

**WORKSHOP**

***POWER CONVERTERS WITH SILICON CARBIDE (SiC) DEVICES***

**Monday, 06.10.2014**

**Tallinn University of Technology, Faculty of Power Engineering**

**Room: NRG-315**

**Speakers:** Prof. Jacek RABKOWSKI, Warsaw University of Technology (Poland)  
Dr. Dimosthenis PEFTITSIS, ETH Zurich (Switzerland)

**09.00-09.05 Opening of the Workshop.**

**09.05-10.00 Introduction to Silicon Carbide (SiC) power transistors**

09.05-09.20 Features of Silicon Carbide

09.20-09.50 SiC transistors concepts (JFETs, BJTs, MOSFETs)

09.50-10.00 Devices available on the market - brief overview

**10.00-12.00 Gate/base drivers and parallel-connection issues**

10.00-10.30 JFETs: normally-ON problem and available solutions

10.30-11.00 Base drivers for SiC BJTs.

11.00-11.30 Driving of SiC MOSFETs. Protection schemes

11.30-12.00 Parallel connection of SiC transistors

**12.00-13.00 Break**

**13.00-14.00 Modelling and simulation**

13.00-13.20 Simple electro-thermal calculations.

13.20-13.40 Impact of SiC FETs reverse conduction on conduction power losses

13.40-14.00 Advanced devices/converters modelling in SABER

**14.00-16.00 Converters with SiC power devices.**

14.05-15.00 Examples of converters built with discrete devices (40 kVA inverter, 250 kHz DC/DC boost converter, 4x125 kHz interleaved converter)

15.00-15.50 Converters built with power modules (125 kVA JFET inverter, 312 kVA MOSFET converter, 10 kVA AC/DC converter)

15.50-16.00 Final remarks.

**16.00-16.15 Conclusions and closing of the course.**

REGISTRATION: Dr. Dmitri Vinnikov  
[dmitri.vinnikov@ieee.org](mailto:dmitri.vinnikov@ieee.org)  
Tel. (+372) 6203705