



Press release

SEMIKRON Foundation and ECPE honour two teams with the Innovation Award 2019 while this year's Young Engineer Award goes to Andreas Bendicks

Erding, Germany, March 26th 2019

This year, the jury decided that the SEMIKRON Innovation Award 2019 should go to two teams — André Haspel and Urs Boehme from **Daimler AG in Boeblingen, Germany** for their **quasi-isolated converter** and Johan Le Leslé and Rémy Caillaud from **Mitsubishi Electric R&D Centre Europe in Rennes** for their work on a **high integration, modular 3.3kW AC/DC converter**.

Abstracts:

André Haspel and Urs Boehme developed an innovative circuit topology for a quasi-isolated converter which allows for two HV systems with different air and creeping distances to be combined and ensures the symmetric distribution of the high voltage potentials in both HV systems. In the event of an insulation error in one subsystem, a safe state is achieved in the other system without excessive stress. The proposed quasi-isolated converter works similarly to a galvanic isolation converter but boasts higher power density with fewer electronic parts. This innovation is designed for use in automotive applications such as high-voltage chargers.

Johan Le Leslé and Rémy Caillaud developed a high integration, modular 3.3kW AC/DC converter for on-board battery chargers. The high efficiency, high power density converter is based on an innovative manufacturing technology where all the components including SiC bare dies, SMT components for the gate drivers and the magnetic core for the inductor are embedded in printed circuit boards. This innovation successfully demonstrates how active and passive components in the kW range can be embedded in PCBs.

The SEMIKRON Young Engineer Award 2019 goes to Andreas Bendicks from the **Technical University of Dortmund** for his work on "**Active EMI Reduction in Power Electronic Systems by Injecting Synthesized and Synchronized Cancellation Signals**" supervised by Prof. Stephan Frei.

Abstract:

Active noise cancellation is a promising approach to suppressing electromagnetic interference (EMI). Existing active EMI filters, however, suffer from unavoidable delay times since they inject a cancellation signal that originates from a measured signal. These delay times limit the suppressible frequency range and the EMI reduction achievable. To resolve this issue, Bendicks' development uses synthesized cancellation signals. Since the signal is artificial, there is no systematic delay and bothersome effects such as phase-shifts or magnitude responses can be compensated for. The only requirement is that the cancellation signal has to be able to be synchronized with the power electronic device to maintain a destructive interference. This can be achieved in most digital controlled systems.



Photo: (f.l.t.r.) Andreas Bendicks, André Haspel, Urs Boehme, Emily Heidenreich (SEMIKRON), Bettina Martin (SEMIKRON), Rémy Caillaud, Johan Le Leslé; Prof. Leo Lorenz (ECPE)

About the SEMIKRON Foundation:

The SEMIKRON Foundation was founded on December 4, 2010, by owners of the SEMIKRON Group. Equal founders are the daughters of Peter Martin, the SEMIKRON owner and managing director of many years, who passed away in 2008. With the founding act, the founders intended to live up to their responsibility being the owners of a family-owned medium industry business and to contribute to their company's "Corporate Social Responsibility".

The purpose of the SEMIKRON Foundation is to bundle and extend the charitable activities operated by the owners of the SEMIKRON Group. In particular, the humanitarian projects initiated by Mr. Peter Martin, and supported by the Mali Martin Care e.V. charity are to be continued. These projects support children and people in need all over the world. Over the past 10 years, Mali Martin Care e.V. has donated more than one million Euro to humanitarian projects for children and young adults, mostly in Brazil (projects "Centro Social" and "Lar do Menor"). In addition, the foundation supports research projects and innovations in the field of power electronics. For more information, please visit: www.semikron-stiftung.com.

Contact:

Rechtsanwalt Dr. Felix Hechtel
SEMIKRON-Stiftung
Sigmundstraße 200
90431 Nürnberg
Tel: 0911/6559-0
E-Mail: felix.hechtel@semikron-stiftung.de

Press Contact:

Werner Dorbath
SEMIKRON-Stiftung
Sigmundstr. 200
90431 Nürnberg
Tel: +49-(0) 911-6559-217
Mobile: 0049/(0) 176 30086217
werner.dorbath@semikron.com

Contact:

ECPE European Center for Power Electronics e.V.
Bayerischer Cluster Leistungselektronik
Dipl.-Phys. Thomas Harder, Geschäftsstellenleiter und Clustergeschäftsführer
Landgrabenstraße 94
D-90443 Nürnberg
Tel: 0911/810288-11
Fax: 0911/810288-28
E-Mail: thomas.harder@ecpe.org