



The Group is an international research centre for power electronics and motor drives. At 31/08/07 the Group had 8 academic staff, 73 post-doctoral and PhD researchers, and a grant portfolio of €12.5M. Its strategy focuses on the aerospace and energy sectors with rapidly growing activities in HV and pulsed power supplies. The activities range from basic technology research to applied research, culminating in advanced demonstrators for industry.

Key Research Fields & Competence Areas:

- ∅ Power Conversion
 - Power converter topologies and control, practical validation
- ∅ Aerospace Electrical Power Systems
 - Compact power conversion, electrical actuation
 - System modelling
- ∅ Power Device and Packaging Technologies
 - Packaging technologies for Si/SiC
 - Reliability, physics of failure, health management
 - Thermal management
- ∅ AC Motor and Generator Drives
 - Sensorless Control Techniques
 - Self-commissioning and drive intelligence
- ∅ Energy Systems
 - Transmission, distribution and micro-grid power electronics
 - Renewable energy systems interfacing, networks & control

Institute Highlights:

- ∅ 1000m² research laboratory
 - 1 MVA utility power supply
 - 90kVA electronic “aerospace” power supply
- ∅ Power converter research
 - Experimental work to 750kW and 25kV+
 - Extensive modelling capabilities
- ∅ Power device technologies
 - Power device packaging : wire-bonding, vacuum reflow etc
 - Electrical and thermal characterisation
 - Reliability assessment, advanced environmental testing
- ∅ Electrical machine and drives research
 - Electrical machine and drive rigs to 800kW
 - Performance and calorimetric efficiency tests
 - 20,000rpm, 40kW dynamometer

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