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Conference Program PCIM 2025

Keynote

K01 **Medium Voltage Power Electronics Building Blocks for Future Electronic Energy Networks**
Dushan Boroyevich, Virginia Tech, USA

K02 **Monolithically Integrated Bi-Directional Switch (BDS) GaN HEMT Technology**
Michael Harrison, Enphase Energy, US

K03 **Challenges of Green Growth – Limited Energy Return on Energy Invested & Critical Raw Material Shortage**
Johann W. Kolar, ETH Zürich, CH

SiC MOSFET

OP001 **SiC MOSFET Module Using Body Diode with High Reliability for Industrial Applications**
Hidetaka Matsuo, Mitusbishi Electric Corporation, JP; Yuji Miyazaki, Masayuki Imaizumi, Mitsubishi Electric Power Device Works, JP; Koichi Masuda, Mitsubishi Electric, DE

OP002 **Impact of SBD Embedding into SiC MOSFETs on the Dynamic Behavior at High Temperature**
Shunsuke Asaba, Masaru Furukawa, Hiroshi Kono, Toshiba Electronic Devices & Storage, JP

OP003 **The 1200V CoolSiC M2 Easy C and .XT Interconnection Technology: Redefining Efficiency and Lifetime**
Ainhoa Puyadena, Paul Salmen, Daniel Heer, Frederick Groepper, Andreas Korzenietz, Infineon Technologies, DE

Packaging Concepts

OP004 **The Novel High Reliability Materials for Power Module**
Yuta Ikari, Go Ichizawa, Cecilia Yustisia, Hwa Yoo, Sumitomo Bakelite, SG

OP005 **High Reliability Al Bonding Wire for Power Devices**
Tomohiro Uno, Tetsuya Oyamada, Yuya Suto, Nippon Steel, JP; Motoki Eto, Tadashi Yamaguchi, Nippon Micrometal, JP

OP006 **Comparison Between a Single-Side Cooled and Two Double-Side Cooled Power Module Layouts**
Konstantin Kostov, Lakshmi Priya Gandla, Mietek Bakowski, Saeed Akbari, RISE Research Institutes of Sweden, SW; Kooros Moabber, Volvo Car, SW

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Converter Design Optimisation

OP007 **22kW High-Power-Density Bidirectional DC-DC Converter with Top-Side-Cooled SiC MOSFETs for OBCs**
Yuequan Hu, Wolfspeed, US; Hailin Wang, Zongzeng Hu, Chen Wei, Wolfspeed, CN

OP008 **Innovative 12 kW Three-level Power Supply for AI Servers Empowered by 400 V SiC MOSFET Technology**
Martin Wattenberg, Matthias Joachim Kasper, Alessandro Pevere, Ralf Siemieniec, Gerald Deboy, Infineon Technologies, AT

OP009 **A Quasi 2-Level Modulation Technique to Increase Efficiency and Reduce Motor Overvoltage**
Sebastian Gick, Mark-M. Bakran, University of Bayreuth, DE; Markus Pfeifer, Sebastian Nielebock, Siemens, DE

Modeling and Simulations I

OP010 **Double-Injection Based Plasma SPICE Modeling in IGBTs with High Carrier Confinement**
Arnab Biswas, Maria Cotorogea Infineon Technologies, DE;Peter Tuerkes, PT Consult, DE

OP011 **Evidence of Frequency-dependent SiC Power MOSFET Capacitances in Switching Transients**
Michel Nagel, Ivana Kovacevic-Badstuebner, Anja Katerina Brandl, Salvatore Race, Ulrike Grossner, ETH Zurich, CH

OP012 **Digital Design for High-Performance IGBT Devices Using Machine Learning and Multi-Physics Simulation**
Nayeon Choi, Sung-Uk Zhang, Dong-Eui University, KR

Monitoring and Testing

OP013 **Precision Junction Temperature Monitoring with Integrated Sensor: and Comparison with In-situ Methods**
Ismail Recepi, Lukas Adelbrecht, Christian Mentin, Stefan Mollov, Silicon Austria Labs, AT; Severin Kampl, Infineon Technologies, AT

OP014 **On the Importance of Appropriate Current Probes for Double Pulse Tests and How to Select Them**
Sebastian Sprunck, Fraunhofer Institute IEE, DE; Hauke Lutzen, Nando Kaminski, University of Bremen, DE; Marco Jung, University of Applied Sciences Bonn-Rhein-Sieg, DE

OP015 **AI Techniques for Continuous Monitoring of Winding Insulation Health of Transformers**
Gayan Wickramasinghe, Ruchira Yapa, University of Central Lancashire, UK; Kapila Warnakulasuriya, University of Teesside, UK; Vajira Dhanapala, Buckingham Magnetics, UK

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Virtual Prototyping

OP016 **Intelligent Methodology for Efficient Power Module Design by SPICE-based Virtual Prototyping**
Taegyun Lee, Inpil Yoo, Indrajit Paul, Valentin Divay, STMicroelectronics, DE; Michele Aparo, Edoardo Matteo Marchica, STMicroelectronics, IT

OP017 **Method to Fit a HV-IGBT TCAD-Model to Match the Switching Behaviour in Measurements**
Tim Scheel, Lukas Tomforde, Hans-Günter Eckel, University of Rostock, DE

OP018 **Thermal Neural Networks for Temperature Estimation of Traction Inverters in Electric Vehicles**
Jessica Yu, Prabhakaran Alagarsamy, Volkswagen, DE; Oliver Wallscheid, University of Siegen, DE

High Power Converters

OP019 **Active Power Decoupling using Zero-Sequence Inductance of Three-Phase Transformer**
Yi Han, Satyam Sa, Cheng Feng Wang, Olivier Trescases, University of Toronto, CA

OP020 **A 2MW Power Stack Design with LV100-Package IGBT Modules for Renewable Energy Application**
Zheng Feng Li, Nobuya Nishida, Ryo Tsuda, Mitsubishi Electric, JP; Koichi Masuda, Narender Lakshmanan, Mitsubishi Electric, DE

OP021 **Test Rig for Investigation of New Generation of 3.3kV SiC MOSFET based Traction Converters**
Pavel Drabek, Zdenek Peroutka, Jan Molnar, Martin Jara, Ales Peroutka, Stepan Janous, Ondrej Suchy, University of West Bohemia, CZ; Yohei Mitsui, Shota Morisaki, Yasushige Mukunoki, Mitsubishi Electric, JP

Hybrid Device Concepts

OP022 **Evaluation of a 650 V GaN Si SiC Hybrid Power Switch**
Alireza Sheikhan, Ekkanath Madathil Sankara Narayanan, University of Sheffield, UK

OP023 **Parallel Operating SiC MOSFET and Si RC-IGBT in SLIMDIP for Higher Efficiency Air Conditioners**
Toma Takao, Keisuke Kawamoto, Haruhiko Murakami, Akiko Goto, Koichiro Noguchi, Kazuki Takakura, Mitsubishi Electric, JP; Mustafa Cem Ozkilic, Mitsubishi Electric Europe, DE

OP024 **Soft Switching Method for MOSFETs used in Low Voltage DC Solid-State Circuit Breakers**
Kenan Askan, Eaton Industries, AT; Radek Kloff, Eaton European Innovation Center, CZ

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Condition Health Monitoring

OP025 **Neural Network-Enabled Condition Monitoring of DC-Link Capacitors in Three-Phase Inverters**
Youssof Fassi, Jérôme Boutet, Vincent Heiries, Sébastien Boisseau, CEA-Leti, FR; Xing Wei, Shuai Zhao, Huai Wang, Aalborg University, DK

OP026 **Machine Learning and Digital Twins for RUL Prediction of DC Semiconductor Circuit Breakers**
Lena Köhler, Marco Messinger, Kilian Drexler, Martin Schellenberger, Georg Roeder, Vincent R. H. Lorenz, Fraunhofer IISB, DE; Anna Rusakova, Noopur Amoli, Johann Wagner, GEFASOFT Engineering, DE

OP027 **Film Capacitors in the High Voltage - Temperature Humidity Bias (HV-THB) Test**
Sven Clausner, Nando Kaminski, Tjark Djuren, University of Bremen, DE

Package Reliability

OP028 **Physics-Based Reliability Analysis of Power Modules at Substrate and Component Level**
Anu Mathew, Susana Oliveira Richter-Trummer, Sven Rzepka Jan Albrecht, Fraunhofer Institute ENAS, DE; Corinna Grosse-Kockert, Berliner Nanotest und Design, DE; Daniel May, Dong Xie, Mohamed Alaluss, Patrick Heimler, Thomas Basler, Chemnitz University of Technology, DE

OP030 **Power Semiconductor Package Structure Highly Robust against Power Cycling Stress at ΔTvj=165°C**
Yuki Tanaka, Makoto Mizukami, Nobutaka SAGAMI, Hideo Nakako, Dai Ishikawa, Resonac, JP

OP031 **Influence of Low Temperature Swings and Short Heating Times on the Power Cycling Capability of IGBTs in Discrete Housings**
Patrick Heimler, James Abuogo, Sören Gesell, Josef Lutz, Thomas Basler, Jens Heilmann, Patrick Türk, Bernhard Wunderle, Chemnitz University of Technology, DE

Pulse Width Modulation

OP032 **Hybrid Pulse Width Modulation for Optimizing Key Index Parameters in Multi-Level Traction Inverters**
Kooros Moabber, Volvo, SW; Vishal Rajesh Bhat, University of Bologna, IT

OP033 **Angle Synchronized PWM to Enable High Degree of Overmodulation for Increased E-Drive Performance**
Thomas Zeltwanger, Gunther Götting, Michele Hirsch, Robert Bosch, DE

OP034 **Selective DPWM (SDPWM) Method for Inner Modulation ANPC with Paralleled SiC MOSFET and IGBT**
Gergő Varga, Vincotech, HU

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Measurement Methods

OP035 **Thermal Impedance Spectroscopy by Varying the Gate Voltage during Inverter Operation**
Michael Gleissner, Mark-M. Bakran, University of Bayreuth, DE

OP036 **Accuracy Comparison of Temperature Sensors for the Thermal Characterization of GaN Transistors**
Aline Reck, Ingmar Kallfass, Dominik Koch, University of Stuttgart, DE

OP037 **Novel Short Circuit Detection Using an Isolated Add-on Coil on Type-B LV-nHPD2 Package**
Akira Mima, Hitachi, JP; Konno Akitoyo, Minebea Power Semiconductor Device, JP

Power Electronics for E-Mobility II

OP038 **Using Embedding Die Technology in GaN Half Bridge Module for 48V Inverter Application**
Olcay Korkmaz, Andreas Schuppan, AVL Software and Functions, DE; Mike Morianz, Thomas Köck, Markus Kastelic, AT & S Austria Technologie & Systemtechnik, AT; Maximilian Hepp, Daniel Messering, Mercedes-Benz, DE

OP039 **Optimal Design of the DAB as a Single Stage DC/DC Interface for Bidirectional DC Chargers**
Simon Fuchs, Morris Fuller, Milad Khani, Shazeb Jehangir, ambibox, DE

OP040 **Optimized Modulation of Isolated Bidirectional Single-Stage Three-/Single-Phase X-Rectifier for EV On-Board Chargers**
Sven Weihe, Johann W. Kolar, ETH Zurich, CH; Jonas Huber, Advanced Mechatronic Systems Center, CH

OP041 **An Evaluation of the Performance and Efficiency of a Si/SiC Fusion Power Module Based Inverter**
Nikolaj Gorte, Christoph Pannemann, Hakan Akabay, Infineon Technologies, DE

OP042 **New HybridPACK HD – Key to Reliable Highest Performance eTRUCK Inverters for Heavy-Duty Operation**
Christian Müller, Krzysztof Mainka, Gernot Stracke, Ulrich Nolten, Wilhelm Rusche, Infineon Technologies, DE

SiC Robustness

OP043 **A Novel Test Method for Bipolar Degradation under Short Dead Times**
Clemens Herrmann, Mengdi He, Mohamed Alaluss, Christian Herold, Thomas Basler, Chemnitz University of Technology, DE

OP044 **Surge Current Robustness of 1.2 kV SiC JFETs for Active Short Circuit Events in Automotive Applications**
Tim Ringelmann, Andreas Bäumler Mark-M. Bakran, University of Bayreuth, DE

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OP045 **Robustness of SiC MOSFETs Design Under Repetitive Short Circuit and Avalanche Cycles Stress**
Andrea Piccioni, Gabriel Conti, Infineon Technologies, AT

OP046 **Short-Circuit Behavior of Quasi Series Connected SiC-MOSFETs: Measurements and Simulative Validation**
Christian Bäumler, Thomas Basler, Chemnitz University of Technology, DE; Felix Gesele, Universität der Bundeswehr, DE; Thomas Brückner, Universität der Bundeswehr Munich, DE

OP047 **SiC MOSFET Reliability Assessment Under Accelerated Dynamic Reverse Bias Methodology**
Abdul Haleem Malik, Mohammed Amer Karout, Ahmed Topkil, Philip Mawby, M. Taha, University of Warwick, UK

Materials for Thermal Management

OP048 **Advanced Copper-Based CTE-Composites with High Performance vs Cost Ratio Made by a Novel Technology**
Andreas Zeller, Darek Kossakowski, Matteo Zanon, Kymera International - Ecka Granules, DE

OP049 **The Usage of Power Metallurgy in Power Electronic Applications**
Markus Schneider, GKN Powder Metallurgy, DE; Virgil Savu, Ian Donaldson, Tom Fonville, GKN Powder Metallurgy, US; Alessandro DeNicolo, Omar Franceschi, GKN Powder Metallurgy, IT

OP050 **Reliability Testing of Liquid Metal Embedded Elastomers for Power Modules**
Cara Rossetti, Dylan Shah, Navid Kazem, Tomoya Yamashiki, Loren Russell, Arieca, US

OP051 **Novel Interlayer Alloy for Bonding High Conductivity Metals to Silicon Using Laser Powder Bed Fusion**
Andrea Mistrini, Polytechnic University of Milan, IT; Amin Hodaei, Davoud Jafari, University of Twente, NL; Riccardo Casati, PoliMI, IT

OP052 **LIME: Liquid Metal Interconnections for Power Semiconductors**
Nick Baker, Andrew Lemmon, Su Gupta, Alec Mshar, University of Alabama, US; Szymon Beczkowski, Kjeld Pedersen, Thore Aunsborg, Asger Bjorn Jorgensen, Ruben Garcia, Aalborg University, DK; Francesco Iannuzzo, Polytechnical University of Turin, IT

Inductors & Transformers Design

OP053 **Improved Insulation Design of Medium-Frequency Transformers Using a Semiconductive Coil Former**
Bastian Korthauer, Juergen Biela, ETH Zurich, CH

OP054 **Fast Analytical Model for Losses of Litz Wire in Transformers with Arbitrary Winding Arrangements Based on Triple 2D Concept**
Qingchao Meng, Juergen Biela, ETH Zurich, CH

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OP055 **Transient Stress to the Insulation of a Power Inductor with HF Litz Wire or Copper Foil**
Lukas Reißenweber, Alexander Stadler, Coburg University of Applied Sciences, DE; Ingo Hahn, Friedrich-Alexander-University Erlangen-Nuremberg, DE

OP056 **AI based Multi Criterion Optimization Solution for Magnetic Design**
Gayan Wickramasinghe, Ruchira Yapa, University of Central Lancashire, UK; Kapila Warnakulasuriya, University of Teesside, UK; Vajira Dhanapala, Buckingham Magnetics, UK; Gayashan Porawagamage, University of Manitoba, CA

OP057 **Extremely High Q-factor Inductor for Loss Reduction in Power Converters for MHz Range**
Franci Zajc, Anja Zajc, Ivica Zajc Zdešar, Franc Zajc, FRAZA, SI

Intelligent Gate Drivers

OP058 **A Gate Drive Circuit for GaN GIT Power Semiconductors with a Minimal Number of Components**
Bikash Sah, Bonn-Rhein-Sieg University of Applied Sciences, DE; Sebastian Sprunck, Fraunhofer IEE, DE; Marco Jung, University of Applied Sciences Bonn-Rhein-Sieg and Fraunhofer IEE, DE

OP059 **Low-Loss Active Gate Driver with Surge Voltage Detection for SiC MOSFET**
Hironori Akiyama, Akimasa Niwa, Mitsuyasu Abe, MIRISE Technologies, JP

OP060 **Gate Drive Concept for Power Semiconductors in Cryogenic Applications**
Marek Galek, Josef Klugbauer-Heilmeier, Munich University of Applied Sciences, DE; Florian Kapaun, Airbus Central Research & Technology, DE; Gerhard Steiner, Ravi-Kiran Surapaneni, Gowtham Galla, Airbus, DE; Ludovic Ybanez, Airbus, FR

OP061 **An Active Gate Driver to Enhance SiC-MOS Performance Utilising a Controlled Parasitic Turn-on Effect**
Michael Frank, Mark-M. Bakran, University of Bayreuth, DE

OP062 **IGBT Module Demonstrator for High Frequency Applications with Integrated Driver and DoL Technology**
Ruman Mahapatra, Thomas Ebel, Kasper Mayntz Paasch, University of Southern Denmark, DK; Christian Hennig, Aylin Bicakci, University of Applied Sciences Kiel, DE; Ramkrishan Maheshwari, SDU Center for Industrial Electronics, DK; Stefan Behrendt, Semikron Danfoss, DE

Innovative Drive Systems for E-Mobility

OP063 **The Impedance Matrix Approach - Machine Modulation Effects from kHz to MHz**
Jan Allgeier, Robert Bosch, DE

OP064 **Meeting Standby Energy Requirements in Motor Drive Applications**
Juan Paolo Quismundo, John Emmanuel Tan, Power Integrations, PH

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OP065 **Integrated High-Resolution Flux Sensing Array for Next Generation High Performance Traction Drives**
Michael Saur, Mercedes-Benz, DE

OP125 **A Modular Rapid Prototyping Test Bench Platform for Accelerated Electric Drive Research**
Stephan Goehner, Alexander Oerder, Tobias Zeller, Benjamin Bachowsky, Mattis Parche, Leonard Geier, Martin Bremer, Christian Digel, Benedikt Schmitz-Rode, Johannes Stoß, Matthias Brodatzki, Andreas Liske, Martin Doppelbauer, Marc Hiller, Karlsruhe Institute of Technology, DE; Felix Hoffmann, Schaeffler Automotive, CH

OP066 **Position Sensorless Control of a Motor-Pump-Unit for an Active Suspension in Automotive Applications**
Andreas Lang, Richard Spießberger, Manfred Schrödl, Technical University of Vienna, AT

Converter Design for E-Mobility

OP067 **Single-Stage Isolated AC/DC Converter for Highly Efficient On- Board Charger**
Xiaoshan Liu, Wendell Da Cunha Alves, Gnimdu Dadanema, Ibrahim Guenoune, Valeo Power Division, FR

OP068 **Future of Bidirectional On-Board Charging: A comparative Analysis of CLLC and DAB topologies**
Hector Sarnago, Oscar Lucia, University of Zaragoza, ES; Francisco Cabaleiro, Jonas Muehlethaler, Frenetic, ES

OP069 **Performance Comparison between GaN-based Flying Capacitor and Active Neutral Point Clamped Three-Level Active Front End**
Francesco Gennaro, Giuseppe Aiello, Dario Patti, STMicroelectronics, IT; Giacomo Scelba, Angelo Di Cataldo, Reza Akbari, Alessandro Lieto, University of Catania, IT; Antonio Testa, University of Messina, IT

Reliability in Power Electronics

OP070 **Optimal Reliability-aware Current Sharing in Adjustable Hybrid Switch (AHS) Power Converter**
Tanya Thekemuriyil, Amin Rezaeizadeh, Silvia Mastellone, Renato Minamisawa, University of Applied Sciences and Arts Northwestern Switzerland, CH; Munaf T.A. Rahimo, MTAL, CH

OP071 **PELCA: An Open-Source Research Power Electronics Life Cycle Assessment Tool**
Nicolas Degrenne, Mitsubishi Electric Europe, FR; Briac Baudais, Mitsubishi Electric R&D Centre, FR; Hamid Ben Ahmed, Gurvan Jodin, ENS Rennes, FR; Stéphane Lefebvre, CNAM, FR

OP072 **Cosmic Ray Robustness: 2kV SiC-based B6 Topology vs Prominent Industrial Solutions for 1500V DCLinks**
Carlos Fuentes, Ignacio Lizama, Christian Felgemacher, Andreas Thamm, ROHM Semiconductor, DE

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Advanced Cooling Technology

OP073 **Stabilizer with Included Pulsating Heat Pipe for Stability, Electrical Insulation and Heat Dispersal**
Claus Brede, Florian Schwarz, Vladimir Danov, Siemens,DE; Stefan Becker, Friedrich-Alexander-University Erlangen-Nuremberg, DE

OP074 **Practical Considerations for Pulsating Heat Pipe and Embedded Heat Pipe Heat Spreaders**
Nathan Van Velson, SaiKiran Hota, Greg Hoeschele, Srujan Rokkam, Advanced Cooling Technologies, US

OP075 **Physics of Failure Based Lifetime Modelling of Double Side Cooled Power Electronics Modules of Electric Vehicles Under Power Cycling**
Saeed Akbari, Konstantin Kostov, Mietek Bakowski, Jang-Kwon Lim, Lakshmi Priya Gandla, RISE Research Institutes of Sweden, SW; Kooros Moabber, Volvo Car, SW

Paralleling Devices

OP076 **Technical Verification of a New 2kV-Class SiC Power Module Aimed at High-Speed Operation**
Tetsuo Yamashita, Yuji Miyazaki, Takuya Kitabayashi, Mitsubishi Electric JP; Thomas Radke, Akiyoshi Masuda, Severin Klever, Mitsubishi Electric, DE

OP077 **A Gain Maximized Gate Circuit Feedback Loop and its Effect on Current Mismatches of Paralleled IGBTs**
Lukas Tomforde, Tim Scheel, Hans-Günter Eckel, University of Rostock, DE

OP078 **Parallelization of XHP2 CoolSiC 3.3 kV Devices**
Andreas Fischer, Matthias Bürger, Diana Car, Infineon Technologies, DE

Server Power Supplies

OP079 **IISB² Topology for 48 V to 1 V Point of Load Applications**
Stefan Zeltner, Jan Hager, Bernd Seliger, Gerson Ayllon, Daniel Haager, Bernd Eckard, Fraunhofer IISB, DE

OP080 **5 kW Isolated 400 V to 50 V, DC-DC Converter for Server Power Supplies**
Alejandro Pozo, Michael de Rooij, Efficient Power Conversion, US

OP081 **High-Density and High-Efficiency of an 8 kW Power Supply Unit for AI Datacenters in 100 W/in3**
Antonello Laneve, Manuel Escudero, Matteo-Alessandro Kutschak, Alex Mirtchev, Theodoros Mouselinos, Infineon Technologies, AT; David Meneses Herrera, Infineon Technologies, FIN

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Power Electronics for E-Mobility III

OP082 **Estimating Semiconductor Switch Temperature in Automotive Applications Using DeSat Voltage**
Nima Saadat, Syed Hafeez, Shadman Mohd Ali, Markus Einhorn, Murugaperumal Devaraja, SEG Automotive Germany, DE; Shiyong Zhu, Lei Dai, SEG Automotive Products, CN

OP083 **Compact Highly Integrated 1kW Peak Motor Drive**
Martin Schiestl, Andreas Albrecht, Maurizio Incurvati, Ronald Stärz, Edward Jones, Gerald Deboy, Infineon Technologies, AT

OP084 **Pushing the Boundaries of High Current LV GaN Motor Drive with a Dual Side Parallel Approach**
Marco Cannone, Martin Wattenberg, Edward Jones, Infineon Technologies, AT

Special Session: Circular Economy in Power Electronics

OP085 **„Circular Economy in Power Electronics“ - Generate More Energy for More Innovation**
Regina Roos, Typhoon HIL, CH

OP086 **Life Cycle Assessment Tool enabling Ecodesign of PCBs for Power Applications**
Thomas Krivec, Christof Wernbacher, Jana Tiffner, AT&S, AT

OP087 **Circular Economy in Power Electronics – Power Semiconductors**
Tobias Keller, Hitachi Energy, CH

OP088 **Sustainability in Power Electronics for Automotive Applications**
Raphael Hartwig, Anneke Schleusener, Alexander Otto, Mohamad Ismail, Volkswagen, DE; Sönke Hansen, Mark Mennenga, Christoph Herrmann, Technical University of Braunschweig, DE

GaN Devices II

OP089 **140-mΩ GaN Bidirectional Switch for Single-Stage Power Converters**
Davide Bisi, Aditya Raj, Carl Neufeld, Geetak Gupta, Nihal Singh, Yu Huang, Floro Camenforte III, Likun Shen, Primit Parikh, Renesas Electronics, US

OP090 **Highly-Integrated 1200 V GaN-Based Monolithic Bidirectional Switch**
Michael Basler, Richard Reiner, Daniel Grieshaber, Fouad Benkhelifa, Stefan Mönch, Stefan Müller, Fraunhofer Institute IAF, DE

OP091 **Demonstration of a Novel Monolithically Integrated GaN-on-AlN/SiC Half-bridge**
Xiaomeng Geng, Nick Wieczorek, Benedikt Kohlhepp, Sibylle Dieckerhoff, Technical University of Berlin, DE; Mihaela Wolf, Oliver Hilt, Ferdinand-Braun-Institute, DE

OP092 **Characterizations of a 1200 V / 150 A GaN Power Module**
Guillaume Piquet Boisson, Van-Sang Nguyen, Anthony Bier, Stephane Catellani, CEA, FR

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Control Methods II

OP093 **Reactive Power Control of an Inverter Based Totem Pole Topology Using Low Frequency Leg**
Rami Troudi, Ousmane Mbaye, Oumaima Hadjadj, Kelly Ribeiro, Moctar Coulibaly, Valeo, FR

OP094 **Enhanced Full-Mode Modulation Scheme for Switching Oscillation Reduction in SiC 3L-ANPC Inverter**
Hangxian Gao,Tetsuya Kawashima,yi Hiroshi Kamiduma, Takashi Hirao, Hitachi, JP

OP095 **Impact of Deadtime and Modulation Schemes on 800 V / 40 kW IMS-based 3L-ANPC Inverter**
Pouya Ahmadi, Jose Ortiz Gonzalez, Philip Mawby, University of Warwick, UK; Temoc Rodriguez, Ricardo, UK

OP096 **Optimal Trajectory Tracking of IPMSM Drives using Continuous Control Set Model Predictive Control**
Kristóf Gábor Bándy, Péter Pál Stumpf, Zoltán Sütő, Budapest University of Technology and Economics, HU

Inverter Design and Reliability

OP097 **Medium-Voltage versus Low-Voltage Converter Reliability in Wind Turbines: A Field-Data Based Study**
Sören Fröhling, Katharina Fischer, Julia Walgern, Fraunhofer IWES, DE; Fraser Anderson, Fraunhofer UK Research, UK

OP098 **Practical Use of xEVCap: The Modular and Std. DC-Link Capacitor for the Main Powertrain Inverter**
David Olalla, TDK Electronics, DE; Fernando Rodriguez, Tomas Wagner, Alberto Espinar, TDK Electronics Components, ES

OP099 **Design of GaN FET-Based Multilevel Three-Phase Inverter for High Voltage Automotive Applications**
Fabio Mandrile, Polytechnic University of Turin, IT; Marco Palma, EPC, IT; Enrico Vico, Salvatore Musumeci, Eric Armando, Fausto Stella, Radu Bojoi, Technical University of Turin, IT

OP100 **Characterization of the Power Stage for a GaN-Embedded-based Traction Inverter**
Maurizio Tranchero, Luca Bongiovanni, Andrea Vinci, Claudio Romano, Paolo Santero, Ideas & Motion, IT

High-Power Modular Converters

OP101 **Evaluation of Magnetic Integration in Modularized-Bridge-Rectifier Solid-State Transformer**
Zhenchao Li, Drazen Dujic, EPFL, CH

OP102 **Novel Control Strategy for Modular Multilevel Resonant Converter based Solid-State Transformer**

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Zhengzhao Li, Reza Mirzadarani, Zian Qin, Mohamad Ghaffarian Niasar, Pavol Bauer, Delft University of Technology, NL; Jarno van der Weg, Werner Heyns, VONK, NL

OP103 **Grid Friendly Supply of Nonlinear Dynamic Loads by a Scalable Hybrid Multilevel Converter**
Pierre-Louis Garmier, Duro Basic, Cyrille Baviere, Philippe Clavier, Nicolas Lapassat, Christof Sihler, Franck Terrien, GE Vernova Power Conversion, FR

OP104 **Testbench Converter to Validate Control Algorithms for a High-Cell-Count Cascaded H-Bridge System**
Paul Aspalter, Markus Vogelsberger, Hans Ertl, Technical University of Vienna, AT

IGBT Technologies

OP105 **New 3.3kV XB-Series HVIGBT Module for High-Speed-Switching**
Saito Shuhei, Mitsubishi Electric, JP; Kenji Hatori, Shogo Tokumaru, Yoichi Hironaka, Mitsubishi Electric Power Device Works, JP; Nils Soltau, Victor Tolstopyatov, Mitsubishi Electric, DE

OP106 **900 A 1200 V ED Module with New Micropattern Trench IGBT Featuring Local Carrier Confinement Control**
Nick Gilles Schneider, Paula Diaz Reigosa, Roger Stark, Tommaso Stecconi, Raffael Schnell, Lars Christian Knoll, Rémi Guillemin, SwissSEM Technologies, CH; Coris Li, Leon Liang, Sun.King Pacific Semiconductor Technology, CN

OP107 **Next-generation 670 V RC IGBT in HCC Enhances Performance and Ruggedness in PFC Application**
Ajith Kumar Sekar, Jaeeul Yeon, Infineon Technologies, AT

OP108 **Double- and Single Gate Desaturated Turn-off of Low Saturation IGBTs for Reduced Turn-off Losses**
Vishwas Acharya Nayampalli, Hans-Günter Eckel, University of Rostock, DE

Smart Battery and DC Grids

OP109 **Automotive Li-Ion Cells Representative Abusive Test at Megawatt Scale**
Daniel Chatroux, CEA-Liten, FR; Julien Chauvin, Rémi Vincent, David Brun Buisson, Laurent Garnier, CEA, FR

OP110 **Cloud-connected Battery Management System for Secure Battery-Passport Implementation**
Wenzel Prochazka, Marc Manninger, NXP Semiconductors, AT; Henk Jan Bergveld, NXP Semiconductors, NL; Avedis A. Dadikozyan, Sjoerd G. J. Rongen, Erik R.G. Hoedemaekers, Siddarth Dinnepati, TNO, NL

OP111 **Experimental Evaluation of Droop Control Characteristics in an Industrial DC Microgrid**
Normann Schwingal, Robin Weiß, Steffen Bernet, Technical University of Dresden, DE; Guido Bachmann, Schaltbau, DE

OP112 **High-Frequency 360kW Motor Control Using Modular Switched Battery Technology**
Ghislain Despesse, Remy Thomas, Yan Lopez, Thibault Bertin Riviere De La Souchere, Eric Fernandez, CEA, FR

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High Frequency Converters

OP113 **GaN-Based Bi-Directional 7.2kW OBC with 10kW/L Power Density and High Efficiency**
Esmaeil Jalalabadi, Xiaoyu Wang, Carleton University, CA; Yang Jiao, Infineon Technologies, US; Lucas Lu, Infineon Technologies, CA

OP114 **Electrolytic Capacitor-Less Integrated Stage Converter for AC-DC Applications**
Alireza Ramezan Ghanbari, Sayed Reza Afzali Arani, Fabian Ammann, Rashid Kazemi, V-Research, AT

OP115 **A Common-Mode Active EMI Filter for Low-Voltage Distribution System in Automotive Application**
Weihao Zhao, Stefan Mollov, Roberto Petrella, Silicon Austria Labs, AT; Michael Hartmann, Graz University of Technology, AT

OP116 **Design Approach to Passive and Active Hybrid Integrated EMI Filters for High-Frequency Converters**
Mohammad Ali, Lukas Fräger, Azariy Portnov, Bernd Eilers, BLOCK Transformatoren-Elektronik, DE

Sintering Technology

OP117 **Benefits of SiC Power Module Package Sintering for Inverter Applications**
Argirios Papagianis, Wolfspeed, US

OP118 **Copper Sintering Paste that can Sinter without Pressure in Nitrogen**
Hideo Nakako, Dai Ishikawa, Ryuya Nakaomoya, Yuki Tanaka, Makoto Mizukami, Motoki Yonekura, Resonac, JP

OP119 **Oxidation-free Bonding of Cu Sintering in the Air on Cold-rolled Bare Cu Substrate**
YehRi Kim, Dongjin Kim, Korea Institute of Industrial Technology, ROK

OP120 **Wetting Force-Assisted Solvent-Drying Method for Large-Area, Low- or No-Pressure Sintering**
Masanao Yamasaki, Hitachi, JP; Katsuya Koseki, Shinsuke Doi, Akiyoshi Tadano, Isamu Yoshida, Minebea Power Semiconductor Device, JP

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OP121 **High Temperature Capacitors with Minimal Derating of Operating Voltage for DC-Link Applications**
Adel Bastawros, SABIC, US; Fumio Yu, SABIC, JP; Takeshi Horiguchi, Takashi Mori, Kenichi Oshita, Nichicon, JP

OP122 **Ultra-Thin Film Capacitors with Gradient Nanocomposite Layers**
Bartosz Gackowski, William Greenbank, Thomas Ebel, University of Southern Denmark, DK

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OP123 **Comprehensive Analysis of Magnetic Flux Distribution in Planar Cores and Surface Flux Density in Airgap**
Ismail Recepi, Jacob Reynvaan, Arya Venugopal, Patrick Nagelmaier, Stefan Mollov, Silicon Austria Labs, AT

OP124 **Design and Control of a Variable Inductor for Power Grid Applications**
Jonas Pfeiffer, Michael Schmidhuber, Herbert Maier, SUMIDA Components & Modules, DE; Marco Jung, Fabian Schnabel, Fraunhofer Institute IEE, DE; Jonathan Billeke, University of Applied Sciences Bonn-Rhein-Sieg, DE

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Sven Matthias, Raffael Schnell, Chantal Toker-Bieri, SwissSEM Technologies, CH; Ian Wang, Ben Gao, Sunking Pacific Semiconductor Technologies, CN; Willi Schweizer, Gerhard Förschler, Schweizer Technologies, DE

PP004 **MMC Output Power Enhancement with IGBT and Diode Desaturation Control**
Vishwas Acharya Nayampalli, Gurunath Vishwamitra Yoganath, Hans-Günter Eckel, University of Rostock, DE

PP005 **High Power Density 2300V X2 IGBT Module with 7th Technology**
Di Li, Lixiao Liang, XiYu Ran, Rongzhen Quin, Qiang Xiao, Zhuzhou CRRC Times Semiconductor, CN

PP006 **HV LinPak Platform Featuring Si IGBT Trench and SiC Technology for Enhanced Traction Reliability**
Lluis Santolaria Perez, Slavo Kicin, Roman Ehrbar, Virgiliu Botan, Milad Maleki, Boni Boksteen, Andreas Baschnagel, Luca De Michielis, Andreas Rösch, Mohamed Musse, Martin Bayer, Hitachi Energy, CH; Edoardo Ceccarelli, Hitachi Energy, DE

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Abby Shih, Keysight Technologies, DE

PP008 **Infineon IHV-A 6.5 kV IGBT4 Module for HVDC (High Voltage Direct Current) Converter Design**
Martin Knecht, Mikel Olalquiaga, Infineon Technologies, DE

PP009 **A New, Fully molded IPM with 7th Generation IGBTs and Diodes**
Taejin Lee, Bokkeun Song, Jaewook Lee, Mankyo Jong, Byoungho Choo, Infineon Technologies, ROK; Laurent Beaurenaut, Infineon Technologies, DE

PP010 **Thermal Performance of the New 600 V CIPOS Micro IPM for HVAC and Heat Pump Fan Motor Drive**
David Jo, Byoungho Choo, Jinhyeok Kim, Jungjun Ha, Bokkeun Song, Infineon Technologies, KR; Laurent Beaurenaut, Infineon Technologies, DE

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Mudit Khanna, Milad Tayebi, Yifan Jiang, Jiankang Bu, Jeff Knapp Ideal Power, US

PP013 **2.7 kV Low-On-Resistance Gallium Oxide Trench Schottky Barrier Diodes with Double Drift Layer**
Sai Charan Vanjari, Aditya Bhat Kundapura, Matthew Smith, Martin Kuball, University of Bristol, UK

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PP014 **Size Up Challenge of β-Ga2O3 Crystal Growth with Cold Container Called OCCC Method**
Masanori Kitahara, Kei Kamada, Taketoshi Tomida, Yosuhiro Shoji, Yoshikawa Akira, FOX, JP; Vladimir Kochurikhin, Liudmila Gushchina, C&A, JP; Koichi Kakimoto, Tohoku University, JP

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Sami Ould-Ahmed, Ian Stubbs, Nexperia, UK

PP016 **SuperQ Technology: A Game-Changer in Power Device Innovation - Analysis of SuperQ 200V MOSFET Industry Leading Design, Manufacture and Performance**
Christopher Kocon, David Jauregui, Ryan Manack, Ideal Semiconductor, US

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Yuequan Hu, Jun Zhang, Tamanna Bhatia, Wolfspeed, US; Chen Wei, Wolfspeed, CN

PP018 **Characteristics of SiC MOSFET Switching and Thermal Properties for Power Semiconductor Applications**
Chang-Seung Ha, In Ho Kang, Yu Jin Seok, Junghun Kim, Hyoung Woo Kim, Korea Electrotechnology Research Institute, KR

PP019 **Integrity of Power Electronic Components on a Rotating PCB**
Milijana Odavic, Furkan Terzioglu, Jem Rongong, Kais Atallah, Hemanth V. Betha, University of Sheffield, UK

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Arne Iskra, Christian Hennig, Aylin Bicakci, Ronald Eisele, University of Applied Sciences Kiel, DE

PP021 **Comparison of Short-Circuit Detection and Protection Methods for SiC MOSFETs in EV Applications**
Vinay Kumar Krishnappa, Jan Riedel, Christoph Lüdecke, Flex Automotive, DE; Jiawen Fu, Texas Instruments, CN

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Amal Kaluarachchi, Nidula Warnakulasuriya, Vajira Dhanapala, Buckingham Magnetics, UK; Kapila Warnakulasuriya, Teesside University, UK

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Wei Wu, Kai Zhang, Zhiqing Yang, Helong Li, Lijan Ding, Hefei University of Technology, CN; Wen Zhou, Hefei Comprehensive National Science Center, CN; Shan He, Aalborg University, DK; Ziquian Zhang, Robert Schürhuber, Graz University of Technology, AT

PP025 **Standalone Current Sensor for Real-Time Supraharmonic Analysis (2–150 kHz) in Bidirectional Chargers for Electric Vehicles**
Antonio Miguel Muñoz Gomez, Alfonso Mareca Miralles, Javier Ballestín Fuertes, CIRCE Research Centre, ES; Jose Francisco Sanz Osorio, University of Zaragoza, ES

PP026 **DC-DC Converters for EVs: EMI-Comparison of a Phase-Shifted Bridge to an Interleaved Buck Topology**
Shounak Shashishekhar Kulkarni, Erik Kampert, Sönke Brandt, Klaus Hoffmann, Helmut-Schmidt-University, DE

PP027 **Multiple Feedback Architecture to Improve the Low-Frequency Immunity of an Active EMI Filter**
Timothy Hegarty, Texas Instruments, US; Naresh Adepu, Texas Instruments, IN

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Priyanka Ghosh, Klaus Hoffmann, Helmut-Schmidt-University, DE

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Bastian Korthauer, Thomas Ewald, Lukas Elmiger, Juergen Biela, ETH Zurich, CH

PP030 **High-Frequency Inductors using an Air Gap Fringing Shield: Cost-effective Design without Litz Wire**
Thomas Ewald, Juergen Biela, Taha Yildiz, Min Jeong, ETH Zurich, CH

PP031 **Improvement of Coupled Inductors by Combining Two Different Magnetic Materials**
Michael Schmidhuber, Jonas Pfeiffer, SUMIDA Components & Modules, DE

PP032 **A Ferrite Transformer Design for a Medium Voltage High Power Charging System**
Christian Blaum, Christoph Drexler, Jonas Pfeiffer, Michael Schmidhuber, SUMIDA Components & Modules, DE

PP033 **Simple Calculation Method of DC Superimposition Characteristics for Gapped Inductor**
Yuto Matsui, Ryota Shimamoto, Toshihisa Tajuta, Koji Maruyama, Fuji Electric, JP; Toshihisa Shimizu, Tokyo Metropolitan University, JP

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PP037 **500W Ultra-low Profile Full GAN LLC Converter**
Gokhan Sen, Infineon Technologies, AT; Yuanshi Li, Infineon Semiconductors, CN; Jitai Han, Infineon Technologies, KR

PP327 **Design of 50 kW 100 kHz Oil Immersed Transformer for Deep Sea Applications**
Gayan Wickramasinghe, University of Central Lancashire, UK; Gerald Schellin, Buckingam Magnetics, DE; Kapila Warnakulasuriya, David Hughes, Teesside University, UK; Nidula Warnakulasuriya, Vajira Dhanapala, Rivi Dhanapala, Buckingham Magnetics, UK

PP276 **Effect of Cutting Technology on the Soft Magnetic Properties of Nanocrystalline Cut Cores**
Inge Lindemann-Geipel, Merlin Thamm, Ahmed Eid, Thomas Weißgärber, Fraunhofer Institute IFAM, DE

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Yoshihito Yamagata, Kentaro Iwai, Hiroyuki Hyodo, Yoshiyuki Fukuda, Toshiba Materials, JP

PP041 **Micrometer Cantilever Beam Measurements at Joining Interfaces of AMB-Si3N4-Copper Substrates**
Axel Rost, Björn Matthey, Jochen Schilm, Fraunhofer IKTS, DE

PP042 **Influence of Transfer Molding Process on the Reliability of High Mass Epoxy Mold Compound Molded Package**
Dong Hu, Sebastiaan Kersjes, Albert Van Driel, Niek Van Haare, BESI, NL; Shatavisha Biswas, Sten Vollebregt, Delft University of Technology, NL

PP043 **Failure Evolution and Reliability Assessment of Epoxy Mold Compounds in Power Module Encapsulation**
Yanfei Zhao, Juergen Schuderer, Felipe Vicent-Dalcamim, Reza Soleimanzadeh, Stephan Wirths, Rajrupa Paul, Jean-Yves Loisy, David Gabriel Schauer, Hitachi Energy, CH

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Max Plumeier, Benjamin Sahan, Hannover University of Applied Sciences, DE; Nigel Springett, Springburo, DE

PP046 **Thermal-Interface-Material Degradation Detection Method via Internal Gate Resistance in an IGBT Chip**
Yuta Yamaoka, Chihiro Kawahara, Ken-ichi Morokuma,Takeshi Horiguchi, Yasushige Mukunoki, Mitsubishi Electric, JP; Yoichi Hironaka, Mitsubishi Electric Power Device Works, JP

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PP047 **Constructing a High-Current Zth-Test Bench with Low-Voltage MOSFETs for Power Semiconductor Modules**
Tobias Heise, Jan Fuhrmann, Hans-Günter Eckel, University of Rostock, DE

PP048 **Zth-Scope: Thermal Impedance Measurement System for Power Semiconductors with Variable Sample Time**
Paul Fuchs, Tobias Heise, Jan Fuhrmann, Hans-Günter Eckel, University of Rostock, DE

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Maurizio Tranchero, Ideas & Motion, IT

PP050 **Comprehensive Electric and Thermal Evaluation of SiC High Power Discrete Packages**
Josef Wildauer, Jon Azurza Anderson, Infineon Technologies, AT

PP051 **Reliability Assessment of Sinter and Solder Interconnections at Power Module-Heatsink Level**
Andres Socarras, Maurizio Fenech, Guilherme Barboza, MacDermid Alpha Electronics Solutions

PP052 **Electro-Thermal Influence of Interconnection Methods for PTC-Elements on Ceramic Substrates**
Mirko Kirchhoff, Henry Barth, Lars Rebenklau, Fraunhofer Institute IKTS, DE

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Martin Schulz, Littelfuse, D; Peter Thiemann, University of Applied Sciences South Westphalia, DE; Manuel Schöermann, Condensator Dominit, DE

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Niklas Stöcklein, Friedrich-Alexander University Erlangen, DE; Tim Augustin, Muhammad Nawaz, Hitachi Energy, SW

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Anantha Hegde, Asamira Suzuki, Hirokazu Nakamura, Takamune Kabashima, Koji Higashiyama, Keiji Akamatsu, Panasonic Industry, JP

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Irma Villar, Amaiur Mendi-Altube, Itsasne Landaburu, IKERLAN Technolgy Research Center, ES; Claudio Carretero, Jesús Acero University of Zaragoza, ES

PP057 **Mitigation of Current Spikes in Totem-Pole PFCs Which Use Discrete Boost-PFC Controllers**
Jim Honea, Sebastian Heinz, Nexperia, US

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PP058 **Performance Analysis of Discrete and Power Module SiC MOSFETs in On-Board Charger Applications**
Francesco Gennaro, Giuseppe Aiello, Dario Patti, STMicroelectronics, IT; Domenico Nardo, STMicroelectronics, US

PP059 **Three-Stage/-Phase Voltage/Current DC-link AC-AC Converter with Synergetic Control**
Christos Leontaris, Gean Sousa, Marcelo Heldwein, Technical University of Munich, DE

PP060 **Analysis and Optimization of GaN-Based AC-DC Converters for Enhanced ZVS Performance**
Michael Patt, University of Applied Sciences Kempten, DE; Antony K Peter, Lukas Weilenmann Weisser, Institute for Power Electronics, DE

PP061 **High-Density High-Performance Server PSU with 3-Level Flying Capacitor PFC and 500 kHz LLC**
Theodoros Mouselinos, Alex Rossi, Matteo-Alessandro Kutschak, Manuel Escudero, Infineon Technologies, A, David Meneses Herrera, Infineon Technologies, FI

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PP062 **Methodology for Implementing Simulation Models of 25 kV 50 Hz Traction Systems with Converter Power Stations**
Jan Leuchter, Jaroslav Novak, Petr Zizlavsky, Ladislav Mlynarik, Ondrej Sadilek, University of Pardubice, CZ

PP064 **Saliency-based Encoderless Railway Traction Drives Considering Current Unbalance**
Markus Vogelsberger, Alstom, AT; Hans Ertl, Thomas Wolbank, Eduardo Eduardo Rodriguez Montero, Technical University of Vienna, AT; Wolfram Teppan, LEM international, CH; Jörn Burk, LEM-Group, DE

PP065 **Modeling of Aircraft Transformer Rectifier Unit using SPICE Models for analyzing the Effects of SiC**
Ngoc Nam Pham, Jan Leuchter, Brno University of Technology, CZ

PP066 **Ultracompact Symmetrical Medium Voltage DC-DC Converter for Electrified Aircraft**
Malavika Santhosh Kumar, Moritz Kerscher, Marc-Pascal Boßle, Fraunhofer Institute IISB, DE

PP067 **Feasibility Study of a Hybrid Battery/Fuel Cell-Powered Electric General Aviation Aircraft**
Wolfgang Granig, Matteo Cuttini, Maurizio Incurvati, Infineon Technologies, AT; Roberto Petrella, University of Udine, IT

PP068 **Mission Profile-Based ANPC Inverter Design Aspect and Reliability Analysis**
Lukas Radomsky, Robert Keilmann, Regine Mallwitz, Technical University of Braunschweig, DE

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PP069 **Revolutionizing Electric Aviation: The Role of Silicon Carbide Semiconductors**
Arun Ashok, Dereje Woldegiorgis, Austin Crubow, Wolfspeed, US

PP070 **Cryogenic Inverter Design for Superconducting Electric Propulsion in Next Generation Aircraft**
Florian Kapaun, Ludovic Ybanez, Gowtham Galla, Ravi-Kiran Surapaneni, Gerhard Steiner, Christopher Dahmen, Airbus Central Research & Technology, DE; Ankit Pal, Adarsh Muraleedharan Saritha Nair, Airbus Upnext GmbH

PP071 **Prototyping and Evaluation of a Fault-Tolerant Three-Level TNPC Inverter for Aircraft Propulsion**
Chanuch Chaisakdanugull, Helmut-Schmidt-University, DE

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Roberto Scibilia, Texas Instruments, DE; Max Wang, Texas Instrument, CN; Bharat Agrawal, Texas Instruments, IN

PP074 **Design of a SiC-based High Bandwidth Switch-Mode Power Amplifier as Grid Emulator for a PHIL-System**
Anton Gorodnichev, Marco Jung, Fabian Schnabel, Jonas Steffen, Juan Alvaro Montoya Perez, Matthias Klee, Fraunhofer IEE, DE; Jonathan Billeke, University of Applied Sciences Bonn-Rhein-Sieg, DE

PP075 **A Plug and Play Three Terminal Active Power Decoupling Circuit**
Sagar De, Siva Prabhakar, Sandeep Anand, Indian Institute of Technology, IND

PP076 **GaN-Based 5 kW Four-Level Totem-Pole PFC Converter for AI Servers Power Supply**
Marco Palma, Efficient Power Conversion, IT; Michael de Rooij, Xiaoping Jin, Efficient Power Conversion, USA; Francesco Musumeci, Andrea Nicotera, EPC, IT; Carlo Lombardi, Microchip Technology, IT; Andreas Reiter, Microchip Technology, DE

PP077 **Series Connected Active Power Buffer Using a Coupled Inductor for a Grid Inverter**
Pelle Weiler, Transdisciplinary Science, JP; Toshiyuki Fujita, Hiroshi Fujimoto, University of Tokyo, JP; Takayuki Miyajima, Yoshiki Yasuda, Akio Yamagiwa, Daikin Industries, JP

PP078 **GaN Based Class DE Inverter Operating Up to 40.68MHz with Dead Time Optimization**
Vincent Blanchon, Ghislain Despesse, Sébastien Carcouet, CEA-Leti, FR

PP079 **Prediction of voltage build up in an electrically floating high voltage high power supply**
Kapila Warnakulasuriya, David Hughes, Teesside University, UK; Vajira Dhanapala, Nidula Warnakulasuriya, Buckingham Magnetics, UK

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PP080 **Voltage Overshoot Reduction for Bidirectional Switches in Current Source Inverters**
Max Wagner, Christian Schumann, Jennifer Piela, Benjamin Hud Zacher, University of Applied Sciences Kaiserslautern, DE

PP081 **High Power Density and High Efficiency ac-dc 250W Adapter based on GaN HEMTs**
Angelo Giordano, Marco Torrisi, Sebastiano Messina, Daniele Sfilio, STMicroelectronics, IT; Mario Cacciato, University of Catania, IT

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PP082 **The Effect of Load Impedance on the Efficiency of a Wireless Power Transfer System with an Additional Resonant Coil**
Nikolay Madzharov, Desislav Iliev, Technical University of Gabrovo, BG

PP083 **New Integrated Wired and Wireless Charging Systems for Electric Vehicles**
Cheol-Hee Jo, Tae-Jun Jeong, Dong-Hee Kim, Chonnam National University, RK

PP084 **Impact of Insulator Thickness and Material on Partial Discharge in High-Frequency OBC Transformers in EV Applications**
Hasan Mousavi-Somarin, Norbert Messi, Farshid Sarrafin Ardebili, Najib Bouzidi, Faissal Mataich, Valeo, FR

PP085 **Novel Voltage Control for Dual Active Bridge CLLC EV Fast DC Chargers**
Carlos Costas Sos, Carlos Barcelona Aznar, Javier Ballestín Fuertes, Antonio Miguel Muñoz Gomez, CIRCE Foundation, ES

PP086 **Improved Sensorless Synchronous Rectification for Resonant Based DC-DC Convertes**
Faissal Mataich, Larbi Bendani, Norbert Messi Bene Eloundou, Nadjib Bouzidi, Hasan Mousavi-Somarin, Valeo, FR

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PP087 **Dynamic Reverse Bias: Lifetime Modeling for SiC MOSFET Automotive Application**
Alessandro Sitta, Giuseppe Mauromicale, Michele Fiore, Luciano Salvo, Benedetto Amata, Massimo Nania, Simone Buonomo, Michele Calabretta, STMicroelectronics, IT; Domenico Nardo, STMicroelectronics, US

PP088 **Investigation of the Degradation of 1200V SiC-MOSFETs Stressed by Different Gamma Radiation Dose**
Martin Rasch, Sönke Brandt, Klaus Hoffmann, Lucas Busch, Helmut-Schmidt-University, DE; Alexander Müller, Martin Wehrstedt, WIS, DE

PP089 **Analysis of the Surge Capability and Degradation Characteristics of 1.2 kV SiC SBD Embedded MOSEFTs**
Gyuhyeok Kang, Sangyeob Kim, Kumoh National Institute of Technology, KR; Ogyun Seok, Hyowon Yoon, Dusan Baek, Sumin Park, Pusan National University, KR

PP090 **SmartSiC 150 & 200mm Engineered Substrate: Addressing Bipolar Degradation of SiC MOSFETs Body Diode**
Eric Guiot, Alexis Drouin, Frédéric Allibert, SOITEC, FR; Guillaume Gelineau, Sophie Barbet, Romain Laviéville, Philippe Godignon, CEA, FR; Tom Becker, Jurgen Leib, Fraunhofer IISB, DE

PP091 **Package Dependency Investigation of Short Circuit Capability of SiC MOSFETs under Type 1 Condition**
Rony Thomas, Zhe Yu, Sebastian Fahlbusch, Nexperia, DE

PP092 **Computation of Dynamic Rds(ON) for WBG devices using mathematical modelling on Oscilloscopes**
Vivek Shivaram, Niranjan Hegde, Srikrishna N.H., Shubha B, Tektronix, IN

PP093 **Impact of Gate Turn-off Voltage on Body Diode Degradation of the Latest Generation SiC MOSFET**
Mohammed Amer Karout, Niamh Arnold, Craig Fisher, Arne Benjamin Renz, Olayiwola Alatise, Peter Michael Gammon, University of Warwick, UK

PP094 **Analysis of Threshold Voltage Hysteresis on Switching Speed of SiC MOSFET with Kelvin and Non-Kelvin Packages**
Ziheng Yuan, Man Zhang, Helong Li, Zhiqing Yang, Shuang Zhao, Lijian Ding, Hefei University of Technology, CN

PP095 **Analysis of SiC MOSFET Degradation in Gate Switching Stress by Small-Signal Gate Impedance Method**
Rishi Krishna Balasubramanian Saraswathy; Sotirios Maslougkas, Basil Vlachakis, Agnimitra Saha, Onsemi, SW; Jaume Roig, Onsemi, B; Lukas Richert, Sara Kuzmanoska, Onsemi, DE

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PP096 **Experimental Dynamic Saturation Current Evaluation of 650V GaN GITs**
Borja Alberdi, Mikel Mazuela, University of Mondragon, ES; Jon San-Sebastian, Ikerlan Technology Research Centre, ES; Roberto Sánchez, Orona EIC, ES; Jon Azura, Clemens Ostermaier, Infineon Technologies, AT

PP097 **Modeling of the Dynamic On-State Resistance of GaN-HEMTs**
Benedikt Kohlhepp, Sibylle Dieckerhoff, Technical University of Berlin, DE; Daniel Breidenstein,Thomas Dürbaum, Friedrich-Alexander-University Erlangen-Nuremberg, DE; Alexander Pawellek, Technical University of Applied Sciences Würzburg-Schweinfurt, DE

PP098 **Extraction of Dynamic Threshold Voltage and on-state Resistance of GaN HEMT in Hard-Switching Operation**
Tianyu Li, Andreas Lindemann, Otto-von-Guericke University Magdeburg, DE

PP099 **Analysis of Instability of Dynamic Ron in GaN eHEMTs by VDS, Temperature and Hot-Electron-Stress**
Xiangyu Wang, Saeed Jahdi, Jun Wang, Bernard Stark, University of Bristol, UK

PP100 **Investigation of a Single-Gate GaN HEMT as Bidirectional Switch in a Low Voltage Multilevel Topology**
Daniel Grieshaber, Richard Reiner, Michael Basler, Stefan Mönch, Rüdiger Quay, Fouad Benkhelifa, Fraunhofer Institute IAF, DE

PP101 **Investigation of Very Low Ron 650V GaN FETs in Copper Clip Package for Use in High Power Converters**
Sebastian Klötzer, NEXPERIA, DE; Jim Honea, Nexperia, US

PP102 **Enhancing DC-DC Boost Converter Performance with Vertical GaN Split-RSO-MOSFET**
Nilesh Kumar Jaiswal, Samaneh Sharbati, Thomas Ebel, University of Southern Denmark, DK

PP103 **Optimization of Current Aperture Length for Enhanced RF Performance in GaN CAVET Devices**
Ashrafun Naher Pinky, Samaneh Sharbati, University of Southern Denmark, DK

PP104 **650V Half-bridge GaN with Integrated Driver for 1kW Motor Drive Applications without Heatsink**
Zhemin Zhang, Infineon Technologies, US; Bainan Sun, Javier Ariza, Infineon Technologies, DE; Steve Park, Infineon Technologies, KR

PP105 **Comparative Analysis of CoolGaN BDS and B2B UDS Dynamic Ron and Switching Loss Performance**
Prodyut Das, Infineon Technologies, DE; Kennith Kin Leong, Christian Koller, Infineon Technologies, AT

PP106 **Enabling Features for GaN in Motor Drive Applications**
Matteo Uccelli, Navitas Semiconductor, US

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PP107 **A 10kW Dual Channel MPPT with Three-Level Topology Implemented Using a Single 32-bit ARM MCU**
Fabrizio Di Franco, Ranajay Mallik, Akshat Jain, STMicroelectronics, IND

PP108 **Repair Techniques for Ceramic Based Sustainable Power Electronic Modules**
Lars Rebenklau, Henry Barth, Fraunhofer Institute IKTS, DE

PP109 **Investigation of a Modular AC Stacked Pure Sine Inverter for Low- Voltage Grid Storage Applications**
Martin Hübner, Dietmar Fehrenbach, Marek Galek, Munich University of Applied Sciences, DE

PP111 **Enhancing Automotive Batteries: Onboard EIS with a Dedicated Converter Solution**
Roger Bautista Florensa, Alberto Gómez Nuñez, FICOSA, ES; Daniel Montesionos-Miracle, Daniel Heredero-Peris, CITCEA-UPC, ES; Carlos Abomailek Rubio, Syensqo, ES

PP112 **Parameterization of Traction Battery Models for Performance Evaluation in Ecological Rail Transport**
Jan Leuchter, Ondrej Sadilek, Jaroslav Novak, Ladislav Mlynarik, University of Pardubice, CZ; Ngoc Nam Pham, Brno University of Technology, CZ

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PP113 **Transient Junction Temperature Measurement Error of SiC MOSFETs in Power Cycling – A Parameter Study**
Jakob Breuer, Fabian Dresel, Juergen Leib, Andreas Schletz, Schletz, DE; Bernd Eckardt, Fraunhofer Institute IISB, DE

PP114 **Dynamic Gate Stress: Advanced Characterization of an Automotive Grade Planar-Gate 1200 V SiC MOSFET**
Michele Fiore, Alessandro Sitta, Giuseppe Mauromicale, Michele Calabretta, STMicroelectronics, IT; Francesco Iannuzzo, Polytechnical University of Turin, IT; Gaetano Sequenzia, University of Catania, IT

PP115 **Thermally stable Operating Point for SiC MOSFETs in the Power Cycling Test**
Fabian Dresel, Lukas Farnbacher, Juergen Leib, Bernd Eckardt, Fraunhofer IISB, DE

PP116 **Unipolar and Bipolar Test Voltage in Conventional Partial Discharge Measurement Setups**
Manuel Wild, Robert Bosch, DE

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PP117 **Improving POL Thermal Cycling Reliability to 200deg.C through CTE Matching of a Back Side Substrate**
Kenichi Koi, Jumpei Tokutake, Yoichi Nishihara, Koji Bando, Shinko Electric Industries, JP

PP118 **10 MHz Accelerated Gate-Switching Stress Tests with In-Situ Degradation Monitoring of SiC MOSFETs**
Ruben Schnitzler, Tobias Fink, Dominik Koch, Ingmar Kallfass, David Halmer, University of Stuttgart, DE

PP119 **Long-term Reliability of Discrete 1200 V SiC Trench MOSFETs at 200°C Junction Temperature**
Ingo Voss, Christian Heidorn, Infineon Technologies, DE

PP120 **Improving the Encapsulation Reliability of Epoxy Sealing Interface through Surface Treatment**
Liu Jun, Xiao Qiang, Zeng Jie, Shi Tingchang, Zhang Haoliang, Chang Guiqin, Luo Haihui, ZhuZhou CRRC Times Semiconductor, CN

PP121 **Evaluation of Multilayer Passivation for Enhanced HV-H3TRB Reliability of High Power FRD Modules**
Muhammad Waseem, Lee Coulbeck, Joseph Perez, Peter Coates, Yangang Wang, Dynex Semiconductor, UK; Ka-Hong Loo, Hong Kong Polytechnic University, HK

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PP122 **An Investigation of Supercapacitor Energy Storage System for Electric Vehicle Regenerative Braking**
Borislav Dimitrov, University of Warwick, UK; Richard McMachon, Warwick University, UK

PP123 **Power Loss Devices Stress Optimisation for Hybrid Si-SiC Switch Design Under High Current Load**
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Kapila Warnakulasuriya, David Hughes, Teesside University, UK; Nidula Warnakulasuriya,Vajira Dhanapala, Buckingham Magnetics, UK

PP273 **A Hybrid Approach for the Data Center Power Efficiency and Reliability Improvement**
Amal Kaluarachchi, David Gurwicz, David Hughes, Vajira Dhanapala, Buckingham Magnetics, UK; Kapila Warnakulasuriya, Teesside University, UK

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PP274 **Novel Rectifier Technology for Power Efficiency Improvement of Telecommunications Base Stations**
Gayan Wickramasinghe, University of Central Lancashire, UK; Vajira Dhanapala, Amal Kaluarachchi, Buckingham Magnetics, UK; Kapila Warnakulasuriya, David Hughes, Teesside University, UK

PP275 **Nanocrystalline Alloys with High Saturation Polarization by Rapid Heat-Treating Methods**
Merlin Thamm, Inge Lindemann-Geipel, Ahmed Eid, Thomas Weißgärber, Fraunhofer IFAM, DE

PP277 **Nanocrystalline Application in Safer and More Efficient Trans-former for Photovoltaic Grid Integration**
Andre Oliveira, CBMM, BR

Thermal Management Cooling Strategies

PP278 **A Study on Power Dissipation and Thermal Resistance of Liquid-Immersion Cooled SiC Power Modules**
Claudia Ferreira, Gerardo Calderon-Lopez, Daniel Graham, Ahmed Ali, Mouhsine Fjer, Ingo Ludtke, Mark Bowkett, Meghna De, Jayakrishnan Chandrappan, Compound Semiconductor Applications Catapult, UK

PP279 **Advanced Cooling of Power Electronics with Copper Cold-Sprayed Aluminium Heatsinks & Busbars**
Michael Dasch, Reeti Singh, Markus Brotsack, Leonhard Holzgaßner, Jan Kondsas, Max Meinicke, Impact Innovations, D

PP280 **Large-area Ag Sintering (40 mm × 51 mm) Application for Transfer Molded Power Module and Al Cooler**
Ryotaro Seo, Oji Sato, Takayuki Ishihara, Kenji Hayashi, ROHM, JP

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Tomoki Kato, Katsuhiko Hidaka, Ayano Imai, Yuya Koga, Mitsubishi Chemical, JP
Toshiyuki Sawamura, Mitsubishi, JP

PP282 **Emerging Cu-Graphene Composites for Enhanced Thermal Management in SiC Power Modules**
JH Chen, Jing-Yao Chng, Wei-Zhong Huang, Sheng-Tsai Wu, Tai-Jyun Yu, Cheng-Han Tsai, Chen-Min Chen, PowerX Semiconductor, TW; Lung-Chuan Tsao, National Pingtung University of Science and Technology, TW

PP283 **Analysis of Coolant Transients Impact on SiC Power Module in Traction Inverter**
Chi Zhang, Riccardo Negri, Volvo Cars, SW

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PP284 **Overvoltage Protection of Power Semiconductors in Solid-State DC Breaker Applications**
Karsten Haehre, Benedikt Mueller, Littelfuse, DE

PP285 **New Solid-State Isolators Enable Superior Pulse-Current Robustness in Si-MOSFETs**
Wolfgang Frank, Infineon Technologies, DE

PP286 **A predictive maintenance concept for LVDC power electronics-based circuit breakers using AI**
Dong Liu, Dimitrios Baros, Akshay Mahajan, Martina Josevski, Eaton, DE; Stefan Schmies, Juan Mena Carrillo, Infineon Technologies, DE; Martin Schellenberger, Lena Köhler, Fraunhofer Institute IISB, DE; Johann Wagner, Anna Rusakova, GEFASOFT Engineering, DE

PP287 **Modular Clamping Circuit for SSCBs, Operated in Cryogenic**
Florian Kapaun, Airbus Central Research & Technology, DE; Christopher Dahmen, Gerhard Steiner, Airbus, DE

PP288 **Ultra Fast Bidirectional SiC-Solid-State Circuit Breaker for 800V/400A Aircraft Applications**
Christopher Dahmen, Florian Kapaun, Airbus Central Research & Technology, DE; Gerhard Steiner, Airbus, DE; Hubert Rauh, Florian Bayer, Fraunhofer Institute IISB, DE

Multilevel and HVDC Converter

PP289 **Switched Capacitor Cascaded Multilevel Inverter with Extended Sinusoidal Modulation Range for Drives**
Vaidika Pardhi, Vibhore Jain, Gopakumar K., Umanand Loganathan, Indian Institute of Science, IN; Vivek R. S., College of Engineering Trivandrum, IN; Dariusz Zielinski, Lublin University of Technology, PL

PP290 **Analytical Chip Area Optimization of SiC Half-Bridge MMC-Submodules Covering all Operating Points**
Michael Rauh, Mark-M. Bakran, University of Bayreuth, DE

PP291 **High Efficiency Interleaved Flying Capacitor For Fuel Cell And Li-Ion Battery Charger**
Thibault Bertin Riviere De La Souchere, CEA, FR; Sébastien Carcouet, CEA-Leti, FR

PP292 **Unfolded Resonant Converter with Large Conversion Ratio**
Francisco Azcondo, Christian Branas, Alberto Pigazo, Rosario Casanueva, Francpassive componenisco Javier Díaz, University of Cantabria, ES; Paula Lamo, International University of la Rioja, ES

PP294 **Analog Regulation of Voltage from an Alternating High Voltage Source**
Priyanka Ghosh, Michael Meissner, Klaus Hoffmann, Helmut-Schmidt-University, DE; Rainer Marquardt, Universität der Bundeswehr Munich, DE

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Felix Buhlmann, Dominik Schlafli, Wolfram Teppan, LEM international, CH

PP296 **Improving the Usability of Calorimetric Measuring Chambers for Reliable Thermal Measurements**
Nikolas Förster, Daniel Urbaneck, Maximilian Schenke, Anastacia Ebers, Nicolas Schönlau, Frank Schafmeister, Paderborn University, DE; Oliver Wallscheid, University of Siegen, DE

PP297 **Compensation Techniques for Inductive-Distorted Measurements of Fast Transients in Double Pulse Test**
Christian Lottis, Bonn-Rhein-Sieg University of Applied Sciences, DE; Sebastian Sprunck, Bikash Sah, Marco Jung, Fraunhofer IEE, DE

PP298 **In-Circuit Switching Loss Measurement of a Three-Level T-Type Inverter with Heterogeneous Switches**
Niklas Krug, Dietmar Fehrenbach, Marek Galek, University of Applied Sciences Munich, DE

PP299 **Power Losses Measurement Method for High Efficiency MV Oil-Insulated DC-DC Converter**
Pierre Le Métayer, Piotr Dworakowski, SuperGrid Institute, FR; Cyril Buttay, University of Lyon, FR; Drazen Dujic, EPFL, CH

PP300 **Non-Intrusive Switching Loss Measurement vs. Double Pulse Test: Accuracy Analysis**
Anliang Hu, Ruida Zhang, Maxwell Guerne-Kieferndorf, Juergen Biela, ETH Zurich, CH

PP301 **Application of Measurements in a PV Inverter for the Determination of Aging and its Driving Factors**
Niclas Reitz, Sebastian Sprunck, Marco Jung, Fraunhofer Institute IEE, DE

PP302 **Design Criteria for Output Current Measurement Circuit in High- Frequency Series-Resonant Inverter**
Fernando Gonzalez-Hernando, Pablo Risquez, Itsasne Landaburu, Roberto Moreno, Irma Villar, IKERLAN Technology Research Center, ES

PP303 **Back-to-back test benches for application-close evaluation of power electronics**
Nicolas Degrenne, Mitsubishi Electric Europe, FR; Vincent Quemener, Merouane Ouhab, Pierre-Yves Pichon, Guillaume Regnat, Mitsubishi Electric R&D Centre, FR

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PP304 **High Frequency Step-Up DC-DC Converter with Integrated Inductances**
Oleksandr Matiushkin, Tallinn University of Technology, EE; Javier Gutiérrez-Escalona, Carlos Roncero-Clemente, Enrique Romero-Cadaval, University of Extremadura, ES; Oleksandr Husev, Gdansk University of Technology, PL

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PP305 **Hybrid Switched Capacitor Converter with GaN Devices**
Daniel Kostynski, Mario Ursino, Roberto Rizzolatti, Erik Medeossi, Infineon Technologies, AT

PP306 **Design of a High Power Interleaved Bididirectional DC-DC Converter Based on Sic MOSFETs**
Alejandro Palacio, Michael Patt, University of Applied Sciences Kempten, DE

PP307 **Power Loss Analysis of the SI-SIDO Boost-Buck-Boost Converter during the Continuous Switching Method**
Babak Rooholahi, Hans-Günter Eckel, University of Rostock, DE

PP308 **Flyback-based Input Series Converter as a Wide Input Auxiliary Power Supply**
Ashish John Thomas, Reza Mirzadarani, Mohamad Ghaffarian Niasar, Delft University of Technology, NL

PP309 **Analysis and Characterization of the LLC Resonant Converter in Sub-Resonant Operation Region**
Daniel Urbaneck, Frank Schafmeister, Paderborn University, DE

PP311 **LLC Converter for Power Switch Evaluation in Resonant Topology and back-to-back Loading Method**
Tomislav Turscak, Infineon Technologies, AT; Paulo Katsuyuki Muraishi Kamimura, Infineon Technologies, BR

PP312 **Design of High-Density and High-Efficiency 8kW LLC converter**
Theodoros Mouselinos, Antonello Laneve, Manuel Escudero, Matteo-Alessandro Kutschak, Alex Mirtchev, Infineon Technologies, AT; David Meneses Herrera, Infineon Technologies, FI

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PP313 **GaN Gate Driver for SiC MOSFETs in a Megawatt Inverter Application**
Yijun Ye, Siemens, DE; Alexander Hensler, Siemens Healthineers, DE; Thomas Basler, Josef Lutz, Chemnitz University of Technology, DE

PP314 **Enhanced Dynamic Active Discharge Approach for SiC MOSFETs Utilizing Advanced Gate Drivers**
Lan Fang, Pushkar Kulkarni, Ismail Yasar, Joachim Joos, Robert Bosch, DE; Burkhard Ulrich, University of Applied Sciences Reutlingen, DElott

PP315 **GaN HEMT Gate Driver Circuit Utilizing Variable Capacitors**
Pawel Kubulus, Henrik Hansen, Asger Jørgensen, Szymon Beczkowski, Stig Munk-Nielsen, Aalborg University, DK

PP316 **Utilization of a Reinforcement Learning Algorithm to Optimize a Multi-Level Gate Driver Circuit**
Celine Lawniczak, Martin Pfost, TU Dortmund University, DE

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PP317 **A Current Source Active Gate Driver for dvdt Control and Voltage Overshoot Reduction for SiC MOSFETs**
Lukas Kappel, Martin Pfost, TU Dortmund University, DE

PP318 **A Desaturation-based Short Circuit Protection Technique for Quasi-Two-Level Converters**
Anand Krishnamurthy Iyer, Thiago Batista Soeiro, University of Twente, NL; Henk Polinder, Delft University of Technology, NL

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Yifu Zhang, Emanuel Eni, Shashank Karanth, Infineon Technologies, DE

PP320 **A 350V Power Management IC for GaN-Based PV Inverters with Local High-/Low-Side Sensing and Control**
Bernhard Wicht, Christoph Hillmer, Tobias Brinker, Leibniz University Hannover, DE; Jens Friebe, University of Kassel, DE

PP321 **Dynamic Gate Driver – Demonstrator Setup and System Efficiency Analysis for an Automotive EDU**
Shino George, Andreas Andersson, Simon Klacar, InfiMotion Technology, SW; Saeid Haghbin, Andreas Käck, Carl Petersson, QRTECH, SW

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PP322 **A Novel Method for V2COT Control with Internal Ramp Compensation for Automotive Applications**
Niccolo' Brambilla, Stefano Corona, STMicroelectronics, IT

PP323 **Self-Synchronized Multifrequency Plant Measurement of a Boost Converter**
Sophia Rösel, Daniel Breidenstein, Thomas Dürbaum, Friedrich-Alexander-University Erlangen-Nuremberg, DE

PP324 **Modelling and Control of a Dual Active Bridge Applied to an Uninterruptible Power Supply**
Florian Weiß, Heinrich Steinhart, Manuel Häußermann, University of Applied Sciences Aalen, DE

PP325 **Continuous Control of Bidirectional Series-Resonant Converters using Pulse-Skipping**
David Bohne, Christian Peter Dick, Cologne University of Applied Sciences, DE

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Hongming Zhao, Abhijith Damodar, Joachim Joos, Robert Bosch, DE; Valentijn De Smedt, KU Leuven, BE