OMICRON LAB
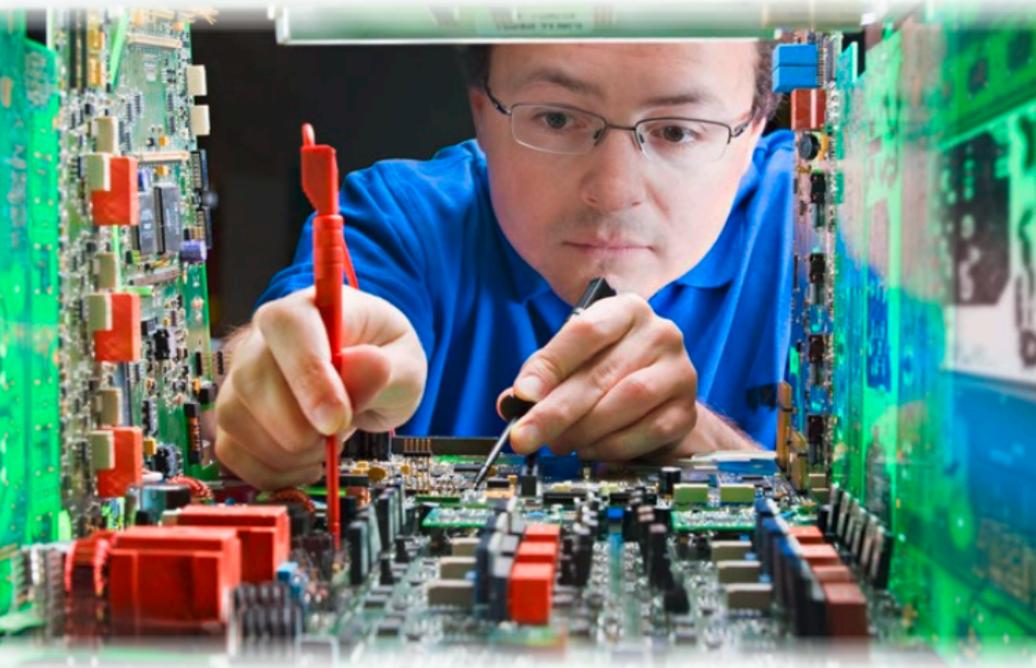
3rd Power Analysis & Design Symposium

Advanced Characterization, Simulation,
and Troubleshooting of Electronic Power Systems

May 15, 2014 / 08:30 - 17:00
Eching (near Munich), Germany

With lectures, practical examples and demonstrations
presented by power supply experts from:

Biricha Digital Power, Infineon Technologies,
Linear Technology, Microchip Technology,
Negal Engineering, Picotest,
TU Ilmenau and Würth Elektronik

Participants

- Power electronics design engineers working on analog and digital power supplies who want to ensure stable system performance.

- Electronic engineers who need to assess the quality and stability of a power supply they are using or planning to buy.

Agenda

08:30 - 09:00 Registration
09:00 - 10:00 Key note by Steven Sandler (Picotest)
10:00 - 10:30 Coffee break and exhibition
10:30 - 12:00 Lectures & demonstrations

12:00 - 13:00 Lunch

13:00 - 14:30 Lectures & demonstrations
14:30 - 15:00 Coffee Break and exhibition
15:00 - 16:30 Lectures & demonstrations
16:30 - 17:00 Discussion & closing

Seminar partners

Smart Measurement Solutions®

Topics

Power Integrity - measuring, optimization and troubleshooting power related issues
(Steve Sandler - Picotest)

Learn about measurement philosophy, test equipment requirements, and simple measurement techniques for obtaining high fidelity measurements. This session addresses the benefits of non-invasive, in-system measurements and the use of indirect measurements to identify, assess and troubleshoot system level problems. While the session includes all system related measurements and domains, you will learn why the frequency domain is generally preferred and how to get the best fidelity when measuring in the time domain.

Design and measurement of stable opto-isolated power supplies
(Ali Shirsavar - Biricha Digital Power)

In this session, Dr. Shirsavar will explain how to design a stable opto-isolated control loop for an isolated power supply. The techniques taught are applicable to both analog and digital power supplies. In particular, the frequency response of the opto-isolator and its impact on the power supply's control loop will be studied. The session will conclude with a real-life measurement of an opto-isolator within a power supply using a Bode 100 VNA.

Real-Life EMC Filter Design and Analysis
(Ralf Negele - Negal engineering)

A working EMC filter is one of the key requirements to ensure stable operation of power supplies. Classical design approaches work either with ideal components or SPICE models. In this lecture, a new method is introduced that takes into consideration the real-life characteristics of the actually used components right from the beginning.

Smart Measurement Solutions®

Topics

Design & verification challenges in fully digital, non-linear control systems
(Andy Reiter - Microchip Technology)
Early DSP-based power converters were mostly used to "imitate" proven analog compensation filters in combination with programmability and design flexibility. With increasing acceptance and experience in various applications and markets, digital control has entered an entirely new level of non-linear control. Over the years adaptive and predictive control methods have been developed to increase efficiency, performance and reliability simultaneously. This lecture introduces the concept of basic non-linear control concepts and focuses on verification methods for Adaptive Gain Control (AGC).

Taking advantage of high resolution PWM
(Pablo Yelamos - Infineon)
The growing demand in terms of conversion efficiency and time to market has led the power control world to adopt digital control techniques. Not only a digital control technique offers better flexibility in terms of adaption to newly created topologies, but will also offer a better efficiency over different operating conditions, such as temperature and fabrication process. We will demonstrate how the XMC4000 microcontroller together with a powerful ARM® Cortex™-M4 processor can be used to control a 5 MHz high switching frequency buck converter – taking advantages of the 150 picosecond PWM resolution – and give examples of how the resources can be arranged to address several other power conversion topologies.

8 design tips for correct power inductor selection
(Markus Schubert - Würth Elektronik)
To ensure the proper functioning of a power supply in the field, the selection of the correct power inductor is essential. In this lecture, it is shown how important it is to consider the core material, the switching frequency as well as inductor currents and losses during design process and component selection.

Topics

Control loop design and practical verification in DC/DC converter applications
(U. Schwalbe, M. Schilling, T. Reimann - TU Ilmenau)
Many currently used research concepts deal with the control loop design of special converter topologies or special control structures. Therefore, power electronic design engineers, it is difficult to find a good design methodology and achieve an optimized controller design quickly. The authors present the development of a simple model-based design methodology for DC/DC converters using the Simulation Program with Integrated Circuit Emphasis (SPICE). Frequency and time domain simulation models will be used for an efficient loop design. In addition, a short practical control loop design guide using the SPICE simulation tool and the vector network analyzer Bode 100 is presented. The complete control loop design will be shown on a flyback converter prototype.

Registration

Register until:
May 5, 2014

Please register online at
www.omicron-lab.com/event

No time to attend?
Visit us at PCIM in Nuremberg for live
demonstrations at Hall 6 booth 228

Free Participation

The participation in our seminar is free of charge and will include lunch and refreshments during breaks.

Venue

The one-day seminar will take place at:

Bürgerhaus Eching
Roßbergerstraße 6
85386 Eching (near Munich)
Germany

Accommodation

For participants who arrive before or leave after the day of the seminar, we recommend a stay in the following hotel:

Hotel Huberwirt
Untere Hauptstr. 1
85386 Eching
Phone: +49 89 319 05 0
Fax: +49 89 319 05 123
E-Mail: info@huberwirt.de

If you need help with the booking of hotel rooms, no problem. Just contact us and we will be happy to assist you.

Your Contact

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