Organisational Information

Sign up at: www.ecpe.org/events

Registration Deadline:

25 May 2022

Participation Fee:

On Site	Online	
660,- € *	560,- € *	Industry
490,- € *	410,- € *	Universities/Institutes
165,- € *	140,- € *	(PhD) Students

* plus VAT

- The on site participation fee includes dinner, lunches, coffee/soft drinks and a flash drive with presentations
- A printed version of the workshop handout is available on request (€ 50,-*).
- Online 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 email.
- Three participants from each ECPE member company free of charge. Allocation in sequence of registration.
- 10% discount on 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 upon to 2 weeks prior to the event. After this date 50 % of the fee is non-refundable (replacement is possible).

Organisational Information

Organiser	ECPE e.V. 90443 Nuremberg, Germany www.ecpe.org
Technical Contact	Thomas Harder
Technical Chair	Prof. Joachim Böcker Dr. Frank Schafmeister Paderborn University (DE) Prof. Johann W. Kolar Dr. Jonas Huber ETH Zurich (CH) Dr. Peter Wallmeier Delta Energy System (DE) Prof. Leo Lorenz Thomas Harder ECPE (DE)
Organisation	Ingrid Bollens, ECPE e.V. +49 911 81 02 88 – 10 ingrid.bollens@ecpe.org
Venue	Careum Auditorium Pestalozzistrasse 11 8032 Zurich, Switzerland

Source: Careum

European Center for Power Electronics e.V.

Hybrid Event

ECPE Workshop

Power Electronics Developments for Data Centres

1 - 2 June 2022
Zurich, Switzerland
or online

in cooperation with

UNIVERSITÄT PADERBORN DELTA ETH zürich

ECPE Workshop

Power Electronics Developments for Data Centres

1 - 2 June 2022
Zurich, Switzerland

The ongoing digital transformation is asking for an increasing capacity of data center resources, which is associated with a tremendous energy hunger of this new digital infrastructure. Therefore, key challenges in this field are related to highest efficiencies and power densities in all power conversion sub-units and sustainable power supply based on renewable energies in combination with a grid-friendly behavior.

There is a wide range of data center types and applications, up to the large hyperscale data centers, leading to different power architectures. Improvements in data center power supply efficiency are enabled by wide bandgap (WBG) power semiconductors as well as by DC power architectures with fewer power conversion steps.

The scope of the Workshop follows the power flow in a data center from the medium voltage (MV) input via e.g. Solid State Transformer (SST) up to the Point of Load (PoL) conversion in the 1.x V or 0.x V range. Aspect of Green Data Centers are included considering not only efficiency and heat loss management but also the integration of the data center into a sustainable energy system based on renewables.

The workshop is chaired by:

Prof. Joachim Böcker, Dr. Frank Schafmeister
Paderborn University (DE)

Prof. Johann W. Kolar, Dr. Jonas Huber
ETH Zurich (CH)

Dr. Peter Wallmeier
Delta Energy Systems (DE)

Prof. Leo Lorenz, Thomas Harder
ECPE (DE)

All presentations and discussions will be in English.

Draft Programme

Wednesday, 1 June 2022

09:30 Registration & Welcome Coffee *Webex started*

10:00 Welcome, Opening
Leo Lorenz, Thomas Harder, ECPE e.V.

Introduction & Overview

10:15 Overview: Power Electronic Topics in Data Center Architectures
Frank Schafmeister, Paderborn University (DE)

10:45 Power Delivery Architecture in Data Centres
Guido Kraemer, dc-ce RZ-Beratung (DE)

11:15 Hyperscale Data Centers / Edge Data Centers
NN

12:15 Grid Integration of Data Centers (renewable energy, grid services)
Johannes Lackmann, WestfalenWIND (DE)

12:45 Lunch

Power Conversion at the Medium Voltage Input

14:00 MVAC-LDVC Hybrid and Solid-State Transformer Concepts for Future Data Centers
Jonas Huber, ETH Zurich (CH)

14:30 MV Input or Power Supplies for Servers
Frank Schafmeister, Paderborn University (DE)

Concepts for an Uninterruptible Power Supply (UPS) and Backup Power

15:00 Data Center Market and UPS Technology Trends
Erik Monisera, Fuji Electric Corp of America (US)

15:30 Optimizing for Energy Efficiency and Striking the Balance Between Reliability and ROI
Rakesh Mukhija, Delta Electronics (CH)

16:00 Coffee Break

16:30 Stationary Fuel Cells - the Missing Piece for a Reliable and Sustainable Power Supply for Data Centers
Florian Greppmair, Robert Bosch (DE)

17:00 TBD

17:30 Discussion

18:00 End of 1st Day

19:30 Dinner

Draft Programme

Thursday, 2 June 2022

08:30 *Webex started*

Power Conversion at the 1.x V/0.x V Point-of_Load Side

09:00 Hybrid Switched-Capacitor Converter Architectures and Control Methods for High-Efficiency 48V to Point-of-Load DC-DC Power Conversion in Data Centers | Robert Pilawa-Podgurski, Univ. of California, Berkeley (US)

09:30 Architecture, Magnetics, and Performance Bottlenecks for 48V-1V Power Conversion
Minjie Chen, Princeton University (US)

10:00 Powering Modern Processors by Integrated Voltage Regulator Modules
Gerald Deboy, Infineon Technologies (AT)

10:30 Coffee Break

High Efficiency Power Conversion

11:00 800V Direct Current and PSU Efficiency
Peter Wallmeier, Delta Energy Systems (DE)

11:30 Direct Current for Data Centers
Vito Savino, ABB (US)

12:00 Discussion

12:15 Lunch

High Power Density and Advanced Cooling Solutions

13:30 Power Density and Thermal Management
Roland Huempfner, Huawei Technologies (DE)

14:00 Data Centers Racks with Integrated Cooling
Rittal (enquired)

14:30 Efficient and Compact Power, Packaging and Cooling for Future Data Centers
Xin Zhang, IBM T.J. Watson Research C. (US)

15:00 Liquid Cooling Expansion into Mainstream Computing
Robert Bunger, Schneider Electric (US)

15:30 Final Discussion

16:00 End of Workshop