

Organisational Information

Sign up at: www.ecpe.org/events

Registration Deadline:

13 February 2022

Participation Fee:

- € 395,- * for industry
 - € 290,- * for universities/institutes
 - € 120,- * for students/PhD student
(limited spaces; copy of students ID required)
- * plus VAT

- The participation fee includes lectures and digital proceedings (provided 1 day prior to the event by email).
- Participation by web conference tool (Webex). Access data will be provided by email.
- Upon receipt of registration confirmation via email you are signed-up for the event. The invoice will be sent via email.
- Three participants from each ECPE member company free of charge. Allocation in sequence of registration.
- 10% discount on university/institute fee for participants from ECPE competence centres.
- Cancellation policy: Full amount will be refunded in case of cancellation up to 1 week prior to the event. After this date 50 % of the fee is non-refundable (substitutes are accepted anytime).

Organisational Information

Organiser ECPE e.V.
90443 Nuremberg, Germany
www.ecpe.org

Technical Contact Gudrun Feix

Organisation Lena Somschor, ECPE e.V.
+49 911 81 02 88 – 18
lena.somschor@ecpe.org

Technical Chair

Prof. Jacek Rabkowski
Warsaw University of Technology, Poland

Dr. Francesco Gennaro
STMicroelectronics S.r.l, Italy

Manuel Gärtner
STMicroelectronics Application GmbH,
Germany



European Center for
Power Electronics e.V.

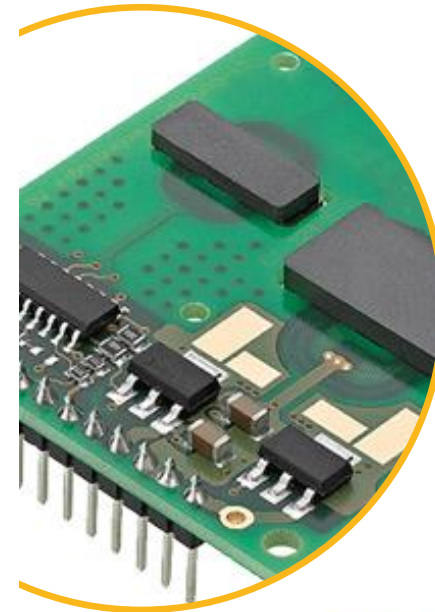
Digital Event

ECPE Workshop Programme

Advanced Drivers for Si, SiC and GaN Power Semiconductor Devices

15 - 16 February 2022

in cooperation with




Warsaw University
of Technology

ECPE Workshop

Advanced Drivers for Si, SiC and GaN Power Semiconductor Devices

15 - 16 February 2022
Digital Event

Inside power electronics systems, the gate driver circuit with its control, power supply and monitoring functions forms the interface between the microcontroller and the power switches. This workshop shall give an overview over current developments and activities in industry and research.

In the context of the development of wide bandgap semiconductors, new challenges concerning robust operation at very fast switching speed and frequencies need to be addressed to attain the expected gains at system level. We will discuss the requirements of systems with fast switching semiconductors. Necessary protection features like short circuit detection e.g. and their implementation will be presented.

Fast switching necessitates low inductive designs, and this in turn can be realized best with integrated solutions. Different solutions will be presented in the workshop.

Driver specifications always depend on their field of application. We will tackle the requirements from different fields like railway and renewable energies.

The workshop is chaired by:

Prof. Jacek Rabkowski
Warsaw University of Technology (PL)

Dr. Francesco Gennaro
STMicroelectronics (IT)

Manuel Gärtner
STMicroelectronics Application (DE)

All presentations and discussions will be in English.

Programme

Tuesday, 15 February 2022	
08:00	Webex started
Introduction (overview, status, trends)	
08:30	Welcome, Opening and Introduction into the Topic Gudrun Feix, Jacek Rabkowski, Manuel Gärtner
08:45	How to Control Modern Power Semiconductors – Differences, Potentials and Limits Stefan Hain, ZF Friedrichshafen (DE)
Power Supply for Drivers	
09:15	Advanced DC-DC Converters for Advanced Drivers Steve Roberts, RECOM Power (AT)
09:45	Break
09:55	NN Rolando Burgos, Virginia Tech (US)
Isolation	
10:25	Isolated Gate Drivers in BCD Technology Platform: CMTI Modelling & Simulation Valerio Gennari Santori, STMicroelectronics (IT)
10:55	Break
11:05	Combined Optical Power and Data Transmission for Gate Drivers in High-Voltage Applications Stefanie Heinig, Hitachi Energy (CH)
11:35	Differences of Standards for Isolated Couplers Wolfgang Frank, Infineon Technologies (DE)
12:05	Lunch Break
High Frequency Gate Driving	
12:50	Challenges in Driving GaN at Multi-MHz Operation Dominik Koch, University of Stuttgart (DE)
13:20	Driver Circuit Design for MHz Operation of GaN Power Transistors Xiaomeng Geng, Technical University Berlin (DE)
13:50	Break
14:00	Inductive Feed-forward Gate Driving Techniques Martin Pfof, TU Dortmund (DE)
14:30	GaN Half-Bridge with Integrated Gate Driver Francesco Pulvirenti, STMicroelectronics (IT)
15:00	Break
Design considerations	
15:15	Driver Integration for Fast Switching WBG Power Modules Kirill Klein, Fraunhofer IZM (DE)
15:45	Impact of Increasing Power Density & Switching Frequency on Thermal Requirements & Design of Gate Drivers Pierre Delatte, CISSOID (BE)
16:15	Influence of Gate Driver Design on SiC Trench MOSFETs Performance Martin Gleich, Infineon Technologies (DE)
16:45	End of 1 st Day

Programme

Wednesday, 16 February 2022	
08:00	Webex started
Integrated and Smart Gate Driver Solutions	
08:30	Monolithic GaN – Unleashing the Potential by Integrating Power Sensing and Control Bernhard Wicht, Leibniz University Hannover (DE)
09:00	Integrated Gate Driver with Advanced Digital Signal Processing Reinhard Herzer, Semikron (DE)
09:30	Break
09:40	Programmable Digital Gate Driver IC to Automatically Reduce both Switching Loss and Switching Noise Makoto Takamiya, University of Tokyo (JP)
10:10	Adaptive Current-Source Gate Driver for High-Voltage SiC MOSFETs Dimosthenis Peftitsis, Norwegian University of Science and Technology (NO)
10:40	Break
Protection Features	
10:55	DESAT Protection with Modern Si and SiC Power Transistors Emanuel-Petre Eni, Infineon Technologies (DE)
11:25	Fast Short Circuit Detection for GaN Devices Jan Schmitz, TU Dresden (DE)
11:55	Methods for Handling high dV/dt Values in Wide Bandgap Power Converters Hubert Berger, Silicon Austria Labs (AT)
12:25	Lunch Break
Applications	
13:10	Highly Digitalized Gate Driver for Future Railways Converters Erik Velander, Alstom (SE)
13:40	Gate Drivers as Key Components in Handling SiC at Medium Voltages Jacek Rabkowski, Warsaw University of Technology (PL)
14:10	Easy-to-Scale Paralleling for IGBTs in Renewable Energy Application Ahmed Saif, Power Integrations (DE)
14:40	Sum-up and Final Discussion
15:10	End of Workshop