6th Power Analysis & Design Symposium

Advanced Characterization, Simulation and Troubleshooting of Electronic Power Systems

Symposium: April 26th, 2017 / 08:30 - 17:00
Open Lab: April 25th, 2017 / 15:00 - 19:00
in Eching (near Munich), Germany

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

Biricha Digital, Microchip Technology, IDT, Kemet and Rohde & Schwarz.

Participants

- Power electronics design engineers working on analog and digital power supplies who want to ensure optimum system performance.
- Electronic engineers who need to assess the quality and stability of third party power supplies

Free Participation

The participation in our symposium is free of charge and includes lunch and refreshments during breaks.

Venue

The Symposium and the Open Lab take place at:

Bürgerhaus Eching
Roßbergerstraße 6
85386 Eching (near Munich)
Germany

Accommodation & Travel Information

All details for recommended accommodations and travel information can be found on www.omicron-lab.com/event

April 25th - Pre-evening Open Lab:

Join our Open Lab after your daily work is done. We will have several measurement benches ready for you, where we can measure loop stability, PSRR, output impedance and more...
So, come whenever you want, have a beer, bring your power supplies and do some great measurements with us. The Lab will be open from 15:00 - 19:00.

April 26th - Symposium Agenda:

08:30 - 09:00	Registration
09:00 - 09:15	Welcome & introduction
09:15 - 10:15	Lecture
10:15 - 10:45	Break & exhibition
10:45 - 12:15	Lecture
12:15 - 13:15	Lunch
13:15 - 13:45	Exhibition
13:45 - 15:15	Lecture
15:15 - 15:45	Break & exhibition
15:45 - 16:30	Lecture
16:30 - 17:00	Discussion & Closing

Seminar Partners

ANALOG DEVICES – AHEAD OF WHAT'S POSSIBLE™
BIRICHA DIGITAL
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Catch
the latest trends in
power electronics!

OMICRON LAB

Analog PFC Design: Step-by-Step
by Dr. Ali Shirsavar - Biricha Digital

In this technical presentation the operation of the highly popular Continuous Conduction Mode Boost PFC is discussed. Starting from first principles the operation and design of the voltage loop, the current loop and the voltage feed forward filter are detailed. All design equations are presented along with a real life numerical design example. The session concludes with a live demonstration of a fully functioning PFC design.
All attendees will receive a complimentary license for Biricha Digital's Analog and Digital Power Factor Loop Design Software (**www.biricha.com/pld**)

Solving model predictive control challenges in spread spectrum modulated systems
by Andreas Reiter - Microchip Technology

Chaotic spread spectrum modulation in digitally controlled power supplies is very common and widely accepted as the most efficient technique to reduce electromagnetic interference and emissions.
However, this permanently active, unpredictable behavior of this modulation technique might impact other control methods where accurate predictions are vital.
This presentation introduces a control system which utilizes sub-cycle model predictive control to achieve true diode emulated sync rectifier control. This is done without analog circuit support within a chaotically modulated PWM scheme in a multiphase architecture. Both techniques, spread spectrum modulation and diode emulation of synchronous rectifiers, are introduced and then incorporated into the multi-loop real-time control concept preventing disruptions between the three control domains.

Insight C - beyond the catalog
by Axel Schmidt - Kemet Electronics

On catalog and internet pages MLCC and Polymer capacitors are described under standard test conditions in accordance to EIA-198-2. This means, typically at room temperature, 1 kHz frequency, 1 Vrms sinusoidal voltage and no DC-bias. However, in real-life applications capacitors are operated at higher frequencies, with DC voltage applied and in a wide temperature range from subzero °C to over 100 °C. In this presentation a simulation tool is introduced that allows to predict the capacitor's behavior under various operating conditions. The simulation covers certain rarely documented cases such as ripple current, pulse capability, reliability, lifetime and anti-resonance effects.

Architecture of digital PWM controllers for high current-slew-rate applications
by Marco Meola - IDT Europe

Increased computation capabilities and improved ADC and DPWM IPs make microcontroller based digital PWM controllers a viable solution for many applications. Nevertheless in high current-slew-rate applications increased controller performance is required to provide tight regulation of the output voltage. Thus, dedicated digital PWM controllers, where analog and digital HW is optimized to execute specific control tasks, are the preferred choice.
In this presentation the architectural differences between a microcontroller based solution and a high performance digital PWM controller is explained. Further on a digital control method to achieve fast transient performance without sacrificing quiet and noise insensitive steady state operation will be presented.

Input impedance measurements for filter stability evaluation
by Florian Hämmerle - OMICRON Lab

Input filters for DC/DC converters are often required to meet today's EMC requirements. Generally input filters are designed to have low loss which can result in high-Q circuits that are subject to oscillation. This can have a negative impact on the stability of DC/DC converters. Further on, the input impedance of a DC/DC converter is the critical parameter for a proper filter design. This presentation focuses on the theory of the filter stability and how to avoid problems. Different input impedance measurement methods as well as their advantages and disadvantages are presented and compared based on real-life measurement results.

Floating measurements with isolated channel oscilloscopes or differentials probes - pros & cons
by Markus Herdin - Rohde & Schwarz

Isolated channel oscilloscopes offer a safe and an economic way to measure floating voltages in switched mode power supplies. In the presence of fast common mode signal transitions the common mode rejection ratio becomes the critical parameter of the measurement system. In this case differential probes tend to be the best performing measurement concept. This presentation shows the performance differences between isolated input oscilloscopes and differential probes and gives hints on how to get the best out of your measurement.

Registration

Register until:
April 11th, 2017

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

No time to attend?
Visit us at PCIM Europe in Hall 6 booth 244

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