



Press Release

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Marelli supplies the inverter for the new BMW CE 04 electric scooter

The system, a key technology in electric vehicles, is developed and produced in-house by Marelli, that will also provide the related software

Marelli, a leading global automotive supplier, will contribute with the inverter – a core component of the electric engine – to the new BMW CE 04 electric scooter, which is recognised as one of the most advanced e-vehicles in its category.

Leveraging on the internal engineering and manufacturing capabilities, the product supplied for the BMW CE 04 is entirely developed and produced in-house by Marelli, in its white room. The inverter is designed to optimize the utilization and reuse of energy, maximising performance and efficiency.

“We are glad to be on board such an outstanding electric vehicle like the BMW CE 04. The availability of new electric two-wheelers further enlarges the opportunities for users to enter into the mobility of tomorrow.” said Hannes Prenn, President of Marelli’s Vehicle Electrification division. “The inverter technology is a key enabler to ensure efficient energy management in every electric vehicle. That’s why we continue to design advanced solutions in this field, both for four-wheels and two-wheels, to complement our electrification offer, that also includes electric powertrains and thermal solutions. This is part of our mission of driving e-mobility by delivering to our customers efficient, high performing, reliable and innovative solutions for their EVs.”

The inverter enables the conversion from DC (Direct Current) power derived from batteries to three phase AC (alternating current) electric power needed for the electric motor. Motorcycle electric applications move the challenges to a higher level, as they have to fit stringent dimensional limits, need to work in an external environment (coping with extreme hot and cold conditions, water, humidity, etc.) and require high power density.

In particular, the inverter for the BMW CE 04 electric scooter delivers 43.5 Kilowatt peak at nominal voltage of 145 Volt, with full performance (300 Ampere rms) in the 115-175 Volt range.

In general, this type of inverter developed by Marelli features distinctive characteristics such as flexibility and a scalable architecture, as it can have more powerful versions (up to 450 Ampere rms - 348 Volt) fitting in the same space and dimensions.



Also the inverter software has been developed by Marelli, with BMW providing the vehicle software, 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 BMW. Functional Safety requirements are compliant to ASIL B (Automotive Safety Integrity Level B) standard.

Marelli Vehicle Electrification has more than ten years' experience in developing leading-edge inverters for electric vehicles. The company has been pioneering in this field, supplying one of the electric car models of a premium Japanese brand with the longest series production run. Another remarkable application is the 400 Volt inverter featured in a supercar of a global top sports cars brand, that provides efficient conversion from DC power to 3-phase AC with smart e-Motor management.

Marelli Vehicle Electrification has also specifically addressed the motorcycle market, supplying technologies for the first high-performance electric bike to be produced in series by a premium motorbike manufacturer. Marelli provided the complete e-axle capable of delivering up to 75 Kilowatt at 200 Volt.

Marelli complete inverters product range includes high-performing 400 and 800 Volt technologies, designed to be flexible and modular, using Insulated Gate Bipolar Transistor (IGBT), with silicon carbide (SiC) and Gallium Nitride (GaN)-based power devices in development. As a complete supplier of all the key e-powertrain and thermal components needed to manage, control and optimize the complete flow of energy in electric vehicles, Marelli develops and produces leading edge technologies for maximizing power density and efficiency: in addition to inverters and power electronics, these include electric motors, integrated e-axles systems and products for managing all vehicle thermal systems.

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 1,266 billion JPY (10.4 billion EUR) in 2020.