



**Press Release**

December 5, 2023

## **Marelli launches its new fuel system for hydrogen propulsion systems at CTI Symposium 2023 in Germany**

Marelli presents its first **hydrogen fuel system**, including specific injectors with patented design and an advanced Engine Control Unit. This state-of-the-art solution is aimed at hydrogen engines, which are similar to traditional endothermic engines but use hydrogen as fuel, producing no CO2 emissions, thus representing an interesting option for eco-mobility. Based on the company's expertise in the high-pressure direct injection technology, the new Marelli's fuel system meets the strict requirements of these engines, ensuring precision, efficiency, performance, easy integration and complexity reduction.

As hydrogen is a very light and reactive gas, a very precise fuel injection inside the combustion chamber is required, together with specific solutions to avoid pre-ignitions and backfire. It also needs a higher compression ratio than common gasoline engines to exploit the fuel efficiently. This makes the direct injection system a key enabler for this technology.

Marelli, as the unique player in the world to have developed and produced a 700+ bar gasoline direct injection (GDI) system, has moved from its experience of the 1,000-bar system to develop, still in the Propulsion Solutions R&D center in Bologna, a solution specifically suited for hydrogen, that guarantees high durability and injection stability, with excellent performance.

This allowed the company to develop reliable and low-noise direct injectors aimed for hydrogen, with the same dimensions as those used for traditional fuels, making it easier for carmakers to integrate them into existing platforms. Moreover, these injectors feature a double actuation, a specific magnetic circuit to control the speed of the needle and a high static flow that can meet the requirements of a variety of different vehicles. The patented design also allows to overcome uncontrolled hits between the injector's dynamic components, to reduce performance drifts. Finally, the use of a standard command control contributes to reducing system costs and complexity.

The fuel system also includes a pressure reducer with an integrated regulator, to reduce hydrogen pressure to the injection's working pressure, and a specific manifold, tested for the most severe automotive applications. The whole functioning is controlled by an advanced Engine Control Unit, featuring software algorithms and specific strategies developed in-house by Marelli to manage the more complex hydrogen-based system.

Marelli will present this new technology at booth G12 at the CTI Symposium 2023, one of the largest international industry events in Europe about sustainable automotive powertrain technologies for passenger cars and commercial vehicles, taking place in Berlin, Germany, on December 5-6, 2023.

At the event, Marelli will also showcase other advanced technologies for different kind of propulsions to support the mobility of the future. The display will include the 1,000-bar GDI fuel system, the Vehicle Domain Control Module for vehicles with different powertrains, as well as the full range of



wired and wireless Battery Management Systems and the multipurpose smart actuators for transmission and thermal management aimed at electric vehicles.

**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.