

Registration (Fax Reply)

To: ECPE e.V.
Att.: Ingrid Bollens

Fax: +49 (0)911 / 81 02 88 – 28

Register before **14 January 2008**

Participation fee:

.. €480,-* for industry

.. €380,-* for universities

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

With the confirmation of seminar registration you will receive the invoice. 50 % discount for ECPE Member Companies

Number of participants is limited to 35 attendees.

Sender:

title, given name, name

company, department

full address

phone, fax

e-mail

date, signature

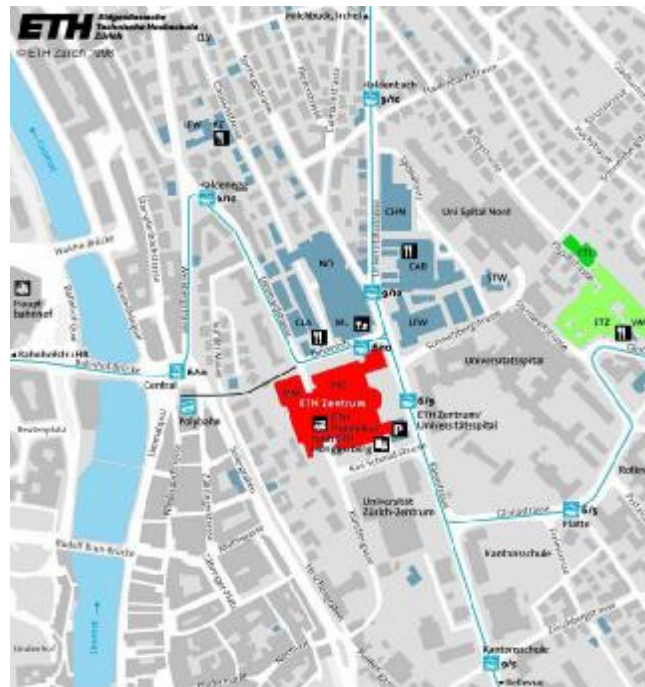
Organisational information

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

Course instructor: Prof. Dr. E. Wolfgang

Organisation: Ingrid Bollens, ECPE e.V.
+49 (0)911 / 81 02 88 – 10
ingrid.bollens@ecpe.org

Place of seminar: ETH Zurich (Eidgenössische
Technische Hochschule Zürich)
Main Building, Rämistrasse 101,
Raum HG F26.3
8092 Zurich, Switzerland



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



**ECPE European Center for
Power Electronics e.V.**

ECPE Tutorial

Reliability of Power Electronic Systems

**22 – 23 January 2008
at ETH Zurich
Switzerland**

Introduction

ECPE Tutorial “Reliability of Power Electronic Systems”

22 – 23 January 2008
Zurich, Switzerland

The aim of the tutorial is to teach the basics of modern reliability engineering. This is based on physics-of-failure-concept and the intended mission profile of the electronic system and its components. The mission profile considers the combination of stresses versus time to which the electronic system is subjected during its application time. Especially application oriented end-of-life testing is under strong consideration today. This requires the design of appropriate accelerating stress tests. To secure reliability of power electronics systems the building-in reliability philosophy will be explained by examples.

Beside the very successful seminar series, ECPE is starting a tutorial programme focussing more on education of young engineers and engineers from neighbouring disciplines.

The course instructor of the reliability tutorial is Prof. Dr. Eckhard Wolfgang. Co-instructors are Dr. Uwe Drofenik, ETH Zurich and Dr. Wolfgang Gerling. All presentations and discussions will be in English.

Programme

Tuesday, 22 January 2008

9:00 *Begin of registration*

10:00 **Welcome, Opening**

10:15 **Introduction**

- content
- scope of tutorial
- E. Wolfgang

11:00 **Definitions and Characteristics**

- quality, reliability
- failure
- reliability phases
- W. Gerling

11:45 **Physics-of-failure Concept**

W. Gerling

12:30 *Lunch*

13:30 **Examples for Failures in Power Electronics**

E. Wolfgang

14:00 **Mission Profiles**

E. Wolfgang

14:45 **Power Electronics Circuit Design**

- switching and on-state losses
- overvoltages
- U. Drofenik

15:45 *Coffee break*

16:15 **Power Electronics Thermal Design and Cooling**

- simulation
- measurements
- U. Drofenik

17:15 Wrap up 1st day

17:30 End

19:00 Dinner

Programme

Wednesday, 23 January 2008

9:00 Open questions from 1st day

9:30 **Life Time Prognosis**

- solder cracking
- wire bond lift-off
- E. Wolfgang

10:15 *Coffee*

10:45 **Reliability Risk**

- fishbone diagrams
- ranking of possible failures
- E. Wolfgang

11:15 **Robustness Validation**

- change of test paradigm
- end-of-life test
- W. Gerling

12:00 **Advanced Cooling**

- thermal interface material
- heat pipes
- E. Wolfgang

12:45 *Lunch*

14:00 **Building-in Reliability and Zero Defect Strategy**

- first time right
- zero defect in manufacturing
- W. Gerling

14:45 Wrap up tutorial

15:30 End