



PRESS RELEASE

Magneti Marelli's technological presence during the 2014 motorsport season

Magneti Marelli Motorsport working side by side with major international teams with solutions aimed at the transfer of technology from racetrack cars to road cars

After the fourth Formula 1 Grand Prix race in Shanghai, all motorsport championships are now underway, and Magneti Marelli once again confirms its widespread presence in international two and four-wheel competitions with technologies and innovations. The season that has just begun represents a veritable technological revolution in the racing world, a revolution that brings the racetrack increasingly close to the road thanks to the strong technological union triggered by the new regulations.

The new hybrid engines with smaller cubic capacity yet equal power, the new electrical and electronic architecture, GDI (Gasoline Direct Injection) and the telemetry applied in **Formula 1** are opening up new scenarios for mass-produced cars.

In fact, this season Magneti Marelli continues to supply the top teams in Formula 1 with the **K-ERS**, a system that recovers kinetic energy under braking, for which it makes strategic components such as moto-generator, inverter and electronic battery control.

The introduction of electric engines in Formula 1 has shown that, power being equal, an increase of about 10-15% is obtained in terms of efficiency, with up to 30-35% less consumption, characteristics that can also benefit possible applications on road cars.

Integrated hybrid engines have made it possible to completely change **the electric and electronic architecture** of the Formula 1 single-seaters, which are now multi-voltage. The possibility of different voltage levels being available on the car means being able to use more efficient sensors and actuators. The experience begun with the K-ERS has enabled Magneti Marelli to study and develop hybrid systems that have already been applied for the first time on the road with the *LaFerrari*, after which there will be others with 48 Volt and with high-voltage hybrid systems.

The 2014 season also represents a challenge with regards to gasoline systems for the Formula 1, where Magneti Marelli Motorsport supplies **injectors and pumps for GDI** engines with gasoline pressure of up to 500 bar.

This application, originally developed on mass-produced vehicles with pressure values of up to 250 bar, is transferred to the Formula 1 to allow significantly higher pressure values, today around 500 bar, to be obtained.

Thanks to the technological transfer, new solutions were developed for road cars, with pressure values of up to 600 bar that will also make it possible to fight the problem of particulate matter generated by direct injection systems. Moreover, in the area of gasoline systems, Magneti Marelli also supplies to several Formula 1 teams **high voltage (HV) coils** and **electronic control units (ECU) for control of GDI injectors**.

The overview of leading-edge technologies dedicated to the Formula 1 is completed with **the V2X telemetry system** developed by Magneti Marelli and used by the main

teams during the 2014 season. This system, based on an evolution of the Wi-Fi protocol, allows for the two-way data and voice transmission, thanks to the wide band, with superior performance compared to previous systems. Magneti Marelli is already working on an additional technological development of this solution to allow transmission in real time of HD videos.

These are the technological challenges that make it possible to develop new solutions for the connectivity of the future on roads, an extended and integrated connectivity where all mobility players (vehicles, signals, infrastructures) communicate with each other at the same time, optimizing consumption and emission, preventing accidents and streamlining traffic flows for less crowded roads.

Leading-edge technologies also for the **MotoGP™ championship**, where Magneti Marelli, thanks to the agreement entered into with DORNA, is the exclusive supplier of the **Engine Control Unit to all teams**.

The main distinctive feature of this control unit is the high calculation capability, a crucial key for the development of high-level engine and vehicle control strategies. The Control unit incorporates two processors: one Dual Core processor for data acquisition and calculation of the strategies, and one for the actuations.

Magneti Marelli supplies the following systems as part of the agreement with DORNA: solutions for trim adjustment, data analysis tool, dashboard, pushbutton panel on the handlebar and inertial platform for dynamic control and motorcycle trim, and chassis with built-in datalogger.

Moreover, Magneti Marelli Motorsport is **official supplier to Yamaha and Ducati for key components**. Specifically, Yamaha fits **coils, injectors, speed sensors, alternator, fuel pump and pressure regulator (FIM)**. The Ducati team, on the other hand, is supplied with **injectors, coils and pressure regulator (FIM)**

For the fourth year in a row, Magneti Marelli is directly involved with the Federation (FIM) for the supply of the **pressure regulator to all MotoGP teams**, for the purpose of ensuring performance and compliance with regulations through an appropriate certification of the item within the limits set by the regulation.

Still in the area of motorcycles, in the **WSBK championship** Magneti Marelli is **official supplier to the Ducati team**, offering its electronic engine control unit with built-in data acquisition system. Magneti Marelli also supports the **Kawasaki** team by supplying its engine control unit, data acquisition system, dashboard, coils and inertial platform, which makes it possible to determine the degree of tilting of the motorcycle. Magneti Marelli components are also found on the **Aprilia, EBR and MV Agusta** motorcycles. The Supersport category also features the use of Magneti Marelli Motorsport components for engine control.

Continuing with the two-wheelers, Magneti Marelli is involved in U.S. national championships, specifically in the **AMA Superbike**, with the supply of the engine control unit, electronic modules and components to the **EBR, Honda, KTM, Suzuki and Yamaha** teams. In the U.S.-based **NHRA** (National Hot Rod Association), Magneti Marelli supplies engine control components and built-in datalogger in the **Pro Stock Motorcycle** category.

During the 2014 season, Magneti Marelli has further expanded its global presence as a supplier of strategic components and systems in international and national four-wheel competitions.

In the **WRC**, Magneti Marelli is the official supplier of the **Citroën** team and of the **Hyundai** team. The various systems used on the Citroën DS3 WRCs include the electronic engine control units, the data acquisition modules and the Wintax analysis tools. The Hyundai I20 WRCs are fitted with electronic engine control units, data acquisition modules and Wintax software developed by Magneti Marelli Motorsport. Again in the WRC area, Magneti Marelli has already developed high-pressure GDI injectors. Electronic vehicle control components are also supplied to Skoda, which competes in the ERC (European Rally Challenge) with the Fabia Super 2000, and to the PSA Group for cars used in various rally competitions at the international level.

In the **FIA WTCC**, Magneti Marelli is **official partner to the Citroën team**, which this year featured the debut of Sébastien Loeb. The cars driven by the Citroën team fit electronic engine control units, data acquisition modules and the Wintax analysis tool supplied by Magneti Marelli.

Magneti Marelli is also involved in the **Le Mans Prototype (LMP)** championship, where the top teams use telemetry, data acquisition systems and Wintax analysis tools, as well as in the FIA GP2 and GP3 Series championships, in which Magneti Marelli supplies all teams with the engine control system, the hydraulic pilot control of the transmission, the data acquisition system and the Wintax analysis tool.

As concerns the championships at the national level, Magneti Marelli supplies Tatuus for the new **Formula 4 Italy** with engine control unit and electro-actuated transmission, while all teams of the **FIA GT Italy** are supplied with datalogger and Wintax tool for data analysis.

Since 2012, **Magneti Marelli has been present in China in the CTCC** (China Touring Car Championship) with the datalogger chosen by FASC (Federation of Automobile Sports of the People's Republic of China) and fitted on all vehicles that compete in the championship for analysis, balancing of performance and compliance with regulations. Moreover, Magneti Marelli supplies the standard ECU for the "China Production" category.

In the United States, in the **Verizon IndyCar Series**, Magneti Marelli supplies the teams involved in the competition with ignition components and Gasoline Direct Injection components. During the 2014 season of the Verizon IndyCar Series, Magneti Marelli is the **technological partner with the Schmidt Peterson Motorsports (SPM) team** with the logo featured specifically on the side and on the nose of the **single-seater number 77 driven by Simon Pagenaud**, which finished third in the general rankings of the IndyCar Series 2013 championship.

Technical partnership also between Honda Performance Development and Magneti Marelli aimed at the development of powertrain and electronic components to be used

in the IndyCar Series championship and in other championship for which HPD produces, prepares and develops the Honda engine.

In the **NHRA (National Hot Rod Association) American championship**, partnership between **Magneti Marelli and Mopar** in **sponsoring the Johnson & Johnson team driving a Dodge Dart Pro Stock**. The Dodge Dart Pro Stock will be joining the Dodge Charger R/T in the Funny Car category and the Dodge Challenger in the Sportsman category.

For the American TUDOR United SportsCar Championship, Magneti Marelli supplies the engine control system, display and data logger for the Prototype Challenge category. Magneti Marelli Motorsport also supplies logger systems, telemetry and displays to various Ferrari teams involved in the GTLM and in the GTD in the United Sportscar championship.

In Brazil, the Stock Car Brazil championship has chosen the Magneti Marelli electro-actuated transmission for all cars.

Lastly, for automobiles designed by university students competing in the **Formula Student China** and in the **international Formula ATA**, Magneti Marelli supplies motorsport components, dataloggers, Wintax analysis systems and electronic engine control units (ECU).