Busbar Design
Sebastian Neira, University of Edinburgh, UK

A05 - 4L0ZJWVQLB
Characterizing the Switching Behavior of a 1.2 kV mixed SiC JFET and MOSFET Half Bridge
Tim Ringelmann, University of Bayreuth, DE

WBG High Frequency Application
Chairperson: Drazen Dujic, Power Electronics Laboratory, EPFL, CH

A05 - 5ANPR54XAQ
Performance Evaluation of the Packaging of SiC Diodes in a 6.78 MHz Wireless Power Transfer System
Ioannis Nikiforidis, Imperial College London, UK

A05 - 5W7JKQL60G
Voltage Waveform Generation for Sawyer-Tower Coss Loss Measurements Using a Hybrid Power Converter
Malachi Hornbuckle, Stanford University, US

A05 - BPJWAB5V49
Evaluation of SiC Devices for Over 500khz Application Based on Buck Circuit
Minli Jia, Navitas Semiconductor, CN

A05 - N6GDWP4G9G
Linearization of Drain-Source Capacitances for Antiserial Configurated SiC MOSFETs in High Frequency Solid State Switches
Lars Dresel, Technical University of Darmstadt, DE

Thursday, 13 June 2024

08:30 **Community Coffee**

Stage: Brüssel 1

08:45 **Keynote**
Challenges and Solutions to Power Latest Processor Generations for Hyper Scale Datacenters
Gerald Deboy, Infineon Technologies, AT
Chairperson: Johann Walter Kolar, ETH Zurich, CH

09:30 **Coffee break**

Stage: Brüssel 1
SiC Devices
Chairperson: Ulrich Kirchenberger, STMicroelectronics, DE

09:50 **The new CoolSiCTM 1200 V G2 MOSFET: Electrical Performance and Compact Modelling**
Andreas Huerner, Infineon Technologies, DE

10:10 **Paralleling SiC-Power-MOSFET Body Diodes under Harsh Switching Conditions**
Michael Rauh, University of Bayreuth, DE

10:30 **3.3kV SBD-Embedded SiC-MOSFET Module for Traction Use**
Yoichi Hironaka, Mitsubishi Electric, JP

10:50 **Dead Time Optimization for High Power SiC MOSFET Module in Consideration of Parasitic Components**
Pham Ha Trieu To, University of Rostock, DE

Stage: München 1
WBG Reliability
Chairperson: Nando Kaminski, University of Bremen, DE

09:50 **Performance Instability of 650 V p-GaN Gate HEMT Device under Temperature-related Positive Gate Bias Stresses**
Renze Yu, University of Bristol, UK

10:10 **Gate Oxide Reliability of Current Generation 1.2 kV SiC MOSFETs under Step-Wise Increased Gate Voltage**
Roman Boldyrjew-Mast, Chemnitz University of Technology, DE

10:30 **An Accelerated Dynamic Gate Switching Stress Test Concept of SiC MOSFETs at High Drain-Source Voltage (HV-GSS)**
Clemens Herrmann, Chemnitz University of Technology, DE

10:50 **Silicon Carbide Power Device Use in Spacecraft and Aircraft**
Akin Akturk, CoolCAD Electronics, US

Stage: München 2
Power Electronics for E-Mobility/ Control
Chairperson: Bernd Eckardt, Fraunhofer IISB, DE

09:50 **Current Ripple Reduction by Combination of Si IGBT and SiC MOSFETs in Heavy Duty Fuel Cell Trucks**
Yavuz Gürlek, Daimler Truck, DE

10:10 **Effect of Active Gate Driver with Adaptive Intermediate Gate Voltage Level on SiC MOSFET Power Module Performance in WLTC**
Michael Frank, University of Bayreuth, DE

10:30 **Performance Evaluation of TCM-based, Zero-Voltage Switching (ZVS) Three-Phase Inverter for Electric Vehicle Drive Systems**
Khizra Abbas, KTH Royal Institute of Technology, SW

10:50 **A Partial Load Three-Phase Triangular Current Mode Modulation Concept with an Optimized Filter Inductor for High Efficiency Traction Drives**
Bhaskar Chatterjee, Robert Bosch, DE

Stage: Mailand
DC-DC Converters I
Chairperson: Drazen Dujic, Power Electronics Laboratory, EPFL, CH

09:50 **GaN vs Si Synchronous Rectifier for LLC Converter**
Gokhan Sen, Infineon Technologies, DE

10:10 **Co-Simulation Design of a GaN-Based Three-Phase LLC Converter with Integrated Three-Phase Magnetics**
Jhih-Cheng Hu, National Taipei University of Technology, TW

10:30 **Switching Assisting Circuit Improving the Efficiency of DC-DC Converters Based on Piezoelectric Resonators**
Ghislain Despesse, CEA Leti FR

10:50 **Transformer-based Fixed-ratio Resonant DC-DC Converters for 48V Data Centers**
Xufu Ren, University of Cambridge, UK

Stage: Athen
PFC Converters
Chairperson: Marija Jankovic, ROHM Semiconductor, DE

09:50	**High-Density 3 kW GaN Rectifier for Server Applications Comprising a 130 kHz Totem-Pole PFC and a 500 kHz LLC** Manuel Escudero Rodriguez, Infineon Technologies, AT
10:10	**Addressing the Power Switch Technology Selection Si/SiC/GaN in ZVS-PFC Resonant Converters** Marco Torrisi, STMicroelectronics, IT
10:30	**Buck-Type Current Unfolding Converter with Discontinuous Conduction Mode in Ultra-Low Power-Factor Operation** Tomoyuki Mannen, University of Tsukuba, JP
10:50	**GaN Based Bi-Directional 6.6kW Interleaved Totem-Pole PFC with 13kW/L Power Density and High Efficiency** Juncheng Lu, Infineon Technologies, CA
11:15 – 12:45	**Poster/Dialogue Session & Coffee Time Foyer**

SiC Ruggedness
Chairperson: Ole Gerkensmeyer, Wolfspeed, DE

A05 - 7V4N6PRKV8	**Effects of Non-killer Defects on SiC MOSFET Short-circuit Ruggedness and Reliability** Sara Kuzmanoska, onsemi, DE
A05 - 8VWYLNXWVL	**Electro-Thermal Characterization for Dynamic Reverse Bias Test on SiC MOSFETs** Giuseppe Mauromicale, STMicroelectronics, IT
A05 - XJ6B5P0DJQ	**SiC Planar MOSFET Topologies to Achieve Reduced RDS (on) and the Consequences on Switching and Short-Circuit Behavior** Minseok Kang, SemiQ, US
A05 - 5YWZXMB86M	**Radiation Hardness of SiC Based Inverters Based on an EV Mission Profile** Hadiuzzaman Syed, Robert Bosch, DE
A05 - 5VY6NBK97M	**Fast Short Circuit Protection Using di/dt Detection for SiC Power Modules** Koki Samura, Mitsubishi Electric, JP
A05 - ZY7PQLB9RN	**Comparison of Dynamic Gate Stress Test Results of SiC MOSFETs** Mathias Gebhardt, SET, DE
A05 - BG8NXBJ8G9	**Extending SiC MOSFET Short-Circuit Withstanding Time by Two-Level Turn-Off Gate Driving** Kwokwai Ma, Infineon Technologies, SG
A05 - VRDP4BQ5RY	**Experimental Investigations on Parasitic Turn-on of 1.2kV SiC MOSFET Discrete Devices** Thanh-Toan Pham, onsemi, SW
A05 - 40ZXY8G70D	**Behavior Modelling the Short Circuit Characteristics of SiC MOSFETs Using Compact Models** Qing Sun, Infineon, DE

Thermal Characterization
Chairperson: Stéphane Lefebvre, CNAM - SATIE, FR

B02 - 8DLY0V87AY	**Investigating the Accuracy of Temperature Swing Measurement of Power Modules using Optical Fibers under Power Cycling Tests** Kaichen Zhang, Aalborg University, DK
B02 - ZL8PXKAJLG	**Thermal Analysis and Modelling of Charging Stations for Electric Vehicles** Ruben Kopischke, University of Kassel, DE
B02 - GA4D64QYA0	**Junction Temperature Measurement of a 3.3 kV Silicon Carbide MOSFET Power Module** Michael Gleissner, University of Bayreuth, DE

B02 - 4VABX4QG9K
Innovative 3D Power Module Defaults Detection via Thermal Impedance Analysis and Simulations
Louis Alauzet, Icam, FR

B02 - B7GYQKNR7N
Thermal Characterization of an Air-Cooled PEBB Based on SiC MOSFET Power Modules
Alexandre Marie, Icam, FR

B02 - PYZWQPBLK5
Thermal Behaviour of SiC MOSFET with Planar Packaging Technology
Yijun Ye, Siemens, DE

B03 - DPB0JKZMPQ
Performance Analysis of Liquid Cooling and Two-Phase Flow Cooling for Thermal Management of Power Electronics Systems
Giuseppe Zummo, ENEA, IT

Reliability and Availablity
Chairperson: Mark M. Bakran, University of Bayreuth, DE

S01 - M5LMG0ZD9P
Implementing Module Health Monitoring in EV Traction Inverters
Karol Rendek, ON Semiconductor, SK

S01 - BK70V6YJA4
Reliability Tests of Copper Thick-Film Substrates for Power Electronic Applications
Henry Barth, Fraunhofer IKTS, DE

S01 - GMQ6RY9LDZ
Power Module Solutions with Improved Reliability for Elevator Drive Applications
Tiago Jappe, Vincotech, DE

S01 - X7WVXL6G5G
Fail-Operational LLC Topologies with Fault-Tolerance Integrated Redundant Capabilities
Aswathy M. Prince, Vitesco Technologies, DE

S01 - ABNQD47JRP
Thermal and Reliability Optimization of Clips in SiC MOSFET Power Modules
Zexiang Zheng, Huazhong University of Science and Technology, CN

S01 - D8KYDQ9Z8W
Degradation Monitoring of a GaN H-Bridge by Means of Forward Voltage Measurements at Critical Operating Temperature
Michael Vogt, University of Bremen, DE

S02 - 5GXW57BQMA
A Simple and Low Cost Overcurrent Protection System Based on Commercial Shunt for Wide-Bandgap Devices
Emanuele Martano, University of Cassino and Southern Lazio, IT

S02 - WGNABXPRLD
SVM-Based Fault-Tolerant Control for a Cascaded H-Bridge Multilevel Converter under Multiple Open-Circuit Switch Faults
Dong Xie, Chemnitz University of Technology, DE

S04 - MN978MDPNG
Second Life for Commercial Vehicles Onboard Charging Electrical Power System
Ajay Krishna Voppu Muralikrishna, SiNIX Group, SW

Low Voltage Switches
Chairperson: Aylin Bicakci, University of Applied Sciences Kiel, DE

A01 - R9WY6NGP9J	**An IGBT Behavioural Model Calibrated with Datasheet for SPICE Simulation** Shiwu Zhu, Nexperia, UK
A01 - RZ5BPV4575	**An Improved ANN-assisted IGBT Model in Both Switching On and Switching Off Simulations with Optimization of Parameter Extraction** Huaiyuan Zhang, Keysight Technologies, US
A01 - QGPZ6MB5G5	**Fabrication of 600V RC-IGBT Using 300mm Wafer** Masaki Ueno, Mitsubishi Electric, JP
A01 - 5XNMG5Y7ZW	**Next Level of Power Module Solution for PV C&I String Inverter with 1200V H7 Technology in Easy3B Package** Tilo Poller, Infineon Technologies, DE
A02 - MA80RDQBA5	**MOSFET Switching Loss Estimation in LLC Converter Using a On-state Voltage Measurement Circuit (OVMC)** Alfio Scuto, STMicroelectronics, IT
A02 - 8L6M9NK0XJ	**OptiMOS 6 135V for High Power Motor Drives** Kunal Jha, Infineon Technologies, US
A03 - 8W574PN5W0	**Auto Power-SOI: Shaping the Future of Battery Monitoring Technology** Alex Lim, Soitec, SP

Lifetime Modelling and Condition Monitoring
Chairperson: Thomas Basler, Chemnitz University of Technology, DE

D05 - R7NZR6KY7D	**Understanding the Impact of IEC60747-17 on Capacitive and Magnetic Couplers** Shu Ee Ong, Skyworks Solutions, US
D05 - LDXGBK0XZ9	**Paris Law Applied to Wire Bonds Degradation Using Crack Growth Measurement** Merouane Ouhab, Mitsubishi Electric, FR
D04 - J47WL0BK4B	**Condition Monitoring Technique of Power Electronic Modules via Square-Wave Gate Signal Excitation** Isabel Austrup, RWTH Aachen University, DE
D05 - WZ79GKLQZM	**Statistics-based Lifetime Simulation Environment for Power Modules incorporating Degradation Models** Karthik Debbadi, Fraunhofer Institute ISIT, DE
D05 - 0AKDV8MXGQ	**Power Cycling Results for Reliability Studies of SiC-Inverters** Robert Keilmann, Technical University of Braunschweig, DE

D05 - 6ZLK9AM7N4
GaN Cascode in High Speed Driven Air Compressors for Automotive Fuel Cells
Florian Lippold, Technical University of Braunschweig, DE

D04 - R0RVW8D70V
Prognostic Analysis of IGBT Health: Real-Time On-State Voltage Prediction through Machine Learning
Tanya Thekemuriyil, University of Applied Sciences and Arts Northwestern Switzerland, CH

D03 - 5BPMZJALDV
Robustness Analysis of Temperature-Sensitive Electrical Parameters of IGBTs
Laurids Schmitz, RWTH Aachen University, DE

D04 - BZ5JNB8KVW
Observation of Thermal-Resistance Increase of Degraded IGBT Modules by VCE (sat) Measurement in a Chopper Circuit
Kazunori Hasegawa, Kyushu Institute of Technology, JP

Pulse with Modulation Methods
Chairperson: Steffan Hansen, SMA, DE

E03 - QG5NRWJDPA
Modulation Technique for Reduced AC Content of the DC Link Current in Single and Dual Three-Phase Two-Level Inverters
Steffen Frei, Technical University of Darmstadt, DE

E03 - 6G0PVABYGV
Common Mode Currents in Resonant Circuits Generated with a Delta-Sigma Modulated Voltage Source Inverter
Tobias Haas, Technical University of Applied Sciences Würzburg-Schweinfurt, DE

E03 - WY7BD5WNJK
Evaluation of New Modulation Scheme for 3L-ANPC Using Both Current Paths in Zero State
Felix Eichler, Technical University of Dresden, DE

E03 - ZPGND6R0YK
An Innovated Synchronous Rectification Method for 11kW CLLC Converter
Sanbao Shi, Infineon Semiconductors, CN

E03 - WDWGZKBLDB
Interleaved Asynchronous Delta-Sigma Modulation Concept for Dynamic Power Converters
Philipp Czerwenka, University of Reultingen, DE

E03 - 5LD9W7BKXB
High Resolution Mixed-Signal Pulse Width Modulator for High-Frequency DC-DC Converters
Tim McRae, University of Southern Denmark, DK

E03 - W9Q7NYLR9M
Implementation and Control of Optimized Pulse Patterns for Salient Permanent Magnet Synchronous Machines in Electric Vehicles
Maximilian Hepp, Mercedes-Benz, DE

E03 - 80XR5QGK0J
A 3-Leg Interleaved TP PFC with a 90˚ Phase-Shifted Asymmetric Leg for Reduced Magnetics
Serkan Dusmez, Wat Motor, TR

E03 - DA5W9RYQA4
Fault-Tolerant Operation Analysis of a Five-Phase Three-Level TNPC Inverter for Electric Aircraft Propulsion Systems
Chanuch Chaisakdanugull, Helmut-Schmidt-University, DE

AC-DC and DC-AC Converter
Chairperson: Serge Bontemps, Microchip Technology, FR

F03 - XM9ZY05L8L
CCM Totem-pole PFC for Ultra-High Power Density USB-PD Chargers
Manuel Rodriguez Escudero, Infineon Technologies, AUT

F03 - JLYAB4WMLX
Comparison of Hybrid Si/SiC and SiC Two-Level and Three-Level Converters for Low-Voltage Low-Power Applications
Tim Augustin, Hitachi Energy Research, SW

F03 - N49JPDZWL6
Analysis of Analogue Current and Flux Balancing for the Dual-Active-Bridge Converter
Christophe Basso, Future Electronics, FR

F03 - JQGR70D9B8
Design and Optimization of a Single-Stage Photovoltaic Microinverter with Integrated Magnetics
Jin Wen, Huazhong University of Science and Technology, CN

F03 - JZ77XB5YZQ
Experimental Study of the Robustness of Class Φ Inverter
Baptiste Daire, Laboratoire Ampère, FR

F03 - XQYRPL46GD
Analysis, Modeling, Design, and Limitations of Current Injection based UPF Rectifier with Small DC-Link Capacitor
Ramkrishan Maheshwari, University of Southern Denmark, DK

F03 - MVK9Q4BGVP
High-Efficient Isolated AC-DC Converter with Circulating Current Reduction for AC Adapters
Hiroki Watanabe, Nagaoka University of Technology, JP

F03 - 89NV5BZL9M
A Phase-Locked Loop (PLL) based Strategy for Accurate Blanking Times in Bridgeless Totem-Pole PFCs
Sandu Tigira Tigira, University of Cantabria, ES

F03- PWVDK5X9WN
Circulating Currents in Coupled Multi-Terminal Hybrid AC-DC Grids
Fabian Herzog, RWTH Aachen University, DE

Advanced Converter Topologies
Chairperson: Manfred Schrödl, Vienna University of Technology, AT

G05 - AN4MPJ0L76	**Comparison of 4500V State-of-the-Art XHP3 IGBT and Conventional IHV IGBT for 3300V 3-Level ANPC Medium Voltage Drives** Martin Knecht, Infineon Integrated Circuit, CN
G05 - 0PNYMD4NAX	**Generalized Switching Sequence for Voltage Balancing in a Flying Capacitor DC-DC Converter with Quasi-2-Level Modulation** Jose Andres Aguilar Croston, SuperGrid Institute, FR
G06 - 47BMVQ4A8Q	**Optimization-Based Sizing of a Modular Multilevel Converter Based on 650 V GaN Modules for New LVDC/MVDC Grids** Gregoire Le Goff, University of Toulouse, FR
G07 - V79J0VPMN0	**A Novel Three-Phase Low-Switch-Count AC-DC Grid Converter Topology with Galvanic Isolation** Liska Steenbock, University of Applied Sciences and Arts Bielefeld, DE
G07 - 5BDPX5KWBW	**Single-Stage LED Driver Based on Coupled Inductor Power Factor Correction and LLC Converter** Alireza Ramezan Ghanbari, V-Research, AT
L02 - D76W0QKP4G	**A Inverse Coupled DC-DC Boost Inductor with 2-kV SiC MOSFET Module for 1500V Solar Inverter MPPT** Yusi Liu, onsemi, US
L07 - M4GY8M0X48	**Environmental Impact of Modular Power Electronics Systems Considering Diagnostic-Driven Unit Replacement** Briac Baudais, Mitsubishi Electric, FR

Power Electronics for Railway Applications
Chairperson: Philippe Ladoux**,** University of Toulouse, FR

H02 - V7VPYXDG7X	**Switching Performance Comparison of 3.3 kV SiC MOSFET and Si IGBT Power Modules for Railway Traction Systems** Yue Zhao, University of Arkansas, US
H02 - 5WRKM5LVBL	**Comparison of Three-Level Inverter Topologies for MVDC Reversible Railway Substations** Luc Bimmel, University of Toulouse, FR
H02 - BZ8MQYLNVR	**Comparison of Selected Megawatt-Level Traction Converter Power Module Implementations in Terms of Commutation Inductance and Practicality** Abdulkerim Ugur, TUBİTAK RUTE, TR
H02 - 7DYJBZVMPA	**Control of Bidirectional Power Flow in Railway Catenary Overhead Lines** Peter van Duijsen, The Hague University of Applied Sciences, NL

H02 - BZBKX0Q6MY
Comparison of Traction Converter Power Module Implementations with 450A, 600A and 800A 3.3kV IGBT Modules in Terms of Power Capability
Ekrem R. Gunes, TUBITAK RUTE, TR

Current Related Testing
Chairperson: Uwe Schilling, Semikron Danfoss, DE

Q01 - 5K06XA8DKM
Pitfalls and their Avoidability in the Double-Pulse Test
Nikolas Förster, Paderborn University, DE

Q01 - D4GG9PQK4P
Modeling and Simulation of Fluxgate Based Current Sensor
Yunus Çay, Middle East Technical University, TR

Q01 - K9VBR8P59L
Sigma-Delta Based Current Acquisition with Reduced Settling Time
Joschka Randerath, Cologne University of Applied Sciences, DE

Q04 - XJQWZYBAJ9
Characterisation of Wide-Bandgap Semiconductors in Double Pulse Testing Using Optically Isolated Probes
Lennart Hoffmann, University of Kassel, DE

Q04 - 9QYNPD87WX
NON-INVASIVE Battery Condition Testing Using Electrical Signals and Oscilloscopes
Srikrishna N.H, Tektronix, IN

Q04 - RX9M50NBX7
Instrumentation Requirements for Fast 130 V/ns Switching of 1700 V, 35 mΩ SiC MOSFETs
Matthew Appleby, University of Bristol, UK

Power Electronics for Aerospace Applications
Chairperson: Jacques Laeuffer, Dtalents, FR

H03 - LPWDLWZ6JA
Conceptualization and Experimental Assessment of Design Aspects for 3-Level ANPC Inverters
Lukas Radomsky, Technical University of Braunschweig, DE

H03 - PYLJ740QYK
High Power Density SiC Inverter with Sensoreless FOC for UAV
Matthias Neuner, MCI Internationale Bildung & Wissenschaft, AT

H03 - WZLABW6D4Q
Highly-Integrated, Flexible Power Solution for Aerospace 5kVA – 20 kVA Motor Drive Applications
Alain Calmels, Microchip Technology, IR

H03 - Q7DM0WJAX9
Database-Supported Preliminary Design, Simulation and Evaluation of Power Converters in Electric Aircraft Propulsion System
Jeff Kugener, DLR, DE

H03 - DMVA69D7W4
Design and Analysis of Gate-Driver for SiC-based Inverter for Megawatt Scale All Electric Aircraft
Ankit Pal, DLR, DE

Measurement Techniques and Methods
Chairperson: Ilknur Colak**,** Schneider Electric, FR

Q04 - 6Y9K8G0JY5	**Addressing Testing Challenges for Power Modules and Three-Level Inverters** Oleg Fotteler, SPEA, IT
Q04 - PBLW0PD9NG	**Characterization of the Bonding Quality of Silver Sintered Compounds by Means of Laser-Induced Breakdown Spectroscopy** Yannick Bockholt, University of Applied Sciences Kiel, DE
Q04 - DBZP4Y65BR	**Inverter-Integrated Measurement of the Frequency-Dependent Winding Impedance of Electric Machines** Christian Mühlfeld, Cologne University of Applied Sciences, DE
Q04 - 074XW5BD7A	**Compensation Techniques for Bandwidth-Distorted Measurements of Fast Transients in Double Pulse Tests** Christian Lottis, Bonn-Rhein-Sieg University of Applied Sciences, DE
Q04 - GANQY4MWBN	**An Aerodynamic Load Measurement Technique for Autonomous Aerial Vehicles** Mehmet Oguz Girgin, Roketsan, TR
Q04 - 8NLMQP4WZP	**A High-Bandwidth Multilevel Counter Circuit for Bearing Current Evaluation** Felix Schulte, Technical University of Dortmund, DE

Transformers
Chairperson: Bernhard Strzalkowski, Analog Devices, DE

R02 - Z6BQYK7XL4	**Design of 50 kW 100 kHz Oil Immersed Transformer for DC-DC Converters in ROV Applications** Rivi Dhanapala, Buckingham Magnetics, UK
R02 - 6M87K96P4Q	**Core Loss Model for considering Anisotropy and Temperature Effects on Electrical Steel under Power Electronic Conditions** Michael Owzareck, Block Transformatoren-Elektronik, DE
R02 - 9WXY69LQGQ	**Optimum Design of a 24-Pulse Transformer for a 200 kW 5000 VDC Power Supply** Nidula Warnakulasuriya, Buckingham Magnetics, UK
R02 - KXA69L5804	**Circular Economy Oriented and Reconfigurable Planar Transformer Design for Isolated DC-DC Converters** Fabian Groon, Univeristy of Kiel, DE
R02 - DVDBNA54V6	**Controllable Magnetics: Variable Transformers and Variable Inductors, Theory – Production – Application** Florian Fenske, mdexx Magnetronic Devices, DE

R02 - 50V4AJ5K0X	**A Three-Phase Interleaved LLC Integrated Transformer Using PCB Windings for Fuel Cell DCDC Converters** Jiajia Guan, Huazhong University of Science and Technology, CN
R02 - DZ0JWG69ZK	**Testing the Primary-Secondary Coil Coupling of High-Frequency Transformer Implemented on ETD and Toroidal Cores** Daniel Chatroux, CEA-LITEN, FR
11:30	**Lunch Break**

Stage: Brüssel 1
SiC Modules
Chairperson: Philippe Ladoux, University of Toulouse, FR

14:00 **The Design of a 2kV 1700A SiC MOSFET Dual Module**
Jorge Mari, Semikron Danfoss, DE

14:20 **Technological approaches to high-power density SiC power module for automotive**
Takeshi Tokorozuki, Mitsubishi Electric, JP

14:40 **Extremely Compact SiC Power Module for EV Traction Inverters in the 250 kW Class**
Raffael Schnell, SwissEM Technologies, CH

15:00 **Benefits of .XT Interconnection Technology for 3.3 kV XHP 2 Module with 3.3 kV CoolSiC MOSFET**
Matthias Bürger, Infineon Technologies, DE

Stage: München 1
Advanced Cooling
Chairperson: Uwe Schilling, Semikron Danfoss, DE

14:00 **Large-Area Bonding with LMEE: Suppression of the Degradation of the Junction-to-Water Thermal Resistance in Power Modules**
Yo Mochizuki, ROHM Semiconductor, JP

14:20 **Active Thermal Control of SiC MOSFETs Utilizing Transient Thermal Characterization**
Varaha Satya Bharath Kurukuru, Silicon Austria Labs, AT

14:40 **Thermal Management Solutions by Additive Manufacturing – Powder Bed Fusion and Diffusion Bonding**
Simon Jahn, Günter Köhler Institute for Joining Technology and Materials Testing, DE

15:00 **A Case Study Comparison of a Novel, Pumped Two-Phase Thermal Management System with a Hybrid Evaporator for Cooling Power Electronics**
Elisabeth Seber, Advanced Cooling Technologies, US

Stage: München 2
DC-DC Converters II
Chairperson: Thiago Batista Soeiro, University of Twente, NL

14:00	**Feasibility Study of High-Power Density Isolated CLLC DC-DC Interface with Wide Range of Voltage/Current Regulation** Oleksandr Husev, Tallinn University of Technology, EE
14:20	**DC-Bias Reduction in High-Frequency Dual Active Bridge DC-DC Converters through Slow DC Measurements** Patrick Lenzen, TU Dortmund University, DE
14:40	**Optimized Current Sharing Technique for Interleaved CLLC Converters for Minimal Output Current Distortion** Martin Gendrin, Fraunhofer Istitute ISE, DE
15:00	**Primary-side Output Regulation Principles in Dynamic Multi-MHz Inductive Power Transfer Systems and Isolated DC/DC Converters** Ioannis Nikiforidis, Imperial College London, UK

Stage: Mailand
Smart Grid
Chairperson: Klaus Rigbers, SMA Solar Technology, DE

14:00	**Low Voltage DC-Grids with Galvanic Isolation: System Discussion, Efficiency and Performance Comparison to AC-Feeding** Lukas Fräger, BLOCK Transformatoren-Elektronik, DE
14:20	**Implementation and Experimental Evaluation of an Adaptive DC Grid Controller for Decentralised Grid Control** Steffen Menzel, University of Bremen, DE
14:40	**Demonstrating the Effectiveness of a DC Solid-State Circuit Breaker's Fast Response Time** Ehab Tarmoom, Microchip Technology, US
15:00	**Modelling and Sizing Sensitivity Analysis of a Fully Renewable Energy-based Electric Vehicle Charging Station Microgrid** David A. Stone, University of Sheffield, UK

Stage: Athen

Measurement Techniques and Methods

Chairperson: Wolfram Teppan, LEM INTERNATIONAL, CH

14:00	**LED Powered Rotor Telemetry System** Raphael Beyerle, Technical University of Vienna, AT
14:20	**'Infinity Gate Sensor': a Differential Magnetic Field Sensor for Measuring Gate Current of SiC Power Transistors** Yushi Wang, University of Bristol, UK
14:40	**Characterising Wide Bandgap Power Modules: Validating the M-Shunt Concept for High-Power Applications in the Kiloampere Range** Hauke Lutzen, University of Bremen, DE
15:00	**Characterization of Power-Module Parasitics: Sub-Nanosecond Large Signal Pulsing vs. Double-Pulse Testing** Gerhard Groos, Universität der Bundeswehr München, DE