

Organisational Information

Sign up at: www.ecpe.org/events

Registration Deadline:

23 June 2021

Participation Fee:

On Site	Online	
660,- €*	560,- €*	Industry
490,- €*	410,- €*	University/institutes
165,- €*	140,- €*	Students/ PhD students

* plus VAT

- The on site participation fee includes dinner, lunches, coffee/soft drinks and a flash drive with the digital presentations.
- A printed version of the workshop handout is available on request (€ 50,-*).
- Online 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 for participants from ECPE competence centres.
- Further information (hotel list and maps) will be provided after registration and can be found on the ECPE web page.
- Cancellation policy: Full amount will be refunded in case of cancellation upon to 2 weeks prior to the event. After this date and in case of no-show 50 % of the fee is non-refundable (replacement is possible).

Organisational Information

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Venue Leonardo Royal Munich
Moosacher Straße 90 *New Venue*
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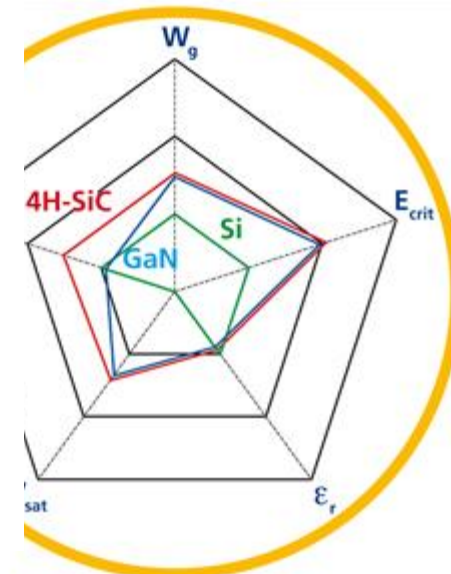
European Center for
Power Electronics e.V.

Hybrid Event

ECPE SiC & GaN User Forum

Potential of Wide Bandgap Semiconductors in Power Electronic Applications

30 June - 1 July 2021
Munich, Germany



in cooperation with



Cluster
Leistungselektronik

ECPE SiC & GaN User Forum

Potential of Wide Bandgap Semiconductors in Power Electronic Applications

30 June – 1 July 2021 - Munich, Germany

Since more than 14 years the biannual ECPE Wide Bandgap User Forum has explained the background and given advice and support to design-in SiC and GaN devices in power electronic systems. Major progress has been achieved in this period, with today a multitude of SiC diodes and transistors and as well GaN transistors being available and used in series products. For those, special aspects gain importance, such as robustness or qualification when exposed to demanding mission profiles. On the other hand still more basic research and development work is dedicated to special devices made by SiC, GaN and other wide bandgap materials including their potential applications. These actual topics will be addressed during the upcoming 9th ECPE Wide Bandgap User Forum:

It will start with an overview, introducing the following more detailed presentations. Those will initially refer to exemplary volume applications with SiC and GaN devices. Special attention is dedicated to the design and qualification process including suitable layout methods, measures to achieve the required electromagnetic compatibility and also the aspect of qualification or reliability testing respectively. Circuit theory constitutes the link between system and device; in this respect, drivers are of particular interest. Finally, the related WBG themselves will be considered, including an insight and outlook on integration particularly of GaN and on other promising materials.

International renowned experts are being invited to give an overview and to in depth explain their research and development work in technical presentations. Besides, the ECPE Wide Bandgap User Forum offers a platform for all participants to share experience and ideas.

The ECPE SiC & GaN User Forum 2021 is chaired by Prof. Andreas Lindemann (Magdeburg University), Dr. Peter Friedrichs (Infineon Technologies) Prof. Leo Lorenz and Thomas Harder (both ECPE).

All presentations and discussions will be in English.

Programme

Wednesday, 30 June 2021

08:30 Registration & Welcome Coffee

09:30 Welcome, Opening Leo Lorenz, ECPE e.V.

Introduction and Overview

09:45 Introduction to the Workshop Programme
Andreas Lindemann, Peter Friedrichs, Techn. Chairmen

10:00 WBG Status and Future Directions
Nando Kaminski, Uni Bremen, Oliver Hilt, FBH (DE)

10:30 Coffee Break

SiC Power Electronics Systems

11:00 Impact of SiC Power Semiconductors on the Mission Profile Efficiency of Automotive Traction Inverters
Ajay Poonjal Pai, Infineon Technologies (DE)

11:30 SiC DC Breaker for DC Grids in Automotive, Industry PV and Buildings
Samuel Araujo, Robert Bosch (DE)

12:00 SiC for Renewables/Grid Applications
Hans-Günter Eckel, University of Rostock (DE)

12:30 Lunch

GaN Power Electronic Systems

13:30 SMPS with GaN
Peter Wallmeier, Delta Energy Systems (DE)

14:00 3.6kW Air Cooled High Power Density Full-GaN OBC
Marko Scherf, Tobias Reimann, ISLE Steuerungstechnik und Leistungselektronik (DE)

Packaging & System Integration

14:30 Double-Sided Cooling SiC-Power Module for EV Traction Inverter
Takeshi Tokuyama, Hitachi (JP)

15:00 GaN on-chip Integration: Technology & Applications
Patrick Waltereit, Fraunhofer IAF (DE)

15:30 Coffee Break

Design & Simulation for Fast Switching Systems

16:15 How to handle 22kW at 1MHz or: Design Challenges when using WBG Benefits
Eckart Hoene, Fraunhofer IZM (DE)

16:45 Impact of High dV/dt on Isolations and System Level
Mark M. Bakran, Univ. of Bayreuth (DE)

17:15 EMI Challenges Related to High dV/dt and dI/dt
Lars Middelstaedt, Panasonic (DE)

17:45 Final Discussion of 1st Day

18:15 End of 1st Workshop Day

19:30 Dinner

Programme

Thursday, 1 July 2021

08:00 Start of 2nd Day

WBG Semiconductor Device Trends (Outlook)

08:30 GaN on 200mm Engineered Substrates for High Voltage and GaN-IC Applications
Ming Zhao, IMEC (BE)

09:00 Diamond for Power Electronics: the H2020 GreenDiamond Project
Etienne Gheeraert, University of Grenoble Alpes (FR)

Application Aspects of SiC Devices

09:30 Extreme Environment Applications of SiC Devices
Carl-Mikael Zetterling, KTH Royal Inst. of Techn. (SE)

10:00 Application Aspects of SiC Devices
Manuel Gaertner, Francesco Gennaro, STMicroelectronics (DE/IT)

10:30 Coffee Break

11:00 PFC & DC/DC Improvement by using SiC MOSFET
Dieter Liesabeths, CREE/Wolfspeed (DE)

Application Aspects of GaN Devices

11:30 Positioning of SiC and GaN versus Silicon-based Power Devices in High Power Applications
Gerald Deboy, Infineon Technologies Austria (AT)

12:00 GaN power FETs and Key Applications
Dilder Chowdhury, Nexperia (UK)

12:30 Lunch

SiC and GaN Drivers

13:30 SMART Gate Drivers for SC Protection and Monitoring of SiC MOSFET
Stephane Lefebvre, CNAM (FR)

14:00 From Evolution to Revolution in Driving Your GaN Power Switches
Laszlo Balogh, Texas Instruments (US)

Reliability, Qualification and Test

14:30 Reliability and Robustness of SiC MOSFETs
Thomas Basler, Technical University Chemnitz (DE)

15:00 Coffee Break

15:20 SiC & GaN Power Semiconductor Reliability and Qualification Procedures in JEDEC JC-70
Stefanie Butler, Texas Instruments (US), Peter Friedrichs, Infineon Technologies (DE)

15:50 SiCRET: An IRT St Exupery Project addressing the SiC Mosfet Reliability Challenges for Use in Multi-Sector Industries
Michel Piton, Alstom, Regis Meuret, Safran (FR)

16:10 Qualification: SiC Implementation in AQG 324 incl. Dynamic HTGB and H3TRB Testing
Martin Rittner, Robert Bosch (DE)

16:30 End of Workshop