

## Organisational Information

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

### Registration Deadline:

- 27 March 2019

### Participation Fee:

- € 750,- \* for industry
- € 595,- \* for universities/institutes

\* plus VAT

- The regular participation fee includes dinner, lunches, coffee/soft drinks and handouts.
- 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.
- 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 12 attendees.

## Organisational Information

**Organiser** ECPE e.V.  
90443 Nuremberg, Germany  
[www.ecpe.org](http://www.ecpe.org)

**Course Instructor** Prof. Eckart Hoene,  
Fraunhofer IZM

**Organisation** Lena Somschor, ECPE e.V.  
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[lena.somschor@ecpe.org](mailto:lena.somschor@ecpe.org)

**Venue** Fraunhofer IZM  
Gustav-Meyer-Allee 25  
13355 Berlin  
[www.izm.fraunhofer.de/en](http://www.izm.fraunhofer.de/en)



Source: Stadt Berlin



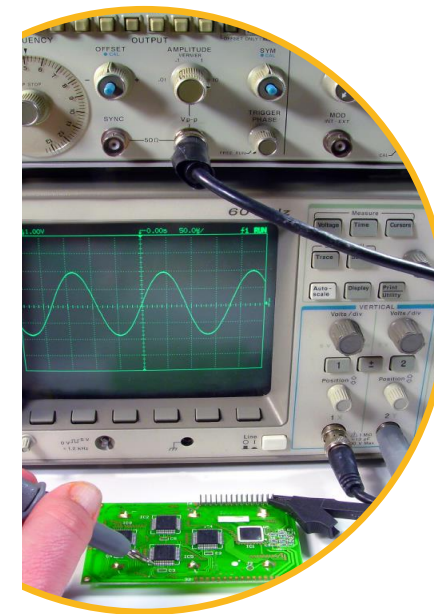
European Center for  
Power Electronics e.V.

## ECPE Lab Course

### EMC Optimised Design (Parasitics in Power Electronics)

4 - 5 April 2019

Fraunhofer IZM  
Berlin  
Germany



## ECPE Lab Course

### EMC Optimised Design

4 - 5 April 2019  
Berlin, Germany

When designing power electronic circuits often electromagnetic properties of layout and construction prevent a proper function. The Know-How for creating working circuits is up to now not well described in textbooks and has to be learned individually by all engineers starting with power electronics. Normally this is accompanied with costly design iterations and many prototypes that slowly lead to an increase in experience.

This lab course is intended to give an insight into the underlying effects by directly carrying out experiments. By investigating the function of a badly designed circuit in the lab a feeling for common mistakes and measurement methods to point them out is given. There is the possibility to modify the circuits and to improve their performance directly.

Different examples for good solutions are shown and finally every attendant has the chance to develop an own design that will be checked by the course instructors for electromagnetic quality. Examples from daily business are also welcome.

#### Course Instructor:

Prof. Eckart Hoene, Fraunhofer IZM

All presentations and discussions will be in English.

## Programme

Thursday, 4 April 2019

09:30 Start of Registration

**10:00 Welcome, Introduction**  
Eckart Hoene, Fraunhofer IZM

Short Coffee Break during 1<sup>st</sup> Lab Session

**11:00 1st Lab Session**  
A circuit board of an inverter working with 40V and 15A is provided as test object. A check of function will be carried out by the attendees using typical laboratory equipment. Goal is to find out all design mistakes and if possible to find work arounds.

12:30 Lunch

**13:30 2nd Lab Session**  
The work of the first session will be continued. Electrical components and soldering materials are offered for modification of the circuit board.

16:00 Coffee Break

**16:15 Discussion of the first results**  
The identified mistakes are gathered and possible counter measures discussed. An explanation of the observed effects is given.

17:30 End of 1st Day

19:30 Dinner

## Programme

Friday, 5 April 2019

09:00 Start of 2nd Day

**09:00 3rd Lab Session**  
The functionally optimised Circuit Board will be additionally measured for conducted emissions. Dependencies between conducted emissions and the bad layout will be carried out.

10:40 Coffee Break

**11:00 4th Review of Lab Sessions**  
Review & common analysis of failures on the Circuit Board.

12:00 Lunch

**5th Part  
Presentations**

**13:00 Design Strategies on Board Level**  
Eckart Hoene

**13:45 Parasitic Effects: Design of Commutation Cells and Filters**  
Eckart Hoene

**14:45 Power Module Design for Lower Emissions**  
Eckart Hoene

15:30 End of Lab Course