



MARELLI TECHNOLOGIES SHOWCASED AT 2024 BEIJING INTERNATIONAL AUTOMOTIVE EXHIBITION

- **'Co-creation @speed' area**

Digital Twin

Marelli's Digital Twin is a cloud-based virtual replica of the entire electric/electronic vehicle architecture. It enables software developers to run simulations, testing, and validations, achieving up to a 70% reduction in development time and 30% reduction in prototype costs.

LeanDisplay

Marelli's LeanDisplay offers advanced local dimming performances at a much lower price point, in addition to an improved sustainability footprint, compared to standard displays. This has been achieved by adopting a design for manufacturing approach resulting in 40% fewer components, through scalable optimized backlight technology – combining LEDs and proprietary lenses – and by localizing the supply chain.

ProConnect

ProConnect is a fully integrated cluster with infotainment and 5G telematics, targeted for the China market where many OEMs are integrating cockpit and telematics functions for entry and mid segment vehicles to better balance performance and cost. Powered by MediaTek's market-proven MT8675 System on Chip (SoC), ProConnect manages both the instrument cluster and the infotainment system, supporting up to six displays and twelve cameras, while providing 5G Release 15 telematics performance. ProConnect maximizes value for OEMs and end-consumers through the elimination of redundant components with an integrated SoC supporting cluster, IVI (In-Vehicle Infotainment), and TCU (Telematic Control Unit) functions, saving up to 40% compared to traditional architectures.

- **Software-Defined Interior (seating buck)**

Marelli's 5th generation architecture and Software Defined Vehicle (SDV) technologies revolutionize the driving experience with innovative Human Machine Interfaces (HMIs), that vanish when off and appear only where and when needed. The system, driven by the EliteCore central control unit and Zone Control Unit, offers a personalized experience through CAMEX, an AI engine, and MyAvatar, a 3D-rendered avatar for intuitive interaction. Marelli's demo car showcases cutting-edge OLED and TFT displays, advanced audio zoning, and integrated monitoring systems for a safer, more connected, and customized driving environment. These features not only enhance comfort and technology within the cabin, but also provide scalable and cost-effective solutions for various market segments, ensuring a future-proof and personalized driving experience for all customers.

- **Lighting & 360° Communication**

LeanLight Headlamp

Our LeanLight platform includes lighting products designed to achieve the best possible solution in terms of sustainability and cost-competitiveness. Our LeanLight headlamp consists of a basic LED module with no microcontroller required.



Laser Fiber Rear Lamp

Marelli was the first in the market to combine a LASER and thin optical fibers to create Thin Lit Lines. This style-driven application ranges from state-of-the-art light guide integration to mazing optical speckling LASER effects.

- **Interactive Experience Lab**

Zone Control Unit

Our Zone Control Unit manages chassis, propulsion, and thermal functions within the vehicle, with integrated drivers managing the suspension and transmission. The control unit also integrates high speed communication lines and power distribution.

Fully Active Suspension

Our fully-active electromechanical technologies provide outstanding comfort, driveability, and safety with high energy efficiency. The technology robotizes the suspension, while the control logic actively neutralizes the vibration and body movement when traveling at high speeds.

Integrated Thermal Management Module

Marelli is actively pursuing a smart iTMM with a high-performance component, able to thermally interact with the 3 main domains: battery, cabin and propulsion, it can significantly improve the overall vehicle efficiency.

- *System flexibility:* specific multi-functional combined valve, with max 9 ports and 6 working modes, Marelli's iTMM can ensure different functions according to the external environment conditions and the thermal needs of each subcomponent. Similar products on the market are normally 4 mode connections.
- *System efficiency:* the multi-functional valve is equipped with a patented spring structure able to reduce up to 60% internal leakage and related heat losses.
- *System weight:* with an optimized structure design, the system weighs up to 11% less than similar products on the market. Specifically, regarding the refrigerant manifold plate, our design uses a die casting and pipe connect structure, resulting in 40% lighter weight than market forging plate, meanwhile the simplified structure can contribute to a simplified production process.

Wireless Battery Management System

Marelli's innovative Wireless Battery Management System offers a cutting-edge solution for the electric vehicle (EV) market by removing the need for traditional wired connections between cell supervisory controllers and the Main controller. This breakthrough technology not only leads to significant weight reduction and simplifies the manufacturing process but also allows for more space within the battery pack, enabling the addition of extra battery cells and consequently extending the vehicle's driving range. Tailored to support a wide array of EV segments with medium to large battery packs, the system is built on a scalable architecture capable of accommodating dual battery configurations for 400V or 800V DC fast charging. Enhanced by cloud computing and artificial intelligence, the system can accurately predict the battery pack's State of Health (SOH) and State of Charge (SOC), ensuring a longer, more reliable service life and superior performance for EV drivers.