

Registration (Fax Reply)

To: ECPE e.V.
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Please **e-mail** a scanned copy of the completed form or send a fax to: +49 (0)911 / 81 02 88 – 28

Register before **10 October 2011**

Participation fee:

Part I 27-28 July	Part II 17 – 18 Oct.	Both Tutorials	
<input type="checkbox"/> 680.00 €	<input type="checkbox"/> 580.00 €	<input type="checkbox"/> 990.00 €	Industry
<input type="checkbox"/> 580.00 €	<input type="checkbox"/> 480.00 €	<input type="checkbox"/> 850.00 €	University
<input type="checkbox"/> 210.00 €	<input type="checkbox"/> 180.00 €	<input type="checkbox"/> 310.00 €	Students

The fee includes the tutorial dinner, lunch, coffee/soft drinks and handouts.

With the confirmation of seminar registration you will receive the invoice. (* plus 19 % VAT); 50 % discount for ECPE Member Companies. In case of cancellation after 10 October 2011 or non-attendance 50 % of the participation fee are payable. Number of participants is limited to 30 attendees.

Sender:

Title, given name, name

Company, department

Full address

Phone, fax

E-mail

Date, signature

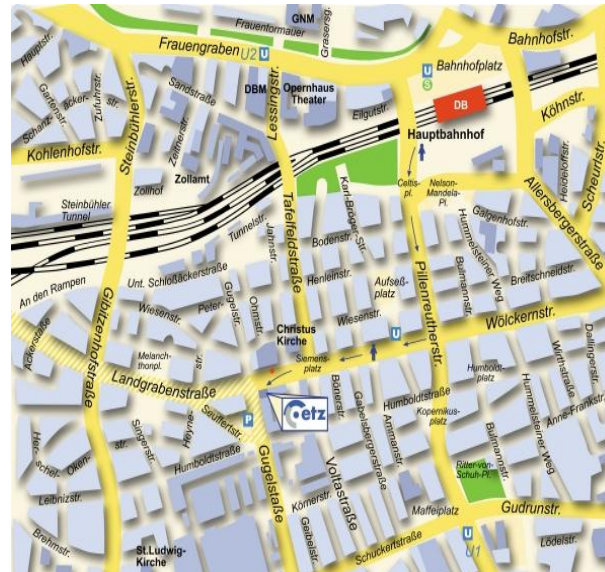
Organisational information

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

Chairmen Prof. Eckhard Wolfgang
ECPE e.V.
Dr. Uwe Scheuermann
Semikron

Organisation Ingrid Bollens, ECPE e.V.
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ingrid.bollens@ecpe.org

Venue ECPE e.V. (in etz-building)
Landgrabenstrasse 94
90443 Nuremberg, Germany



Further information (hotel list and maps) will be provided after registration.



ECPE
European Center for
Power Electronics e.V.

ECPE Tutorial

Thermal Engineering of Power Electronic Systems Part II: Thermal Management and Reliability

17 – 18 October 2011
ECPE (etz-building)
Nuremberg, Germany



Cluster
Leistungselektronik

Thermal Engineering of Power Electronic Systems

17 – 18 October 2011
Nuremberg, Germany

Thermal engineering of power electronic systems is a key to achieve high performance and reliability. In the focus of the ECPE tutorial is the thermal simulation and verification of the SEMIKUBE IGBT converter which is equipped with thermal sensors for verification.

Part 1: At first the topology of the IGBT converter and its components are described as well as the data sheet. Then the results of the electrical simulation are presented in regard to performance and thermal losses. The following sections deal with basics of heat conduction, convection and exchange. Practical examples will be used for a good understanding of cooling the hot parts in the system. After an introduction to analytical and FEM methods five groups are formed to exercise thermal simulations and measurements.

Part 2: After a detailed description of the results of the first part the impact of transient thermal behavior of the converter on the reliability is discussed in detail. The knowledge of functional requirements, mission profiles, physics of failure, thermal measurements (thermal images and impedance) are needed for building-in reliability and for the robustness validation process.

All presentations and discussions will be in English.

Programme

Monday, 17 October 2011

- 09:30 **Start of Registration**
- 09:45 **Welcome, Introduction**
T. Harder, ECPE e.V.
E. Wolfgang, ECPE e.V.
- 10:00 **Results of Tutorial Part 1**
A. Wintrich, Semikron Elektronik
- 10:45 **Temperature and Reliability: Failure Mechanisms**
U. Scheuermann, Semikron Elektronik

12:00 Lunch

- 13:00 **Requirements, Mission Profile**
E. Wolfgang, ECPE e.V.
- 14:00 **Thermal Measurements**
U. Scheuermann, Semikron Elektronik
- 15:00 **Thermal Impedance Measurement – Preparation**
U. Scheuermann, Semikron Elektronik
- 15:15 **Introduction to the Experiment**
A. Wintrich, Semikron Elektronik

15:30 Coffee Break

- 16:00 **Thermal Impedance Measurement – Results and Interpretation**
U. Scheuermann, Semikron Elektronik
- 17:45 **Wrap up 1st Day**
- 18:00 **End of 1st Day**

19:30 Dinner

Programme

Tuesday, 18 October 2011

- 08:30 **Thermal Impedance: FEM Simulation**
E. Rudnyi, CADFEM
- 09:30 **Thermo-mechanical Simulation**
E. Rudnyi, CADFEM

10:30 Coffee Break

- 11:00 **Cooling Technologies and Thermal Interface Materials**
E. Wolfgang, ECPE e.V.
C. Capriz, Aavid Thermalloy

12:00 Lunch

- 13:00 **Design for Reliability**
U. Scheuermann, Semikron Elektronik
- 14:15 **Robustness Validation**
E. Wolfgang, ECPE e.V.
- 15:15 **Wrap up 2nd Day, Final discussion**
- 15:45 **End of Tutorial**