Technical Article

Another Chance to Catch the 2016/2017 Power Supply Design Seminar

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***Author's note**: Before catching up on the 2016/2017 Power Supply Design Seminar, register for the 2018 Power Supply Design Seminar! This year's seminar is the 23rd edition of the seminar, which has been educating the power community for nearly four decades.*

For the past year, a team of leading TI power experts came together to create fresh high-quality technical material for the 2018 Power Supply Design Seminar. Now, teams of experienced power supply engineers are ready to travel to your city and deliver this training material directly to you in a relaxed and friendly learning environment.

For the 2018 seminar, we have six technical topics covering timely topics like the active clamp flyback and resonant converters. This year's seminar also provides material that most power engineers can immediately put to use, like trouble-shooting DC/DC power supplies, and measuring the frequency response of a feedback loop. Additional useful and interesting topics cover driving synchronous rectifiers in isolated supplies and powering audio applications.

Regardless of your level of expertise, I am sure you will find the seminar to be useful, educational, and interesting.

In addition to training by TI experts, registration includes a bound book of white papers for all six topics, a presentation workbook for taking notes, refreshments and lunch. Additionally, this well-attended seminar provides a great opportunity to network with the power community in your region.

The 2018 seminar begins in India, China, Japan, Korea, Japan, and Europe during March, and finishes up by touring US cities during the month of April. Our registration page contains the complete list of cities and dates, as well as the complete list of topics and brief abstract.

For nearly four decades, the Texas Instruments Power Supply Design Seminar has brought in-person training from power-supply experts directly to customers.

For each seminar, we carefully choose topics under guidelines set by Bob Mammano. Ultimately, each topic selected must be useful, educational and interesting. We take pride in the fact that the seminar is not a sales pitch, but truly an educational experience.

Our most recent 2016/2017 seminar was the 22nd edition (SEM2200), which wrapped up earlier this year after touring the United States, China, India, Japan, Taiwan, Korea and Europe. Personally, I am thankful to have been a part of the seminar tour, and to have had the opportunity to meet so many fellow engineers in the power-supply community.

If you missed the last seminar tour, it's not too late; we are now preserving the experience for you online through a new training site, with all of the 2016/2017 seminar material in one place. With a myTI login, you can access videos of each presentation and downloadable versions of the papers and presentation material. Each video has been studio recorded and is around 40 minutes in length.

SEM2200 includes seven topics covering a variety of power-supply-related issues, written by expert engineers with practical experience dealing with those topics. They are:

- "**Design of a high-frequency series capacitor buck converter**" by Pradeep Shenoy. In this paper, Shenoy introduces the series capacitor buck-converter topology and discusses how it can significantly reduce the size of point-of-load (POL) voltage regulators. He also covers the limitations of conventional high-frequency buck converters and how the series capacitor buck converter overcomes these challenges.
- "**Flyback transformer design considerations of efficiency and EMI**" by Bernard Keogh and Isaac Cohen. The flyback converter is widely used in AC/DC power supplies due to its simplicity and wide operating range. In this topic, Keogh and Cohen focus on the importance of transformer design, since this single component has an enormous impact on converter efficiency and electromagnetic interference (EMI) performance.
- "**Switch-mode power converter compensation made easy**" by Bob Sheehan and Louis Diana. Compensating power supplies can be an arduous task for those not well versed in it. Sheehan and Diana break down the procedure into a step-by-step process that you can easily follow to compensate a power converter, while also explaining the theory of compensation and why it's necessary.
- "**Bidirectional DC/DC converter topology comparison and design**" by Zhong Ye and Sanatan Rajagopalan. A bidirectional DC/DC converter is a key element of many new applications, such as automotive, server and renewable-energy systems. For this topic, Ye and Rajagopalan use a 48V/12V bidirectional converter as an example with which to revisit the hard-switching synchronous buck topology and compare it to a transition-mode totem-pole zero-voltage-switching (ZVS) topology.
- "**SiC and GaN applied to high-frequency power**" by John Rice and Rais Miftakhutdinov. Emerging wide-bandgap (WBG) silicon carbide (SiC) and gallium nitride (GaN) power devices are steadily gaining popularity in power electronics and have the potential to significantly increase a power converter's efficiency and power density. In this paper, Rice and Miftakhutdinov examine important design issues when using WBG devices including drive technique, mitigating layout and packaging parasitics, high-frequency measurements, and simulations.
- "**Under the hood of a noninverting buck-boost converter**" by Vijay Choudhary, Timothy Hegarty and David Pace. When it comes to designing buck-boost converters, there is a huge gap between the simple inverting buck-boost converter in textbooks, which actually produce a negative output voltage, and real-world buck-boost applications that require a positive output. With this paper, Choudhary, Hegarty and Pace fill a gap in buck-boost literature by presenting various topologies used in noninverting buck-boost designs.
- "**Design review of a 2-kW parallelable power-supply module**" by Roberto Scibilia. In this paper, Scibilia steps through the design procedure of a real project that resulted in a prototype for a 2kW power-supply module. He covers the selection of the main power stages, including a continuous conduction mode (CCM) power-factor-correction circuit and a peak current mode-controlled isolated DC/DC resonant phase-shifted full-bridge converter with synchronous rectification.

I hope that you find the material from the seminar series truly useful, educational and interesting. Please share your questions and thoughts on the SEM2200 topics or the seminar in general by commenting on this post. Of course, as we are busy preparing for the next seminar series, we are very interested to hear what topics you would like to learn more about as well.

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