

The Power Electronics Group is part of the Institute of Electrical Power Engineering at Technische Universität Dresden. With its about 15 members staff the group is responsible for power electronics education at TU Dresden, and carries out government and industry funded research projects. The area of expertise includes power semiconductors, topologies, and control for industry, energy, and traction applications.

Key Research Fields & Competence Areas:

- Ø **High-Power Semiconductors**
 - Characterisation, optimisation and application of IGCTs, IGBTs and SiC devices
 - Gate unit development
- Ø **Low- and Medium-Voltage Converters**
 - Multi-level converter topologies and their modulation
 - Power Electronic Building Blocks
- Ø **Electric Drives**
 - High-speed drives and new control concepts, e.g., sliding-mode control, flatness based control, DTC, vector control
- Ø **Power Supplies for Specific Applications**
 - e.g., welding, piezzo, laser, contactless and wireless power

Highlights:

- Ø **15kV - 5kA Press Pack Test Bench (IGCT or IGBT)**
 - Test of 10KV IGCTs (successful turn off at $V_{dc} = 7kV$ / $I_A = 1kV$ achieved: **world record !**)
- Ø **1kVA contactless piezzo power supply for supersonic grinding**
- Ø **Active NPC Voltage Source Converter**
 - Invented by members of the Power Electronics Group
 - 20%-60% output power increase compared to NPC VSC !
- Ø **40kW Four-Quadrant Drive Test Bench**
 - with rapid prototyping or low cost control platform

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