

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.

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