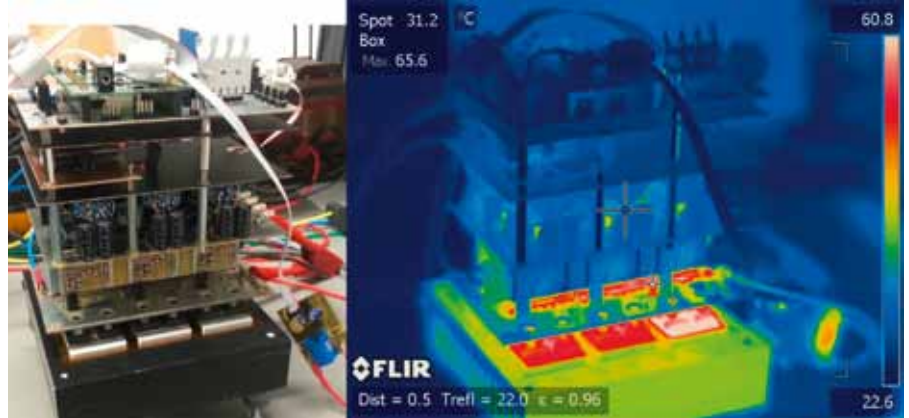


GRAZ UNIVERSITY OF TECHNOLOGY

The Electric Drives and Machines Institute at Graz University of Technology has a long-standing tradition of research into electric and electromechanical energy converters, power electronics, and the integration of these components into systems. Located in the second largest city in Austria, it is part of a university with a focus on the engineering and technical sciences. The university includes some 12000 students and close to 2500 members of staff, the institute is embedded in a network with other universities within the city, the country, Europe, and beyond, thereby benefitting from a strong research and increasingly international climate.

The competence of the institute was complemented and extended in April 2010 when Prof. Muetze, who had worked previously in Germany, the US, and the UK, became head of the institute, further directing the institute into an international network of research and development activities. The new leadership also brought forth the construction of a new, modern laboratory building for research and teaching activities. This facility provides around 300 m² of floor space, up to 500 kVA power capabilities, including 690 V systems and variable AC and DC voltages up to 600 V, as well as the appropriate modeling and measurement equipment. A power electronics test laboratory is also situated on the first floor to complement the research in this area.



DC current link PWM inverter and its true color thermo graphic image.

A significant part of the research activities is carried out in cooperation with national and international industrial partners, covering the areas of electro-mechanical as well as solid-state power converters, design of power-electronics based systems including control and interactions between system components, and the development of prototypes and experimental verification in the institute's own laboratories. With activities both in the area of power electronics and in the field of electric machines, the institute is ideally placed to work on questions that arise from power electronics to electric drive systems applications.



New laboratory building.

Examples for current research projects cover the wide range of topics from starting of a line-operated synchronous machine with damper winding to the electric and thermal design of drives for electric traction applications, and small low-cost drives of a few hundred Watts rated power for mass production. Further activities include motor-inverter interactions, such as inverter-induced bearing currents, and the development of new power converter topologies, such as a power supply reaching titanium level efficiency for a wide range of input voltages.



Test rig for fractional horsepower drives (Mechatronic Systems GmbH, Wies).