Marelli presents new AI-based Electronic Control Unit
for engine and vehicle control in motorsport

Marelli launches its new AI-based Electronic Control Unit for engine and vehicle control in motorsport applications, designed for all types of vehicle propulsion, from traditional to electric. The solution, called VEC_480, ensures 100% compatibility with the rising trend of real-time AI computation onboard, and will be presented during the Professional MotorSport World Expo held in Cologne, Germany, on November 13th and 14th.

This breakthrough technology redefines the standard of traditional Vehicle Control Units (VCU) for motorsport, offering unprecedented performance, efficiency, reliability, computational capabilities and advanced connectivity to meet the sector's growing demands. Compared to previous VCUs, the new solution offers superior performance in computational power. Real-time computing performance is 2.5 times higher; the inter-processor bandwidth is increased by 10 times and RAM memory bandwidth is improved, enabling greater reliability in reiterating crucial vehicle operations.

VCUs are high-performance control units that integrate different functions into a single device: engine and chassis control and actuation, data logging and gateway to telemetry and cloud, in-car networking.

Based on Marelli Motorsport's solid know-how in vehicle control solutions, the VEC_480 is engineered to manage the increasing complexity of neural based algorithms in real time (milliseconds). This is achieved through the adoption of an advanced AI Accelerator (NPU), available with a high computing capacity up to 26 TOPS (Tera Operations per Second). This cutting-edge technology provides greater potential for internal vehicle networking and engine or vehicle management.

The powerful AI accelerator embedded in the device supports real-time AI inference with low latency and high efficiency, paving the way to neural virtual sensors, data inference with Artificial Intelligence, real-time video processing (track detection, object detection, and more), localization and positioning, performance analysis, predictive analysis, voice recognition. The technology is also compatible and supports the top AI frameworks, such as TensorFlow, TensorFlow Lite, Keras, PyTorch, and ONNX.

This solution complements the range of advanced technologies that Marelli Motorsport will showcase at the Professional MotorSport World Expo, in Hall 10.01, at booth 3064. Acting as an accelerator for technology development, Marelli Motorsport develops innovations and cutting-edge solutions for racing vehicles, enabling the flow down to the passenger car business by leveraging an agile, fast, and optimized design.

About Marelli
Marelli is a leading mobility technology supplier 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 50,000 employees worldwide, the Marelli footprint includes 170 facilities and R&D centers across Asia, the Americas, Europe, and Africa.