

Workshop: Advanced Modeling and Simulation of Power Electronic Systems

Zurich, January 24–25, 2012

Speakers

Dr. Jost Allmeling, Managing Director Plexim GmbH

Dr. Wolfgang Hammer, Chief Scientist, Plexim GmbH

Dr. John Schönberger, Research & Applications Engineer, Plexim GmbH

Day 1

08:30 Introduction into PLECS

- General use of PLECS Blockset and PLECS Standalone
- Instantaneous switching
- Variable and fixed step operation

Exercise: Modeling of a forward converter

10:00 Coffee break

10:30 Solver Settings

- Definition of stiff and non-stiff systems
- Explicit and non-explicit solvers
- Stability domain
- Accuracy considerations, step-size control
- Proper handling of discontinuities, zero-crossing detection

Exercise: Solver Settings

12:00 Lunch

13:00 Introduction to Thermal Modeling & Simulation

- Switching & conduction loss descriptions
- Combined electrical-thermal simulation
- Calculation of average power losses

Exercise: Thermal modeling of a buck converter

14:30 Coffee break

15:00 Advanced thermal modeling

- Electrical feedback of thermal losses
- Lookup table approximation from datasheets

Exercise: Thermal design of an inverter

16:30 End of day 1

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Day 2

08:30 **Use of the C-script block**

- Function call interface
- Time settings and macros
- High speed logic emulation

Exercise: Implementing a digital PI controller with control delay

10:00 Coffee break

10:30 **Scripting options for PLECS Standalone**

- Inbuilt scripting engine
- External simulation scripting via XMLRPC
- Matlab syntax
- Executed with Octave engine
- External Python, Java with XML client

Exercise: Parameter sweep with a buck converter

12:00 Lunch

13:00 **Overview of PLECS Tools**

- AC sweep and impulse response analysis
- Steady-state analysis
- Implementing custom components

Exercise: Creating a custom PV string model

14:30 Coffee break

15:00 **Converter Controller Design Using PLECS**

- Flyback converter overview and control structure
- A design flow using PLECS tools

Exercise: Control design of a flyback converter using PLECS tools

16:30 **End of day 2**

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I will participate at the workshop and in the following events of the workshop
(please indicate and send back to us)

Day	Event	Yes	No
Jan 24, 12:00	Lunch		
Jan 24, 19:00	Workshop dinner		
Jan 25, 12:00	Lunch		
I have a computer	with PLECS Standalone		
Promo code:			
Name:			
Affiliation:			
Comments:			
Contact details (telephone, email, address):			

Venue	Renaissance Zurich Tower Hotel, Turbinenstrasse 20, 8005 Zürich
Accommodation	The Renaissance Tower Hotel offers workshop participants a reduced room rate of CHF 315.00 per night. Rooms can be reserved directly at the hotel. The offer is valid until December 23, 2011.
	The workshop contains hands on exercises. Please bring your own computer with you. PLECS Standalone licenses may be obtained ahead of the workshop from www.plexim.com .
Contact	Peter Baumann, tel: +41 44 445 2410, info@plexim.com
Cost	CHF 810.- (incl. 8% VAT) (includes: workshop, documentation, lunch and workshop dinner)