

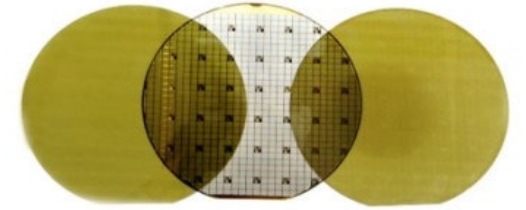
Technology Field 2: Power semiconductors



Summary of achievements at TF level

IPCEI created significant progress in the field of power semiconductors in Europe by

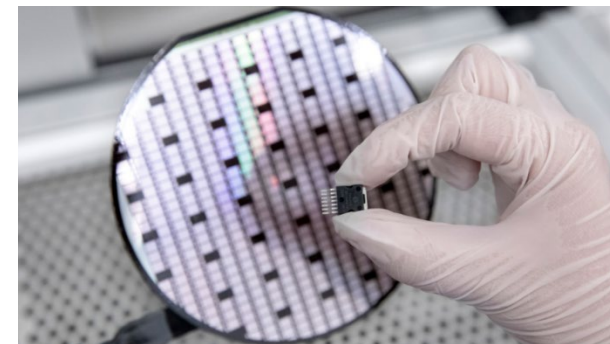
- Advancing new technologies and products based on wide bandgap materials, SiC and GaN, to state of market readiness
- Expanding leading edge manufacturing capabilities and capacities on 300mm for silicon based power semiconductors
- Creating synergies between semiconductor frontend and assembly & packaging (also called backend) technologies leading to unparalleled knowhow
- Increasing reliability of devices in integrated systems and packages
- Increasing sustainability of frontend and backend processes
- Implementing Artificial Intelligence in semiconductor equipment, manufacturing (Industry 4.0 concepts) and testing
- Fostering collaboration along the value chain



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Bosch – IPCEI enabled a leap in e-mobility technology. It helps to become a global leader in the production of SiC chips. Silicon carbide semiconductors enable longer ranges and faster recharging for electric cars. Bosch’s highly innovative semiconductor production strengthens the microelectronics ecosystem in Europe and is a further step toward greater independence in this key field of digitalization. A forecast by the market research company Yole indicates that, between now and 2025, the SiC market as a whole will grow on average by 30% a year to over 2.5 billion USD. At around 1.5 billion USD, the SiC car market is expected to account for the lion’s share. Every day, data that would cover about 400000 pages of paper is used for AI-based control of the fab.



Infineon – IPCEI strengthens the fast industrial ramp-up of green-tech solutions to achieve the climate targets. Infineon pools expertise for R&D and production in power electronics, including new semiconductor materials (SiC, GaN) and leading-edge thin wafer manufacturing. With investments in new production capacities and R&D in Villach (AT), Infineon fosters the supply security for microchips used in automotive, consumer and industry electronics, renewable energies and quantum computing. These innovations will provide a significant contribution to reducing energy consumption and reaching the EU Green Deal Goals. In addition, Infineon boosts the knowledge transfer along the value chain and reinforces long term cooperations with companies, schools & universities. www.infineon.com/ipceimeustria



ST – IPCEI enables significant progress in the field of power semiconductors to contribute to the EU decarbonization targets by improving the overall efficiency of power components and conversion modules through the new BCD technology platforms and products. The new 300 mm Fab in Agrate Brianza (IT) is a key step for future power devices and allows new highly qualified jobs. RDI activities and the preparatory work for the new 150 mm SiC substrates pilot line in Catania (IT) decrease the dependency on extra-EU sources for the fabrication of cutting-edge SiC power devices. The development of a dedicated RF GaN technology optimizes power efficiency and power gain. A first phase of a new 200 mm GaN line installed in Tours (FR) to develop the Power GaN technologies enabling future power devices. The introduction of smart factory concepts (i.e. Industry 4.0) contributes to the digitalization of the manufacturing Fabs.

