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| **Press release** | 9 May 2023 |
| **Embargo 9 May 2023, 10 a.m.** Award winners of the PCIM Europe conference 2023 announced  | Vineeta ManglaniTel. +49 711 61946-297Vineeta.Manglani@mesago.com[pcim-exhibition.com](http://www.pcim-exhibition.com/) |

**Just in time for the start of the PCIM Europe conference, the first winners have been announced: A total of five outstanding submissions convinced the jury during the evaluation process.**

Since 2008, the PCIM Europe Conference has been presenting this annual honor to young talents in the power electronics industry. The winning contributions will be presented by the successful candidates at the conference from 9.5.2023 – 11.5.2023.

Three Best Paper Awards, one Young Engineer Award and one Young Researcher Award were honored once again this year. The PCIM Europe Advisory Board, chaired by Prof. Dr. Leo Lorenz, ECPE, selected the five winners from over 400 submissions. The main criteria were the timeliness, relevance and quality of the submission.

The awards were presented by Prof. Dr. Leo Lorenz and this year's conference sponsors Semikron Danfoss, Littelfuse, Infineon, VW and Mitsubishi Electric. The winners of the awards will also receive prize money of €1,000.

The Best Paper Award honored the top three submissions overall. Engineers aged 30 or younger were eligible to apply for the Young Engineer Award. Since 2022, the Young Researcher Award has been given to an author aged 30 or under from the field of science and research institutions.

The winners of the three Best Paper Awards are:

**Ralf Schmidt, Siemens, Germany**

Impact of Current Density on Wire Bond Lifetime – Power Cycle Testing with Clamped VCE for Realistic Current Stress

**Martin Guillet, SuperGrid Institute, France**

Design and Testing of a Compact Dry Insulated Medium Frequency Transformer Prototype for Medium Voltage Applications

**Hamzeh Beiranvand, Christian-Albrechts-University Kiel, Germany**

Advanced Solid-State-based Protection Scheme for High-Voltage Li-ion Battery Energy Storage System

The Young Engineer Award was given to:

**Leonhard Hertenstein, Mercedes Benz, Germany**

Machine-Learning Approach to Model Junction Temperatures in Automotive Inverters

The winner of the Young Researcher Award is:

**Minh Nhut Ngo, CEA, France**

Implementation and Characterization of a 200 kW Full-SiC Isolated DC-DC Converter for Future Medium Voltage PV Plants

**Abstracts of the Best Papers:**

**Ralf Schmidt, Siemens, Germany**

Impact of Current Density on Wire Bond Lifetime – Power Cycle Testing with Clamped VCE for Realistic Current Stress

In power cycling tests, end-of-life failure modes of IGBT modules are provoked by repetitive DC current pulses. However, in real-life inverter operation a big portion of the power losses is due to switching events and much smaller currents are present in the module. Especially the wire bond lifetime depends on the current density and exaggerated test load currents can lead to early wire bond lift-off. This article presents experimental results on the impact of current density on wire bond lifetime and introduces a novel PC test method that allows for testing with moderate currents.

**Martin Guillet, SuperGrid Institute, France**

Design and Testing of a Compact Dry Insulated Medium Frequency Transformer Prototype for Medium Voltage Applications

Medium voltage solid state transformers with a modular structure require compact insulated medium frequency transformers with high efficiency to be an attractive solution. In this paper, the design, prototyping and test of a cast resin 12 kV class insulated medium frequency transformer with more than 99.5% efficiency and more than 5kW/L power density is described. Dielectric performances are demonstrated experimentally. An accurate measurement method for the losses as well as a full load test method are also presented.

**Hamzeh Beiranvand, Christian-Albrechts-University Kiel, Germany**

Advanced Solid-State-based Protection Scheme for High-Voltage Li-ion Battery Energy Storage System

Safety issues such as external short-circuit (ESCs) increase discharge rate and hence impose impacts on Li-ion batteries by raising the temperature. To minimize these effects, high-speed protection schemes are required to eliminate ESCs.

**Abstract of the Young Engineer Award Paper:**

**Leonhard Hertenstein, Mercedes Benz, Germany**

Machine-Learning Approach to Model Junction Temperatures in Automotive Inverters

Increasing power density of automotive inverters lead to an increasing demand for accurate lifetime and reliability models. As such models are closely dependent on junction temperatures, they benefit from accurate temperature estimation methods. In this contribution, a machine-learning approach to model semiconductor junction temperatures is presented. The model was trained and evaluated with data from a test bench incorporating a 1200 V SiC power module. The data pipeline, model performance, benefits and limitations are shown and discussed.

**Abstract of the Young Researcher Award Paper:**

**Minh Nhut Ngo, CEA, Frankreich**

Implementation and Characterization of a 200 kW Full-SiC Isolated DC-DC Converter for Future Medium Voltage PV Plants

Nowadays, taking into account the new projects of photovoltaic (PV) power plants, novel architectures with an intermediate medium-voltage DC (MVDC) collector are under consideration. Thus, high-power isolated DC-DC converters are key components to accelerate the deployment of these architectures. The author presents the implementation and characterization of  a prototype which is a 200-kW two-stage isolated DC-DC converter based on Medium Voltage SiC Power Modules.

**About Mesago Messe Frankfurt**

Mesago, founded in 1982 and located in Stuttgart, specializes in exhibitions and conferences on various topics of technology. The company belongs to the Messe Frankfurt Group. Mesago operates internationally and is not tied to a specific venue. With around 150 members of staff Mesago organizes events for the benefit of more than 3,300 exhibitors and over 110,000 trade visitors, conference delegates and speakers from all over the world. Numerous trade associations, publishing houses, scientific institutes and universities work with Mesago closely as advisers, co-organizers and partners. ([mesago.com](https://www.mesago.de/en/Mesago/home.htm))

**Background information: Sustainable Messe Frankfurt**

The Messe Frankfurt Group is one of the world’s leading trade fair, congress and event organisers with their own exhibition grounds. With a workforce of some 2,200\* people at its headquarters in Frankfurt am Main and in 28 subsidiaries, it organises events around the world. Group sales in financial year 2022 were around €450 million\*. We serve our customers’ business interests efficiently within the framework of our Fairs & Events, Locations and Services business fields. One of Messe Frankfurt’s key strengths is its powerful and closely knit global sales network, which covers around 180 countries in all regions of the world. Our comprehensive range of services – both onsite and online – ensures that customers worldwide enjoy consistently high quality and flexibility when planning, organising and running their events. We are using our digital expertise to develop new business models. The wide range of services includes renting exhibition grounds, trade fair construction and marketing, personnel and food services.
Sustainability is a central pillar of our corporate strategy. Here, we strike a healthy balance between ecological and economic interests, social responsibility and diversity.

For more information, please visit our website at: [www.messefrankfurt.com/sustainability](https://www.messefrankfurt.com/frankfurt/en/company/sustainability.html)

With its headquarters in Frankfurt am Main, the company is owned by the City of Frankfurt (60 percent) and the State of Hesse (40 percent).

For more information, please visit our website at: [www.messefrankfurt.com](https://www.messefrankfurt.com/frankfurt/en.html)

\* Preliminary figures for 2022