Organisational Information

Sign up at: www.ecpe.org/events

Registration Deadline:

- **24 September 2020**

Participation Fee:

- **€ 620,–** * for industry
- **€ 490,–** * for universities/institutes
- **€ 165,–** * for students/PhD students (limited spaces; copy of students ID required; dinner € 50,-* extra)

* plus VAT

- The regular participation fee includes dinner, lunches, coffee/soft drinks and handouts. The reduced (PhD) students fee includes all the above except for dinner (can be booked for an extra fee of € 50,-*)
- Upon receipt of registration confirmation via email you are signed-up for the event. The invoice will be sent via letter post.
- 25 % discount for participants from ECPE member companies.
- 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 up to 2 weeks prior to the event. After this date and in case of no-show 50 % of the fee is non-refundable (substitutes are accepted anytime).
- The number of participants is limited to 35 attendees.

Organisational Information

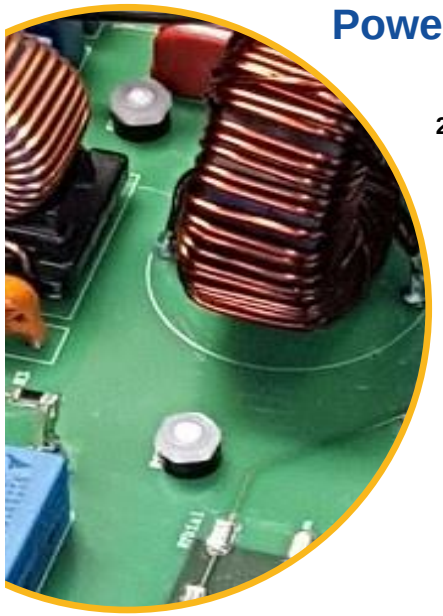
Organiser	ECPE e.V. 90443 Nuremberg, Germany www.ecpe.org
Course Instructors	Hans-Peter Feustel, ECPE e.V. (DE) Prof. Wulf-Toke Franke, University of Southern Denmark (DK)
Organisation	Ingrid Bollens, ECPE e.V. +49 911 81 02 88 – 10 ingrid.bollens@ecpe.org
Venue	Lofthaus am Elbberg V.I.E.L®Coaching + Training 2nd Floor Elbberg 1 22767 Hamburg, Germany

Source: : pixabay

European Center for Power Electronics e.V.

ECPE Tutorial

Introduction to Power Electronics



29 - 30 September 2020

Hamburg
Germany

ECPE Tutorial

Introduction to Power Electronics

29 – 30 September 2020
Hamburg, Germany

With the advance of automation and increasing demands on energy efficiency, many industrial applications use closed-loop controlled drives based on power electronics. Power electronics also play a key role in feeding renewable energies from photovoltaic and wind power into the grid as well as coupling different voltage systems, e.g. battery energy storage systems. This also applies to electromobility, both on the vehicle side with the drive converter and various power-electronic converters in the car, as well as on the grid side with the charging infrastructure, e.g. for DC fast charging.

The aim of the training is to convey the basic structure and above all the behaviour of power electronic components and circuits. The important circuit topologies are discussed and their use in various applications is shown.

The training is aimed at electronics developers, designers, software developers, physicists, chemists or material scientists who are new to power electronics in various fields of work and require knowledge of the basic behaviour and characteristics of power electronics. On the other hand, the training is also intended for users of power electronics who work more on a system level. Here the knowledge of the basics of power electronics helps to make the right decisions and measures.

Course Instructors:

Hans-Peter Feustel, ECPE e.V. (DE)
Prof. Wulf-Toke Franke,
University of Southern Denmark (DK)

All presentations and discussions will be in English.

Programme Overview

1. **Electronic Basics**
2. **General Basics of Power Electronics**
   - a. Components of Power Electronics
     - i. Passives
     - ii. Semiconductors
   - b. Principle of converters
   - **c.** Switching Process
   - **d.** Gate Drive
3. **Circuit Topologies**
   - **a.** DCDC Converter
     - i. Not galvanically isolated
     - ii. Galvanically isolated
   - **b.** ACDC Rectifier
     - i. Diode rectifier
     - ii. Active rectifier, PFC
     - iii. Thyristor circuits
   - **c.** DCAC Inverter
     - i. Basics and control principles
     - ii. Currents in transistors, diodes and DC link capacitors
4. **EMC Considerations**
   - a. Introduction
   - b. EMC in power electronics
   - **c.** Design principals
5. **Assembly Concepts**
   - a. Electrical design considerations
   - **b.** Thermal assembly concepts
6. **Applications**
   - **a.** Automotive
   - **b.** Industry
   - **c.** Solar
   - **d.** Wind power
7. **Summary and Discussion**

Programme

Tuesday, 29 September 2020

08:30 Start of registration / Welcome Coffee
09:00 **Welcome, Opening**
ECPE e.V.
09:10 **Electronic Basics**
10:30 Coffee Break
10:50 **Components of Power Electronics**
12:30 Lunch
13:30 **Principle of Converters**
15:00 Coffee Break
15:15 **Switching Process and Gate Drive of Power Semiconductors**
16:15 **End of 1st Day**
19:00 Dinner

Wednesday, 30 September 2020

08:30 Start of 2nd Day
08:30 **Circuit Topologies Part 1**
10:30 Coffee Break
10:50 **Circuit Topologies Part 2**
12:30 **EMC Considerations**
13:00 Lunch
14:00 **Assembly Concepts**
15:00 Coffee Break
15:20 **Applications**
16:45 **Summary and Discussion**
17:00 End of Tutorial