

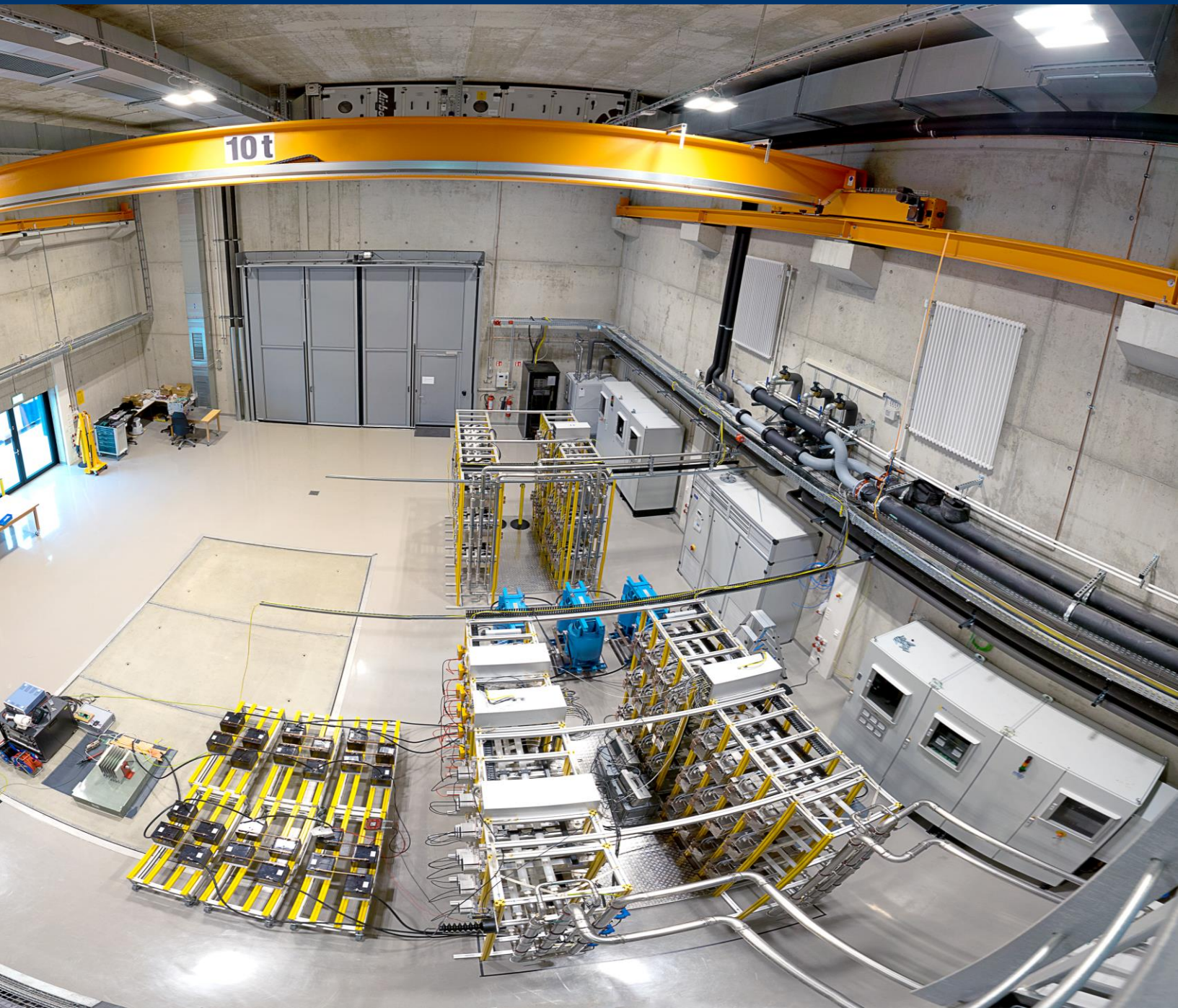


# Fraunhofer

IISB

FRAUNHOFER INSTITUTE FOR INTEGRATED SYSTEMS AND DEVICE TECHNOLOGY

## 10 MVA Medium Voltage Test Bench with Modular Multilevel Converter





Fraunhofer IISB Medium Voltage Test Bench – Innovative test infrastructure for future grids



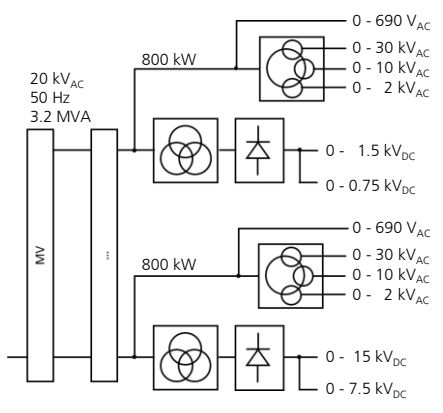
Modular Multilevel Converter: Flexible power electronic topology for your challenging demands

**Our framework ready for your tests**

- A robust, scalable and innovative test infrastructure for technical devices
- Control room for personal and operational safety
- Nearby extensively equipped laboratories to prepare the test devices
- Accessible for trucks up to 40 t
- Ceiling crane to move loads up to 10 t

**The technical backbone**

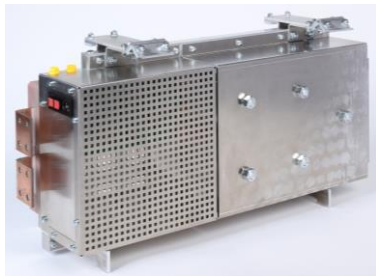
- Connected to public power supply @ 20 kV<sub>AC</sub>  
Electrically decoupled via transformers
- 900 kW water cooling
- Two separated power branches
- Variable voltages up to:  
30 kV<sub>AC</sub> via tap-changing transformers  
15 kV<sub>DC</sub> via 12-pulse rectifier



Available connections with voltage ranges up to 30 kV<sub>AC</sub> and 15 kV<sub>DC</sub>

**Modular Multilevel Converter**

- In-house development from planning to manufacturing and testing
- Full bridge submodules with
  - 1200 V / 600 A IGBTs
  - Integrated capacitor voltage measurement
  - Gate driver with safety features
  - Fiber-optic cable interface for communication and sensor data
  - Internal power supply from cell capacitor for FPGA and gate driver
  - Explosion-proof housing



Full bridge submodule

- Modular assembly for series and parallel connection possible
- Inhomogeneous voltage steps for better power quality possible

**Fraunhofer Institute for Integrated Systems and Device Technology IISB**

Schottkystrasse 10  
91058 Erlangen, Germany

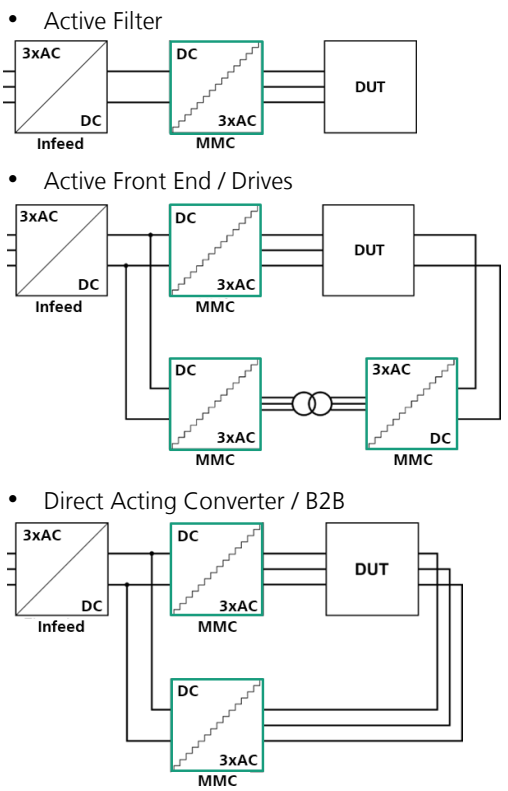
**Contact**

Dr. Thomas Heckel  
Medium Voltage Electronics  
Tel.: +49 9131 761-436  
Thomas.Heckel@iisb.fraunhofer.de  
www.iisb.fraunhofer.de

**Our knowledge for your benefit**

- Broad experiences in power electronics development from PCB to full systems
- In-house communication design for software and hardware
- Close cooperation with FAU Erlangen-Nuremberg and LZE Bayern
- Upcoming extension: Megawatt motor test bench in 2023

**Use cases and test scenarios**



Sponsored by



Bavarian Ministry of Economic Affairs, Regional Development and Energy