

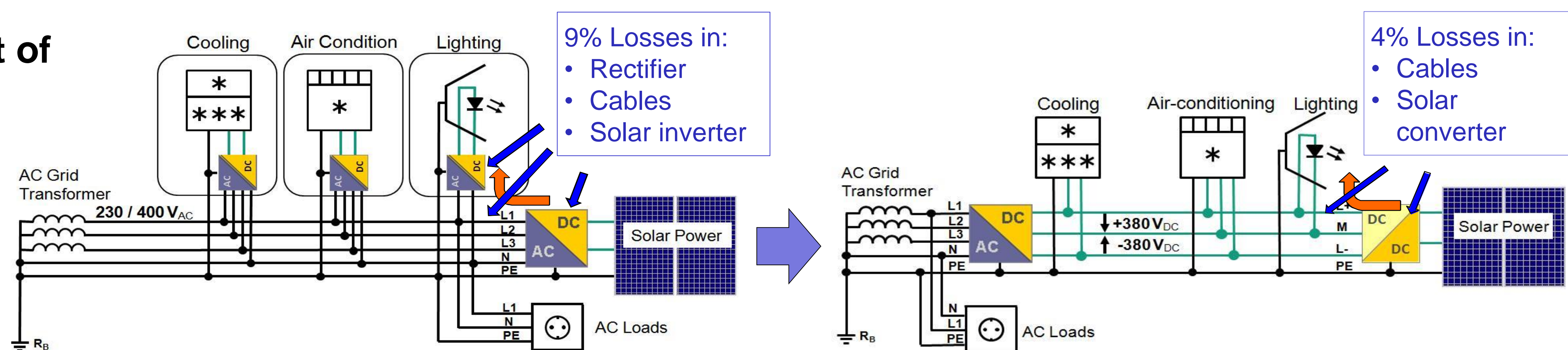
Motivation

Re-consider AC-grids in the light of

- Renewable energies
- Switch mode power supplies

Demonstrate

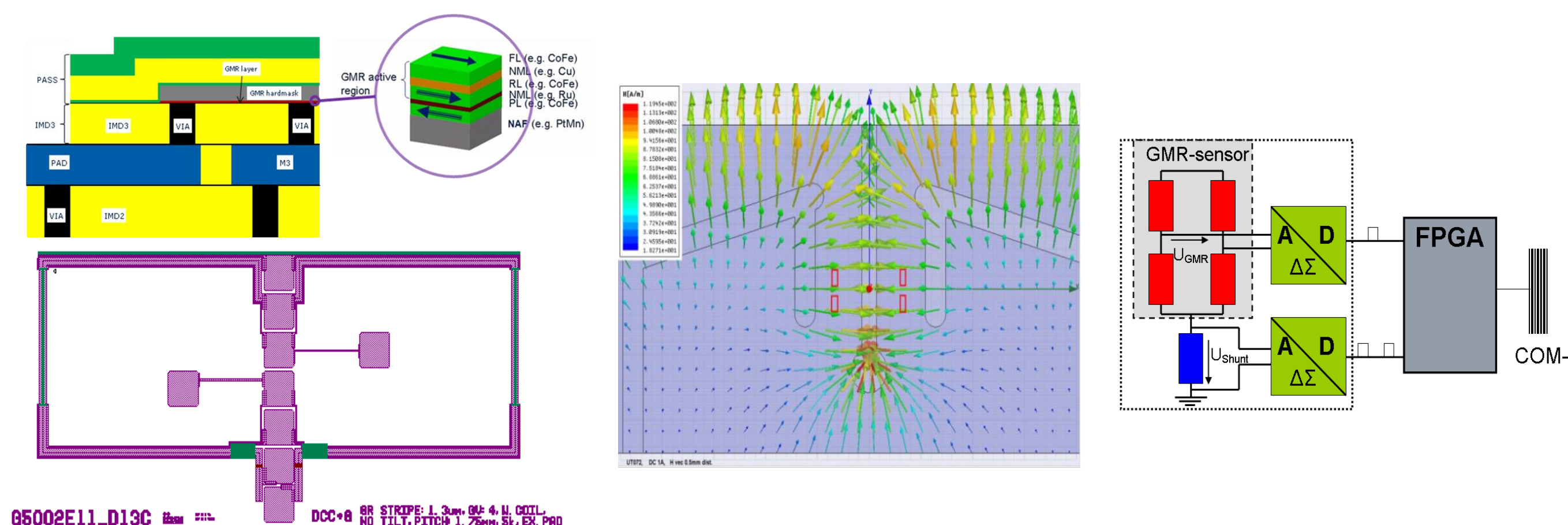
- 5% less power consumption
- 7% cost reduction for solar power



DC Components

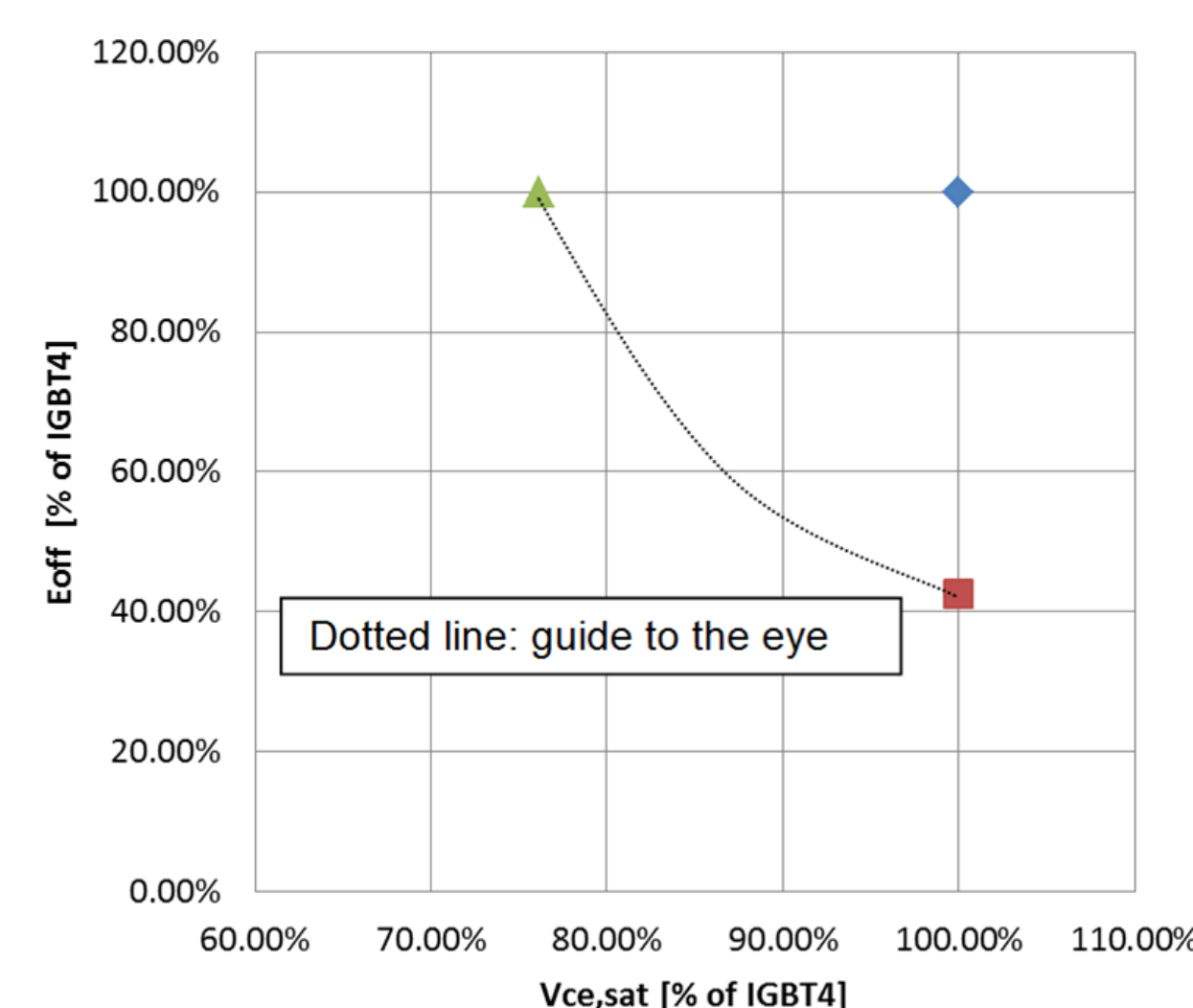
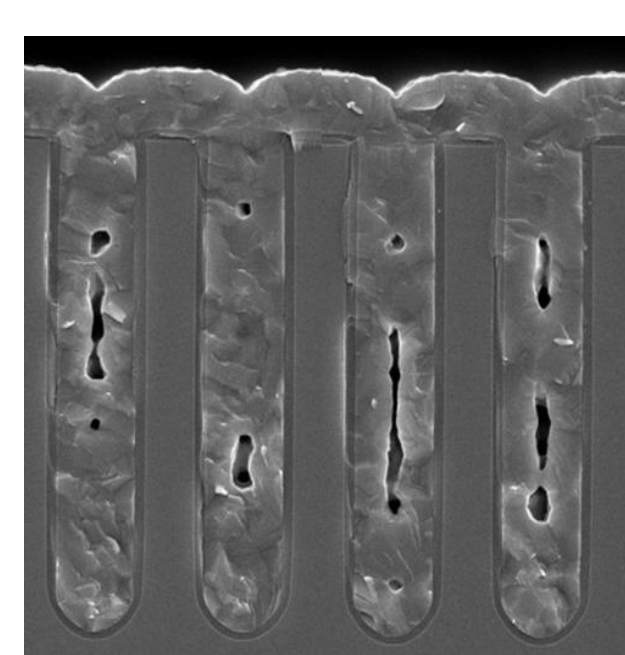
Current - / Voltage - / Power-Sensors

- Based on magnetoresistance
- Galvanically isolated from measured circuit
- High accuracy & low power consumption



Semiconductor Switches

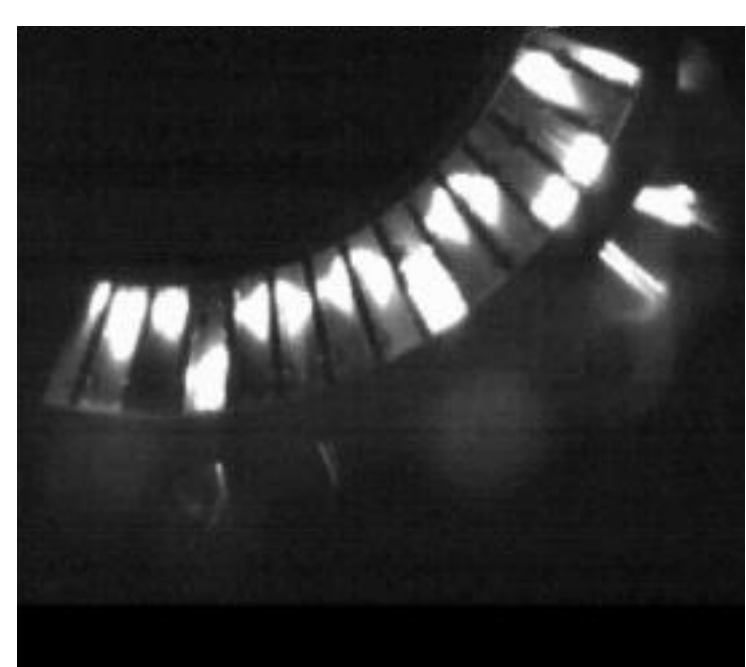
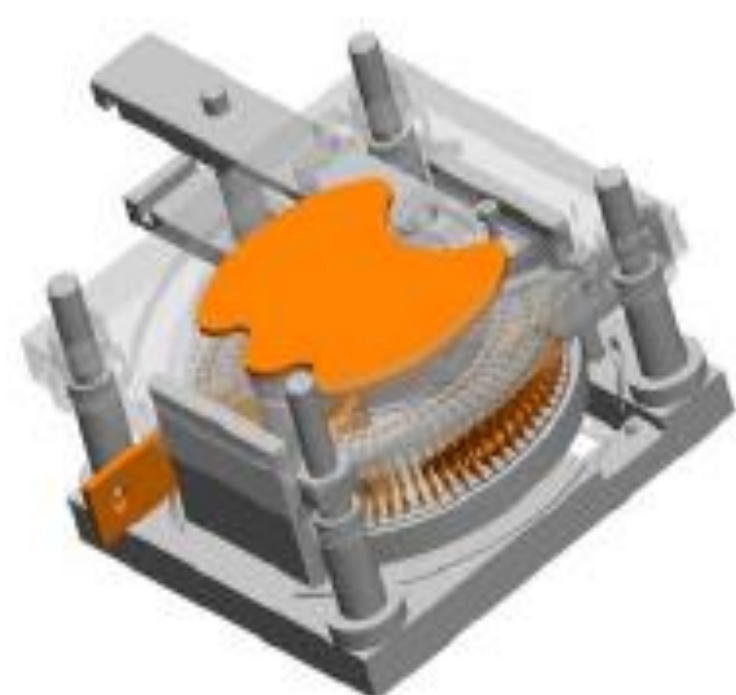
- Development of MPT-IGBT technology
- Next improved generation w.r.t. losses vs. switching speed



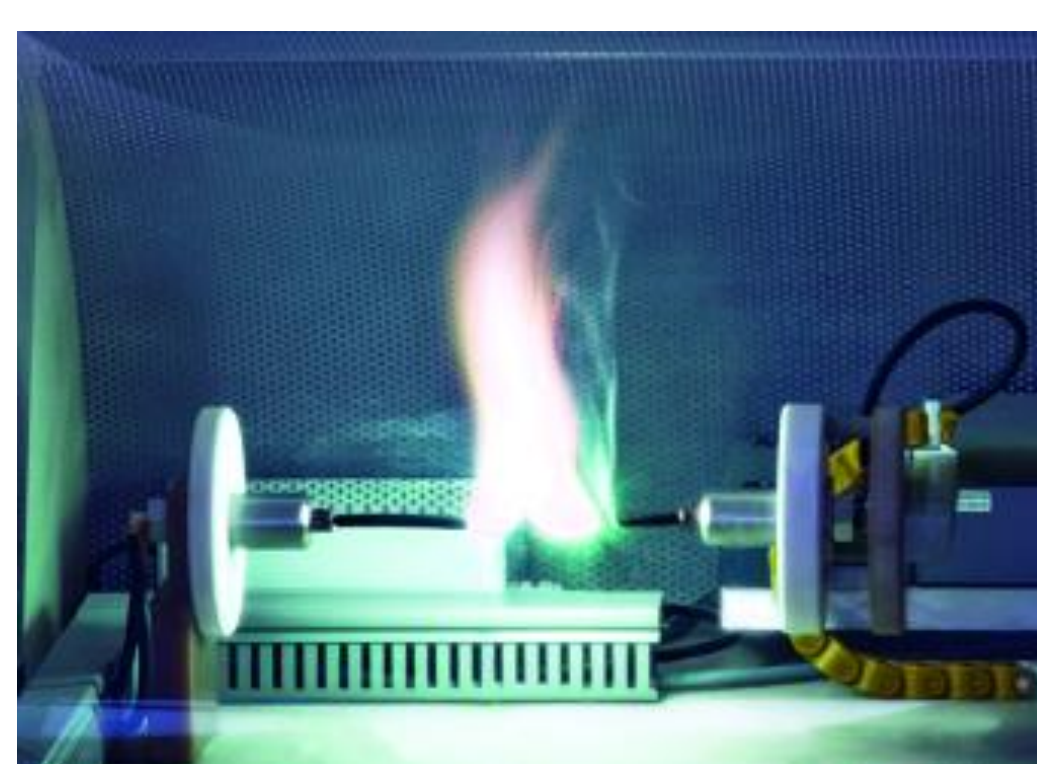
DC Power Switches

Electro-mechanical switches

Classical solution with special adaption to arc-extinction

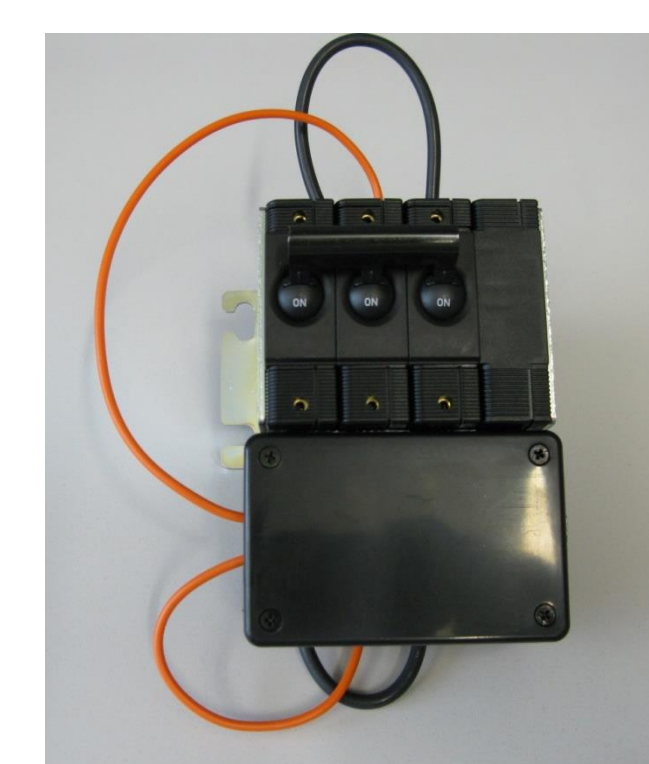
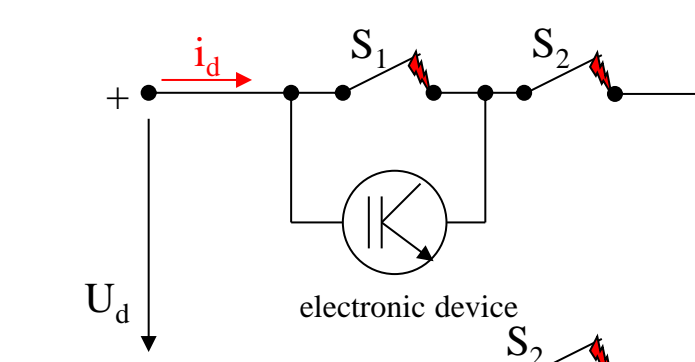


Arcing is the main challenge in switching off DC nets



Hybrid Switches

Combine speed of semiconductors with low loss of mechanical switch



Hydraulic-magnetic circuit breaker with remote on / off
Electronic device

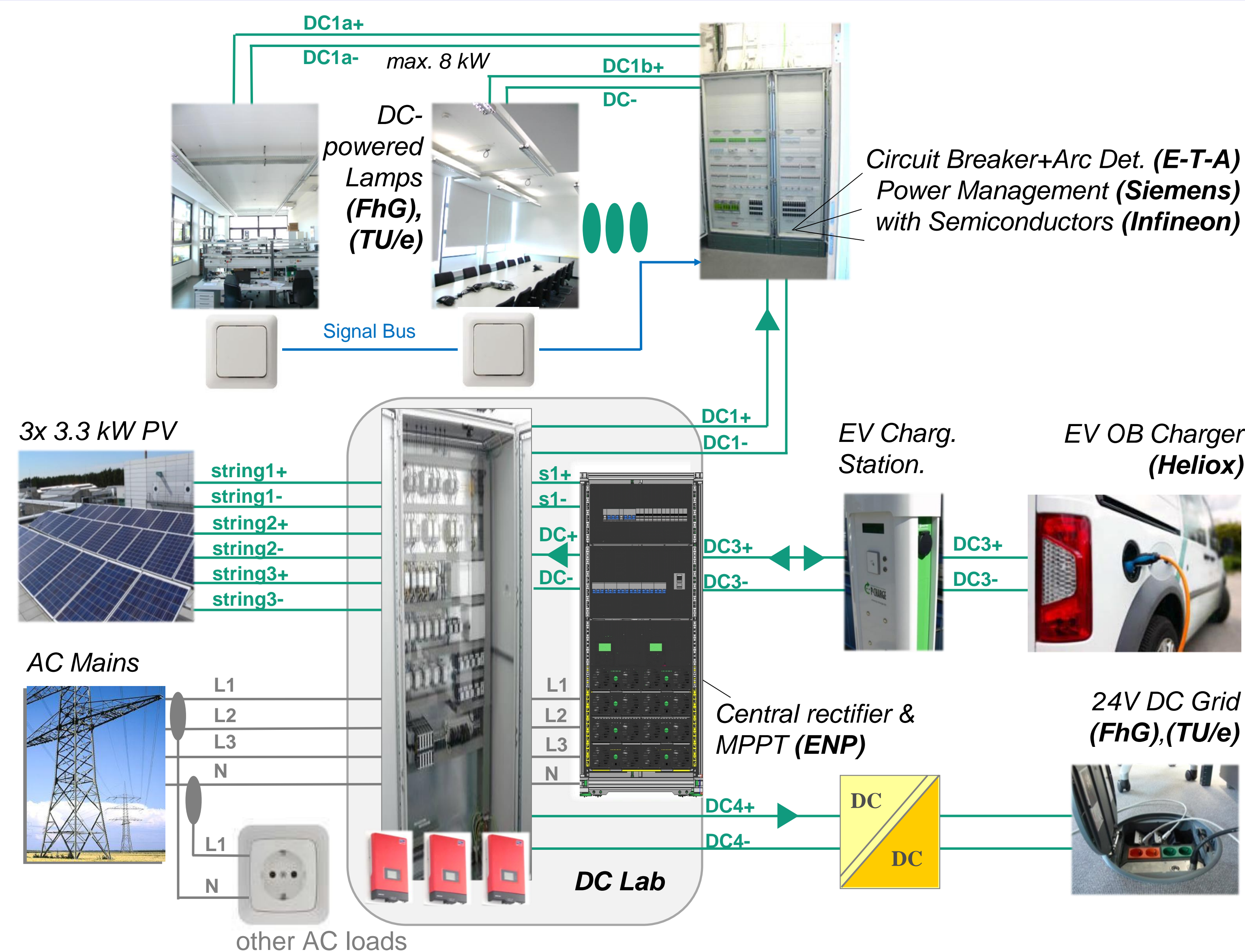
DC Grid Demonstration

Office Building Test Bed at Fraunhofer IISB

- Safe environment to test systems & concepts
- Extended measurement facilities

Retail Demonstrators

- In negotiation



The work has been performed in the project DCC+G, co-funded by grants from Germany, The Netherlands, Austria, Sweden, Czech Republik, and the ENIAC Joint Undertaking