



**Press Release**

July 7, 2022

## **Marelli presents its new 800 Volt Silicon Carbide inverters platform at Dritev**

*With higher efficiency and reduced size and weight,  
the solution allows for increased driving range and further benefits in electric vehicles.*

Marelli, a leading global automotive supplier, has developed a new, complete platform of **800 Volt Silicon Carbide (SiC) inverters**, ensuring improvements in terms of inverters' size, weight and especially efficiency, which is a critical parameter in electric vehicles. The platform is presented for the first time at the International VDI Congress "Dritev" (Drivetrain Transmission Electrification in Vehicles), held in Baden Baden, Germany, on July 6 and 7 2022, where Marelli is showcasing its electrification technologies at its booth, located at stand B, on the ground floor.

Due to its excellent performance at high temperature and high voltage – enabling smaller, lighter and more efficient solutions – Silicon Carbide is recognised as a technology of choice for power electronics. Thus, it is particularly suitable for inverters, which convert DC (Direct Current) power derived from batteries to AC (Alternating Current) electric power used in electric vehicles' motors. In addition to this, Marelli's new 800 Volt inverter platform also features an optimised thermal structure, thanks to innovative structural and cooling channel designs that drastically reduce the thermal resistance between the SiC components themselves and the cooling liquid. This is a critical aspect in high power applications, where the heat rejection of the power module is significant.

Among the main advantages, the new inverter platform presented by Marelli can extract more energy from the battery at a higher efficiency and secure a significant increase in the driving range of a vehicle. It also ensures faster charging times and better acceleration. Finally, a smaller and more efficient inverter allows a reduction in battery size which delivers cost, weight and sustainability benefits.

*"The new inverters platform based on our 800 Volt Silicon Carbide power module technology allows to serve applications where energy use is optimized, the performance is maximized and efficiency is dramatically improved" said **Dr. Razvan Panati, Head of Power Electronics Technology of Marelli's Vehicle Electrification Division.** "With a complete range of modular solutions, we are able to offer to our customers more flexibility in terms of packaging, cooling system design and energy storage."*



The software for all the inverters in Marelli's range is developed in-house by the company and is hosted by an Electric Control Unit located in the same inverter case. The software is compliant with AUTOSAR (AUTomotive Open System ARchitecture) standards and specifically customized for the diagnostic standards required by car makers. Functional Safety requirements are compliant to ASIL D (Automotive Safety Integrity Level D) standard.

The new 800 Volt SiC platform completes the inverters range offered by Marelli, resulting from over ten years of experience, that includes also 400 Volt solutions based both on IGBT (Insulated Gate Bipolar Transistor) and Silicon Carbide, and Gallium Nitride (GaN)-based converters in development.

The inverters range is part of the solutions Marelli is showcasing at its booth at the 22<sup>nd</sup> edition of the International VDI Congress "Dritev", one of the largest industry events in Europe in the field of drivetrain and transmission. At the congress, the company exhibits its portfolio of technologies for vehicle electrification, that includes a full selection of single components, as well as subsystems, up to solutions for the complete integrated vehicle energy management system, applying a "tier 0.5" approach, with the integration of thermal management into the electric powertrain. Alongside inverters, also electric motors, integrated e-axes systems, battery management systems, and solutions for managing all vehicle thermal systems are part of the company's technological offer.

#### **About Marelli**

MARELLI is one of the world's leading global independent suppliers to the automotive sector. With a strong and established track record in innovation and manufacturing excellence, our mission is to transform the future of mobility through working with customers and partners to create a safer, greener, and better-connected world. With around 54,000 employees worldwide, the MARELLI footprint includes 170 facilities and R&D centers across Asia, the Americas, Europe, and Africa, generating revenues of 1,380 billion JPY (10.6 billion EUR) in 2021.