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PCIM Europe 2020 Conference Program Features More Than 300 Contributions

Running in parallel to the extensive exhibition, the PCIM Europe conference, which will be held from May 5 – 7, 2020 in Nuremberg, will offer a multifaceted program consisting of lecture and poster presentations, keynotes, special sessions and exclusive seminars and tutorials.

Current research is focused on the applications of wide-bandgap technologies at component and chip level, in packaging and interconnection technologies and packaging design. Technical advances in silicon carbide (SiC) and gallium nitride (GaN) devices have also made it possible to create power electronic converters and evaluate the tremendous advantages of using them in systems.

A major part of the PCIM Europe Conference 2020 will be dedicated to the latest innovations, in particular those relating to the robustness of devices and reliability of systems as well as their excellent overload and short-circuit behavior. Future packaging designs featuring extremely low leakage inductance to control ultra-fast switching times will be discussed.

Experts from science and industry will present the latest findings on new materials that combine modified thermal expansion coefficients with very good thermal management to extend the service life of devices. Innovative system solutions with intelligent control concepts for managing high di/dt and dv/dt values will also be on show. The program includes the following presentations:

“3.3 kV All SiC Module with 1st Generation Trench Gate SiC MOSFETs for Traction Inverters” by Yusuke Sekino et al, Fuji Electric, Japan.

“dv/dt Control Methods for United SiC FETs with Internal Cascode Structure” by Zhongda Li et al, United Silicon Carbide, USA.

“Experimental Evaluation and Analysis of Dynamic On-Resistance in Hard- and Soft-Switching Operation of a GaN GIT” by Xiaomeng Geng et al, TU Berlin, Germany.

A further highlight of the PCIM Conference 2020 will be system designs with new low-inductance package designs, chip interface technologies for extended temperature ranges, and multi-ceramic substrate materials with integrated cooling for chips with high power density and extremely fast switching operations. A major goal of these module variants is to achieve significantly higher load cycles and provide new materials for highly effective heat dissipation combined with high insulation strength.

Especially when using SiC components with higher dielectric strength, important questions arise regarding possible lead applications and system advantages and their intersection with economic efficiency. These and other questions will be discussed during the conference. Experts will share their knowledge in the following contributions:

- “An Economic Evaluation of SiC-MOSFET Modules in Wind Turbine Converters” by Robin Schmidtke et al, University of Rostock, Germany.
- “Advantages and Challenges of Using SiC MOSFETs in a High Power Density Insulated HV/LV DC-DC Converter” by Stephan Zeltner et al, Fraunhofer IISB, Germany.
- “Monolithic GaN Inverter Experimental Investigations” by Dominique Bergogne et al, CEA-Tech Grenoble, France.
- “Power Cycle Lifetime of Over 320,000 Cycles at $T_{jmax} = 200^{\circ}C$ Realized by a Fatigue-Free Chip Top Structure” by Hiroshi Notsu et al, AIST, Japan.

Interested participants can also obtain comprehensive information about the intelligent management of energy storage systems. Special attention will be given to discussing and evaluating system-relevant electrical functions, sensors for monitoring the state of charge and aging of individual battery cells, and optimized charging strategies designed to extend battery life.

For the first time, the PCIM Europe Conference will offer a special session on the additive manufacturing of components. These 3D-printed components are used, among other things, as integrated heat sinks in the

automotive industry. Three further special sessions will focus on the topics of "Reliability and Safety of Energy Storage Systems," "Battery Management in Automotive Applications," and "Rail Traction Power Supplies".

In addition to a keynote presentation on "Electric Cars," attendees to the conference can also look forward to two more keynote presentations on "Battery Energy Storage Systems: Past, Present and Future" by Ahmed Elasser from the GE Global Research Center in the USA and "Innovative Data Centers Power Infrastructure Solutions" by Roland Hümpfner from Huawei Technologies in Germany.

"This year's PCIM Europe Conference features outstanding presentations on key developments in power electronics," states Professor Leo Lorenz, general conference director of PCIM Europe. These developments include aspects of future system development for energy storage systems and new approaches for producing power electronic components using additive manufacturing techniques.

You can register for the PCIM Europe Conference at pcim.de/registration. You can find out more about the PCIM Europe Conference at <http://www.pcim-europe.com/>.