



Porsche 919 Hybrid – Technological Advantage

Published: March 4, 2016 By: Virtual Motorpix

Online version: <https://www.virtualmotorpixblog.com/porsche-919-hybrid/>



The Porsche 919 Hybrid team, drivers and management pose for a family snap before the Silverstone 6h, 2014

In 2014, Porsche marched back into the top class of endurance racing, and announced that they were here to take the championship. Their new racer, the Porsche 919 Hybrid, was powered by a 2.0-litre V4 petrol turbocharged engine, and they proudly claimed that it held a technological advantage over the rest of their competitors. Many were sceptical because not only was the Porsche power package untried, but this engine layout was not a format used in any other form of motor sport.

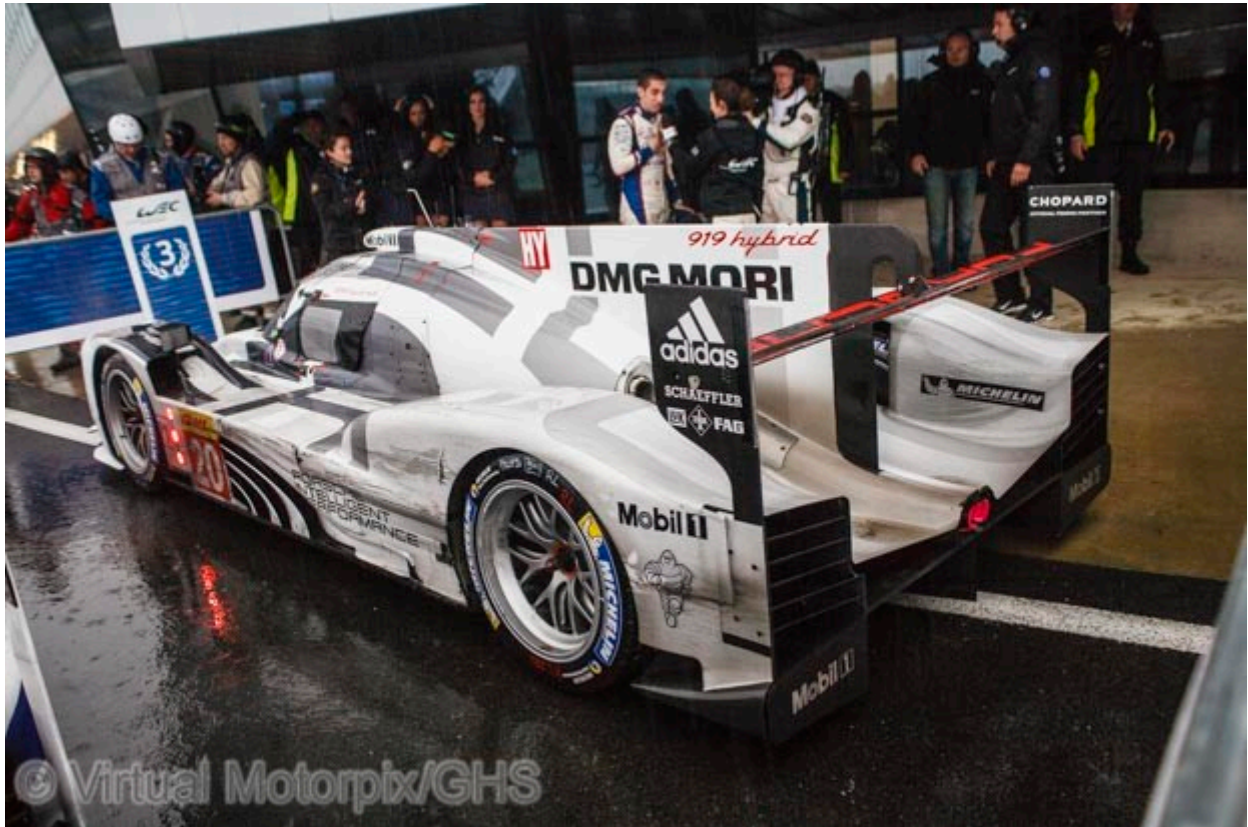


Launch of the Porsche 919 H (LMP1) and 911 RSR (GTE PRO) at the Geneva Motor Show, March 2014



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Works driver Timo Bernhard on the Porsche stand at the Geneva Motor Show on the occasion of the launch of the Porsche 919 H (LMP1), March 2014

The Porsche 919 Hybrid was first revealed to the public at the Geneva Motor Show on 4 March 2014. However, the 919 first turned a wheel in a semi-competitive environment at the WEC Prologue at the Paul Ricard circuit in the south of France on 29 March 2014, but here it was only the media who got to see it.



First race for the Porsche 919 Hybrid at the Silverstone 6h, where drivers Webber/Bernhard/Hartley finished third, giving the #20 car its first podium result in April 2014



The #14 Porsche 919 Hybrid of Dumas/Jani/Lieb calls into the pits during the first free practice session of the Silverstone 6h on Friday, 18th April 2014

Their two cars, #20 and #14, represented the year of their return, and they very nearly **did upset the applecart at Le Mans**, but unfortunately podium finishes were hard to find. Clearly they had the speed, but reliability dogged them in the 6-hour races, while in the **Le Mans** race, it was a case of so near and yet so far. Persistence, however, paid off in the end as they won the last race of the season in Brazil, proving that their formula was a winner.



The #14 Porsche 919 Hybrid driven by Dumas/Jani/Lieb at speed during first free practice on Friday, 18th April, at the Silverstone 6h 2014



The #14 Porsche 919 Hybrid driven by Dumas, Jani, Lieb rounds the corner at Indianapolis during practice at the Le Mans 24H, 2014

At the start of the 2015 season, the Porsche 919 Hybrid finished second in the first two races, these being Silverstone and Spa, but the Le Mans 24-Hours proved the biggest haul of silverware for them when they finished first and second. A few champagne corks popped that night in Stuttgart! As we now know, Porsche finished the season as World Champions, but in 2016 they have to defend that crown, not chase it, which requires a different strategy. The Porsche Board has approved the LMP1 programme through to 2018, so we have three full seasons of the 919 ahead of us, and no doubt Porsche will want to add to their all-time record tally of seventeen Le Mans wins.



The first round of the 2015 WEC season was held at Silverstone in April. Here the #18 Porsche 919 Hybrid driven by Dumas, Jani, Lieb speeds through Becketts during practice for the 6-hour race



All dressed in black, the #18 Porsche 919 Hybrid of Romain Dumas, Neel Jani and Marc Lieb passes the pits during the Le Mans 24H in June 2015

Back in 2014, the Porsche 919 boasted the most innovative drivetrain concept on the grid, consisting of a turbocharged, direct injection, 2-litre four-cylinder petrol engine driving the rear axle, an exhaust energy recovery system, lithium-ion battery technology for energy storage to serve the electric motor on the front axle, and complex hybrid management. With this, Porsche established a technological advantage in that their engine was not only the most efficient combustion engine the company had ever built, but it was also the lightest in the class. The engine was said to produce around 500bhp and the hybrid system the same, for a total of approximately 1000bhp. Of course no images of the engine were circulated in the media at this point. In 2015, which was only the second year of competition, the Porsche 919 Hybrid, with its total system output of approximately 1000bhp, was able to use 8 megajoules of recovered energy per lap at Le Mans, while only burning 4.76 litres of fuel per lap.



Finished in red, the #17 Porsche 919 Hybrid driven by Timo Bernhard, Mark Webber and Brendon Hartley negotiates the Ford Chicane during FP1 at the Le Mans 24H 2015

2014 - approx. 1000bhp (combined) - 6 magajoules

2015 - approx. 1000bhp (combined) - 8 magajoules

2016 - approx. 900bhp (combined) - 8 magajoules

These figures are given by the Porsche motor sport press office



Released for distribution just recently, this shows the compact Porsche 2-litre V4 engine that powered the Porsche 919 Hybrid cars during 2014 and 2015

For 2016 the regulations require a lower amount of energy from the fuel used per lap and thus the fuel flow for all the prototypes has been reduced. In the Porsche 919 Hybrid, this results in a loss of eight percent of fuel and this now translates into a figure of less than 500bhp being produced by the petrol engine. Together with the electrical energy from the two recovery systems (brake energy from the front axle and exhaust energy), which serve the e-machine on the front axle, the overall power system of the Porsche 919 Hybrid is circa 900bhp. You can be sure that in order to maintain similar track speeds, the Porsche engineers would have worked some magic on the aerodynamics for the new season.



The #19 Porsche 919 Hybrid of Nico Hülkenberg, Earl Bamber and Nick Tandy open the door as they cross the finish line as winners of the Le Mans 24-Hours, June 2015

The new season's activities kick off on 25/26 March with the Prologue at the Paul Ricard circuit. This is followed three weeks later by the first round of this year's WEC at Silverstone on 17 April. All three manufacturers, Porsche, Audi and Toyota, will have their new cars ready to do battle, and a battle royal it is going to be, because Audi are licking their wounds after 2015 and Toyota will unleash their new TS050. So take your seats in the front row, with your favourite beverage in your right hand and the TV remote in the left, and let the fireworks begin!

Written by: Glen Smale

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