

POWER ELECTRONICS

ICM – INTERNATIONAL
CONGRESS CENTER MÜNCHEN

JUNE
18–19
2018

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13TH SEMINAR

POWER ELECTRONICS FOR
PHOTOVOLTAICS AND BATTERY SYSTEMS

Part of

THEsmarter
| EUROPE



| CHAIRMAN 2018



Prof. Dr.-Ing. Bruno Burger
Head of Group Advanced Devices and
Technologies, Fraunhofer Institute
for Solar Energy Systems ISE,
Freiburg, Germany

Prof. Burger offers this special seminar since 2006. His research and development activities are focused on power electronics and digital controls for photovoltaics, batteries and fuel cells.

He gives lectures on Basics of Power Electronics and Power Electronics for Photovoltaics and Wind Energy at the University of Freiburg and the Karlsruhe Institute of Technology (KIT).

| QUICK FACTS

Venue

ICM – International
Congress Center München
Messe München
81823 Munich, Germany

Pricing

€1,050.00
Includes the three day
exhibition ticket and free
admission to the "Balance
of Systems" Session at
the Intersolar Europe
Conference on Wednesday

Registration

→ [https://www.messe-ticket.de/
INTERSOLAR/TSEE2018/Shop](https://www.messe-ticket.de/INTERSOLAR/TSEE2018/Shop)



| YOU WILL MEET

Planners, producers, engineers and scientists active in power electronics for renewable energies, manufacturers and suppliers of power electronic systems and energy storage technology, energy consultants and suppliers.

MONDAY, JUNE 18, 2018

9:00AM–5:30PM | ROOM 03

9:00am Power Electronics for Future Renewable Grids

Energy Transition to 100% Renewables in 2050;
Grid Voltage, Power and Frequency Control with
Power Electronics, Smart Grids, Sector-Coupling
Dr. Olivier Stalter,
Fraunhofer ISE, Freiburg, Germany

10:15am New Power Semiconductors

SiC and GaN Power Transistors and Diodes, Gate
Drivers, Applications and Challenges of the new
Technologies
Dipl.-Ing. Andreas Hensel,
Fraunhofer ISE, Freiburg, Germany

11:00am Coffee Break

11:30am Power Inductors

Electrical Properties of Chokes, Losses, Parasitic
Properties, Core Materials and their Properties,
Shapes, Design Procedures, Winding Types,
Thermal Design and Simulation
Prof. Dr. Alexander Stadler,
Coburg University, Coburg, Germany

12:15pm Module Integrated Electronics

Active Bypass Diodes, DC/DC-Converters,
Micro Inverters, Challenges of module
integrated electronics
Dipl.-Ing. Andreas Hensel,
Fraunhofer ISE, Freiburg, Germany

13:00pm Lunch Time



MONDAY, JUNE 18, 2018

9:00AM–5:30PM | ROOM 03



2:00pm **Single Phase String Inverters**
Basic Requirements, Circuits, Efficiency,
Development Trends
Prof. Dr. Bruno Burger,
Fraunhofer ISE, Freiburg, Germany

3:30pm Coffee Break

4:00pm **Three Phase String Inverters**
Basic Requirements, Circuits, Efficiency,
Development Trends
Prof. Dr. Bruno Burger,
Fraunhofer ISE, Freiburg, Germany

5:30pm End of First Day

TUESDAY, JUNE 19, 2018

8:30AM–7:30PM | ROOM 03

- 8:30am** **Battery Chargers and Off-Grid Inverters**
Battery Charge Regulators: Series, Shunt and MPP-Regulators, Circuits, Trends; Off-Grid- Inverters: Requirements, Circuits, Efficiency
Prof. Dr. Bruno Burger,
Fraunhofer ISE, Freiburg, Germany
- 9:15am** **Residential Grid-connected Battery Systems**
Residential battery systems for PV self-consumption, central battery systems for grid support, delivery of active and reactive power, compensation of harmonics
Cornelius Armbruster,
Fraunhofer ISE, Freiburg, Germany
- 10:00am** **Central Inverters and
PV Power Plant Concepts**
Basic Requirements, Circuits, Efficiency, Reliability, Cooling, Power Plant Concepts, Development Trends, System Design of PV Power Plants
Dipl.-Ing. Stefan Schönberger,
Fraunhofer ISE, Freiburg, Germany
- 11:15am** Coffee Break
- 11:45am** **PV System Technology**
IV-Curves, MPP and DC voltage range, temperature behaviour, MPP-Tracking, ratio PV power to Inverter power, losses due to PV oversizing, power limitation to 70%
Prof. Dr. Bruno Burger,
Fraunhofer ISE, Freiburg, Germany

TUESDAY, JUNE 19, 2018

8:30AM–6:00PM | ROOM 03

12:30pm Feedback Control Systems for Power Electronics

Modelling of Controlled Systems, Controller Types, Cascaded Control, State Control, Control of DC/DC converters and DC/AC inverters, different types of PLLs
Dipl.-Ing. Corentin Gasser,
Fraunhofer ISE, Freiburg, Germany

1:15pm Lunch Time

2:30pm Utility Scale Battery Systems

Battery types, system concepts, galvanic isolation, voltage levels, safety aspects, control concepts, development trends
Dipl.-Ing. Erich Bosch, autarsys, Berlin, Germany

3:15pm Microgrids and PV-Diesel Systems

Definition of microgrids; control modes for microgrids; droop control for active and reactive power; hybrid systems; voltage and frequency control of diesel generators; development trends
Dipl.-Ing. Stefan Schönberger,
Fraunhofer ISE, Freiburg, Germany

4:00pm Coffee Break

4:30pm Fire Safety in PV and Battery Systems

Methods and circuits for arc-fault detection; ground-fault protection; circuits for disconnection of PV-modules and strings; rapid system shutdown; safety and transportation requirements; safe operation
Dipl.-Ing. Felix Eger,
Fraunhofer ISE, Freiburg, Germany

TUESDAY, JUNE 19, 2018

8:30AM–6:00PM | ROOM 03



- 5:10pm** **Grid Codes for PV Inverters and Battery Systems**
International Requirements, Low Voltage Ride Through (LVRT), Inverter Efficiency, Harmonics, Measurement Results, Field Experience
Dipl.-Ing. Stefan Schönberger,
Fraunhofer ISE, Freiburg, Germany
- 5:50pm** Final Discussion
- 6:00pm** End of the Seminar
- 7:30pm** Conference Barbecue,
Tickets can be bought from Solar Promotion

POWER ELECTRONICS



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