

Vision and Mission

Highly efficient Power Electronic (PE) systems applied in power generation, transmission, and distribution is the prerequisite for European-wide penetration of renewable energies. Thus energy efficiency will improve, power quality will increase, and continuous voltage regulation, reactive power compensation and automated distribution will be alleviated. Integration of distributed resources like local energy storages, photovoltaic generators, and plug-in electric vehicles will be pushed, too.

Furthermore, the development of a new generation of high power semiconductor devices, able to operate in the range of 10 kV and above, is crucial for reducing the costs of PE in the above-mentioned applications. The material properties of SiC, clearly superior to those of Si for PE-applications, will afford enhanced power devices with much better performance than conventional Si ones. However, today's SiC-PE performs rather poorly compared to the theoretical limits and also, the production costs are by far too high.

Pooling world-leading manufacturers and researchers, SPEED aims at a breakthrough in SiC technology along the whole supply chain:

- Growth of SiC substrates and epitaxial-layers
- Fabrication of power devices, 1.7 / >10 kV range
- Packaging and reliability testing
- SiC-based highly efficient power conversion cells
- Real-life applications and field-tests in close co-operation with two market-leading manufacturers of high-voltage (HV) devices

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SILICON CARBIDE POWER ELECTRONICS TECHNOLOGY FOR ENERGY EFFICIENT DEVICES



Consortium

Overall Strategy

SPEED consortium includes outstanding companies as well as six EU Universities and research centers of excellence on SiC in Europe.

