

Institute for Power Electronics and Electrical Drives ISEA

RWTH Aachen University



The Institute for Power Electronics and Electrical Drives is headed since 1996 by Univ.-Prof. Dr. ir. Rik W. De Doncker. With approx. 28 full time employed scientists, 10 technicians and administrators and numerous students it is one of the largest power electronics institutes in Europe. Research activities cover various applications of electric energy conversion ranging from small dc/dc converters to high power wind energy converters, and automotive applications to household appliances. Since 2003 the electrochemical energy conversion and storage system group is headed by Prof. Sauer.

Key Research Fields & Competence Areas:

- **Power Electronics**
Photovoltaik, DC/DC, DC/AC, High Frequency Converters, Inductive Heating, Active Filters, Reliability and Life Time
- **Electric Drives**
Switched Reluctance Drives, Control, Design & Simulation
Special Drives (spherical Motor)
- **Electrochemical Energy Conversion & Storage**
Electrochemical Impedance Spectroscopy, Modelling, State-of Charge, State of Health Prognosis, Battery Management
Pb-, NiMH- and Lithium-Ion Batteries, Fuel Cells
- **Power Electronic Devices**
Modelling and Characterization of High Power Switches and Drivers

Institute Highlights:

- EMC Test Laboratory, Calorimetric Efficiency Measurement Box, Rapid Prototyping Tools and Teal Time Simulator
- Test Benches for Electric Drives (up to 100 kW), Drive Line Oscillations, Acoustic Noise Measurement and Analysis Tools
- Multi-Channel Impedance Spectroscope, Automated Battery Charging and Discharging Test-benches, Battery Monitoring,
- Clean Room, Power Semiconductor Test-Bench,
- Analytic and Numeric Simulation Models for Power Electronic Systems and Devices.

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