

Silicon carbide powering sustainable mobility

The challenge of a European project promoting the “value chain” between component manufacturers, research bodies and end users



The objective of the “WIn-SiC4AP” project is to develop innovative and reliable technological instruments based on silicon carbide to create efficient, lowcost applications. Silicon carbide technology (SiC) has characteristics that make it preferable, in perspective, to the current silicon or gallium nitride technology. SiC, for example, can work efficiently and with piloting capabilities at temperatures up to 200°C, meaning lower weight and higher performing components: a significant contribution to driving a potential revolution in the key sectors targeted by the project (applications for electric vehicles, train, aerospace and defence systems.) Several challenges remain to be overcome regarding key issues like the driver gate, packaging, design and auxiliary

devices. The WInSiC4AP project is one of the first examples of the technical and scientific integration of two financial mechanisms, one is European (funds from the ECSEL JU programme) and the other all-Italian FESR funds from the Italian Ministry of Education and Universities: this characteristic explains how the project can count on such important funding - to cover part of the about 30 million euro of the research costs - , and the many projects partners involved - (twenty in total covering four different Countries, and coordinated by the Sicilian Micro and Nano Systems Technological District). “After the first year, which was devoted to defining requirements (voltages, currents, weight, dimensions and other characteristics of the new components to be pro-

totyped) we are now commencing the second part,” explained project coordinator, Leoluca Liggio. “The key innovative technological components will be packaging, PCB production methods, and discrete passive and active components based on silicon carbide which will underpin the development of applications for the targeted project sectors.” The approach taken to the project is also innovative: “First and foremost, the emphasis on the value chain, at the European level, through the close collaboration that we encouraged in the project between manufacturers, end users, laboratories and research bodies. Then there’s the synergy, within a single project, between two programmes which come together in the end results and outcomes: the first programme funded by ECSEL JU and the other entirely by the Italian Ministry of Education and Universities, which made it possible to practically double the resources available.” Ten of the project partners are Italian and considering that some are consortiums of universities and organisations, the impact on the country, through the research bodies and small and medium enterprises involved, is significant. ■

