

Organisational Information

Sign up at: www.ecpe.org/events

Registration Deadline:

10 March 2021

Participation Fee:

€ 250,- *	for industry
€ 190,- *	for universities/institutes
€ 90,- *	for students/PhD students (limited spaces; copy of students ID required)

* plus VAT

- 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 email.
- Three participants from each ECPE member company free of charge. Allocation in sequence of registration.
- 10% discount on university/institute fee for participants from ECPE competence centres.
- 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.
90443 Nuremberg, Germany
www.ecpe.org

Technical Contact Dr. Chris Gould, ECPE e.V.
+49 (0)911 / 81 02 88 – 21
chris.gould@ecpe.org

Organisation Ingrid Bollens, ECPE e.V.
+49 911 81 02 88 – 10
ingrid.bollens@ecpe.org

Technical Chairmen:



Prof. Marc Hiller,
Karlsruhe Institute of Technology (DE)



Dr. Giovanni De Carne,
Karlsruhe Institute of Technology (DE)



Timo Rösch,
OPAL-RT Germany (DE)

Cluster
Leistungselektronik



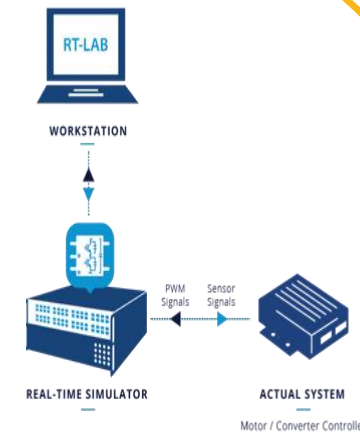
European Center for
Power Electronics e.V.

Digital Event

ECPE/Cluster-Online Workshop

Hardware-in-the-loop (HIL) Testing of Power Electronics: Concepts, Updates and Trends

15 March 2021
Digital Event



ECPE/Cluster Online Workshop

Hardware-in-the-loop (HIL) testing of power electronics: Concepts, updates and trends

15 March 2021

In order to reduce design iterations and time-to-production, components for embedded systems - such as the power electronics which drive an electric motor in an electric vehicle for example, have to be tested in as realistic conditions as possible before being qualified in a real environment. Hardware-in-the-loop (HIL) testing provides thorough and repeatable testing conditions by simulating not just the environment of operation but also system-wide inputs and disturbances. By this, not only the functionality of the device under test may be validated, but also the behaviour to simulated malfunctions of connected components. At the same time sensors in the system can measure changes in the tested component for reliability and end-of-life predictions.

This workshop aims to address the different HIL-techniques relevant to power electronics. In addition to presenting state-of-the-art examples of HIL, future trends like the impact of the introduction of very high frequency Wide Bandgap Devices on real-time simulation in the loop will be discussed.

In bringing experts in various HIL technologies within the ECPE network together with academics and end-users who would like to get insight into the latest developments in this field, it is expected that both newcomers to HIL technologies as well as experienced practitioners who want to get an overview of this challenging field will benefit from the presentations and discussions covered in this workshop.

The workshop is chaired by:

Prof. Marc Hiller, Karlsruhe Institute of Technology (DE)
Dr. Giovanni De Carne, Karlsruhe Institute of Technology (DE)
Timo Rösch, OPAL-RT Germany (DE)

All presentations and discussions will be in English.

Programme

Monday, 15 March 2021

08:30 Webex will be started

09:00 Start of Workshop

09:00 Opening / Welcome

Chris Gould, ECPE,
Marc Hiller, Karlsruhe Institute of Technology (DE)

09:10 Real Time Modelling and PHIL Testing Experience at KIT

Giovanni De Carne, Karlsruhe Institute of Technology (DE)

Automotive & Drives

09:50 X-in-the-loop Technology Supporting Drive Design and Application

Peter Köllensperger, Siemens (DE)

10:20 Parametrization and Accuracy of an E-Motor-Emulator

Patrick Winzer, AVL SET (DE)

10:50 Real-time Power Losses Calculation in Automotive

Dusan Cohadzic, Typhoon-HIL (SRB)

11:20 Break

Power Electronics

11:30 Virtual Test Field based on Freely Available Models for Solid-State-Transformers and their Applications

Sebastian Bröske, Maschinenfabrik Reinhausen (DE)

12:00 Development of a Distributed and Efficient Hardware-in-the-Loop MMC Model Employing Virtual Capacitor Concept

Stefan Milovanovic, EPFL (CH)

12:30 Switching Device Models for Hardware in the Loop Simulation of Power Converters

Niklaus Felderer, Plexim (CH)

13:00 Lunch Break

Programme

Real Time Simulation

13:45 HIL to test and validate MV Converter Controls for Industrial Applications

Antoine Bodson, Cédric Bordas, General Electric (F)

14:15 An Overview of Numerical Approaches for XiL-Simulation of fast switching Power Electronics

Ravi Venugopal, Marija Stevic, OPAL RT (DE)

14:45 Validation of Embedded Systems with Hardware-in-the-loop Methods

Daniel Heinrich, iSyst Intelligente Systeme (DE)

15:15 Break

PHIL & Testing

15:30 Recommended Practice for Hardware-in-the-Loop (HIL) Simulation Based Testing of Electric Power Apparatus and Controls – The IEEE WG “P2004”

Georg Lauss, AIT Austrian Institute of Technology (AUT)

16:00 HIL Testing Experience at Fraunhofer ISE - Showcase EV Supply Equipment

Bernhard Wille-Haussmann, Fraunhofer ISE (DE)

16:30 Stability and Accuracy of P-HIL Simulation in Power Electronics Testing

Sante Pugliese, Christian-Albrechts-Universität zu Kiel (DE)

17:00 Final Discussion

17:30 End of Workshop