

## Organisational Information

Sign up at: [www.ecpe.org/events](http://www.ecpe.org/events)

Registration Deadline:  
11 September 2024

### Participation Fee:

€ 670,- \*for industry  
€ 520,- \*for universities/institutes  
€ 180,- \*for students/PhD students  
(limited spaces; copy of students ID  
required; dinner € 50,-\* extra)

25 % discount for participants from ECPE member companies.  
10% discount on university/institute fee for participants from  
ECPE competence centres.  
\* plus VAT

### On site Participation:

- The participation includes dinner, lunches, coffee/soft drinks, and digital proceedings. The reduced (PhD) students fee includes all except for dinner (can be booked for an extra fee of € 50, - \*).
- Digital proceedings will be provided by download link latest one day before start of the event. A printed handout is available on request (€ 50, -\*).
- Upon receipt of registration confirmation via email you are signed -up for the event. The invoice will be sent via email.
- 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 50 % of the fee is non - refundable (replacement is possible).
- The number of participants is limited to 35 attendees.

### Online Participation:

- 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 letter post.
- Cancellation policy: Full amount will be refunded in case of cancellation up to 1 week prior to the event. After this date and in case of no-show 50 % of the fee is non-refundable (substitutes are accepted anytime).

## Organisational Information

**Organiser** ECPE e.V.  
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**Venue** TBD  
Barcelona, Spain

### Course Instructors



Hans-Peter Feustel, Consultant (DE)



Prof. Dr. Wulf-Toke Franke,  
Danfoss Power Electronics and Drives (DK)



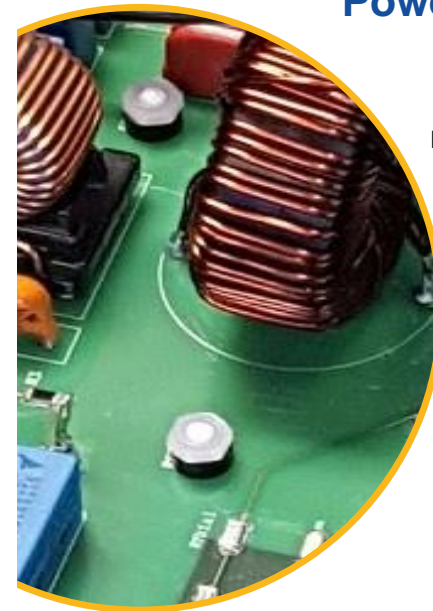
European Center for  
Power Electronics e.V.

## Hybrid Event

### ECPE Tutorial

### Introduction to Power Electronics

18 - 19 September 2024  
Barcelona, Spain/ hybrid



## ECPE Tutorial

### Introduction to Power Electronics

18– 19 September 2024  
Barcelona, Spain/ hybrid

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 scientists, engineers and technicians who have no background in electrical engineering and especially in power electronics, and who want to acquire general 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, Consultant (DE)  
Prof. Dr. Wulf-Toke Franke,  
Danfoss Power Electronics and Drives (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

### Wednesday, 18. September 2024

08:50 Registration, Webex started

09:20 Welcome, Opening  
ECPE e.V.

09:30 Basics of Power Electronics

10:15 Components of Power Electronics I

10:45 Coffee Break

11:05 Components of Power Electronics II

13:00 Lunch Break

14:00 Principle of Converters

15:10 Coffee Break

15:30 Switching Process and Gate Drive of Power Semiconductors

17:20 End of 1st Day

20:00 Dinner

### Thursday, 19 September 2024

08:45 Webex started

09:00 Start of 2nd Day

09:00 Circuit Topologies

11:10 Coffee Break

11:30 EMC Considerations

12:15 Assembly Concepts I

13:15 Lunch Break

14:15 Assembly Concepts II

15:15 Coffee Break

15:30 Applications

16:45 Summary and Discussion

17:00 End of Tutorial