Press Information

Porsche LMP1
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March 2015
LMP1 works campaign

**At a glance: Porsche to start second racing season with an evolution of the 919 Hybrid**

Porsche will enter the 2015 FIA World Endurance Championship (WEC) with two extensively reworked 919 Hybrid cars. This will be the second year of racing for the cutting-edge technology platform in the top category of the up-and-coming world championship. For the first time, Porsche will deploy three of the Class 1 prototypes for the high point of the season – the 24 Hours of Le Mans – and for the preceding 6 Hours of Spa-Francorchamps. With 16 overall victories between 1970 and 1998, Porsche remains the record holder for the Le Mans race.

The WEC’s unique efficiency regulations for LMP1 race cars give engineers an unusual degree of freedom. However, they require the use of technologies with great future potential such as hybridisation, engine downsizing and uncompromising lightweight design. All of this is extremely significant for the development of next-generation sports cars, and it’s also what led Porsche to return to the world of top-class motor racing in 2014 after a 16-year absence.

The 919 is equipped with a 2-litre V4 turbocharged petrol engine with an output of more than 500 hp, which powers the rear axle, and an electric motor with over 400 hp that drives the front wheels and gets its electricity from two energy recovery systems. A liquid-cooled lithium-ion battery temporarily stores converted braking energy from the front axle and converted thermodynamic energy from the exhaust tract.

Whereas cars in Le Mans race twice round the clock, the other seven WEC races each last six hours. The season will kick off in Silverstone (GBR) on 12th April. After that, the championship series will continue in Spa (BEL) on 2nd May and Le Mans (FRA) on 13th–14th June. The race at the Nürburgring (DEU) on 30th August is a new addition to the WEC, which will then leave Europe and head to Austin, Texas (USA) for a race on 19th September. The next two races will be held in Fuji (JPN) on 11th October and Shanghai (CHN) on 1st November. The finale will take place in Bahrain (BHR) on 21st November.
Each Porsche 919 Hybrid will have three drivers. The two trios of Timo Bernhard (DEU), Brendon Hartley (NZL) and Mark Webber (AUS), and Romain Dumas (FRA), Neel Jani (CHE) and Marc Lieb (DEU) will participate in all races, as they did last year. In Spa and Le Mans, they will be joined by a third crew, consisting of Earl Bamber (NZL), Nico Hülkenberg (DEU) and Nick Tandy (GBR).

The racing team, which is led by Head of LMP1, Fritz Enzinger (AUT), and is based at the Porsche development centre in Weissach, has approximately 230 employees. Well over a hundred of them are engineers who work for LMP1 Technical Director Alexander Hitzinger (DEU). Team Director Andreas Seidl (DEU) handles all operational issues.
2015 FIA World Endurance Championship (WEC)

26th March
Presentation of the Porsche 919 Hybrid, Paul Ricard (FRA)

27th/28th March
WEC Prologue, Paul Ricard (FRA)

12th April
6 Hours of Silverstone (GBR)

02nd May
6 Hours of Spa-Francorchamps (BEL)

31st May
Official test day at Le Mans (FRA)

13th/14th June
24 Hours of Le Mans (FRA)

30th August
6 Hours of Nürburgring (DEU)

19th September
6 Hours of COTA (Austin, Texas – USA)

11th October
6 Hours of Fuji (JPN)

01st November
6 Hours of Shanghai (CHN)

21st November
6 Hours of Bahrain
Background

Interview with Wolfgang Hatz, board member for research and development at Porsche AG

What’s new for the Porsche 919 Hybrid in 2015?

Wolfgang Hatz: “We have practically enhanced every detail, but the general concept has remained the same. However, it’s a great accomplishment of engineering that the first powertrain concept worked at the first shot, as eventually it was new territory for us. During the 2014 season we were able to put into use some experiences and have continuously improved the hybrid management as well as the aerodynamics. Other measures we could only achieve for 2015, such as the, again, more powerful hybrid system, the weight reduction of the overall vehicle and the new suspension. The mission for the second generation of the 919 Hybrid was: be more efficient, more powerful, but at the same time easier to drive, lighter and more robust.”

What’s the benefit of the WEC LMP1 programme for road cars?

Wolfgang Hatz: “For sure, the greatest improvement comes from the powertrain. For example, in storage technology, i.e. the battery, we have advanced in power densities, which we would have hardly achieved otherwise – thanks to the LMP1 programme. This does not mean we can transfer that knowledge straight to our road cars, because for daily use the electric range is still more dominant compared to the increase in performance. But by the immense pressure to perform in this top league, we learn an incredible amount in a very short time. Another example relates to the combustion technology. The 2-litre 4-cylinder turbo petrol engine is the most innovative and efficient downsizing-engine that Porsche has built so far, and it’s definitely a pioneer in terms of its injection. During the development, calculation and validation work for the LMP1 engine, our road car engineers support this programme. Thus, the knowledge is generated directly to where it is most important for the company. This also applies to the young engineers in motorsport. If they switch to the road car development, they have a solid education in turbo pace behind them.”
What is the target for 2015?

Wolfgang Hatz: “You cannot write race results on a job list for motorsport, and especially not in endurance races, because there are just too many unpredictable aspects. But our technical ambition for our performance in the WEC is very clear: we want to be able to win in 2015. It goes beyond a purely emotional level when we say: If Porsche competes in Le Mans, we compete with a certain claim.”
Porsche 919 Hybrid

**Evolution of the technology pioneer for the 2015 WEC**

Porsche will enter the second season of the FIA World Endurance Championship with a considerably advanced version of the 919 Hybrid. The high point of the season will be the 24 Hours of Le Mans. The top category of the up-and-coming international racing series – the Le Mans Prototype 1 (LMP1) class – has very stringent efficiency requirements. For this reason, the sports car manufacturer extensively optimised what is the most complex race car in its history for the 2015 season. The basic concept remains the same, however. The 919 Hybrid is equipped with a downsizing turbocharged direct injection petrol engine and two different energy recovery systems. System power now totals nearly 1,000 hp. The ambitious goals for the upgraded model were to make it more efficient, more rigid, easier to handle, lighter, and yet more robust.

**Requirements**

The regulations for the top segment of the WEC require manufacturers to use hybrid drive systems. They also establish a direct link between the sporty performance of the prototypes and their energy efficiency. Put simply, this means that a large amount of energy from recovery systems may be used. However, this entails a proportional reduction in the permitted amount of fuel per lap, and the quantity of fuel consumed in each lap is accounted for.

WEC officials give engineers a great degree of freedom in terms of the hybrid drive concepts that may be employed. The teams can choose between diesel and petrol engines, naturally aspirated or turbocharged engines, various displacements, and one or two energy recovery systems.

This set-up puts the focus on innovations that will have a huge impact on future production sports cars – and this was actually the main reason why Porsche decided to return to the world of top level motor racing.
Drivetrain

Porsche made its début in 2014 with the most innovative drive system in the WEC starting field. The concept was created and refined in a team led by LMP1 Technical Director Alexander Hitzinger. All drive system components were optimised for the 2015 season. The combustion efficiency of the now lighter and more rigid 2-litre V4 turbocharged petrol engine has been increased, for example. The V engine's load-bearing function (90 degree cylinder bank angle) within the chassis was also optimised by means of geometric adjustments that have led to better overall rigidity. The previously used centralised exhaust tract has been replaced by a twin exhaust-pipe system in order to improve output and optimise the vehicle's aerodynamics. The 500-hp combustion engine powers the rear axle.

The increased rigidity of the monocoque-engine-transmission unit is also due in part to the shifting system, as the casing of the hydraulically operated sequential 7-speed racing gearbox made of aluminium is mounted in a carbon structure. With this component as well, the engineers were able to accomplish the feat of making it both lighter and more rigid and robust. They were also able to further reduce shift times.

Higher output at a lower weight were achieved by a complete redesign of the energy recovery systems. The kinetic energy produced at the front axle when braking is converted into electrical energy. That's the first energy recovery system – the second is installed in the exhaust tract, where the exhaust-gas stream drives a second turbine (in parallel with the turbocharger) that acts as a generator. The electricity thus produced – along with that generated by the kinetic energy recovery system (KERS) at the front axle – is temporarily stored in lithium-ion battery cells. The driver can call up power from the cells, and if he engages the full-boost function, additional power output of more than 400 hp will thrust him back into his seat. This power is applied to the front axle by the electric motor, and it temporarily transforms the 919 Hybrid into an all-wheel drive race car with system power of nearly 1,000 hp.
Energy management

The WEC regulations also give engineers plenty of freedom with regard to energy storage medium: flywheel storage, electrochemical supercapacitors (so-called ultracaps) or lithium-ion batteries – the developers tried out everything. “In the end, you have to choose the storage device that’s most suitable for the type of hybrid system you’re using,” Hitzinger explained. “It always comes down to balancing power density and energy density.”

The higher the power density of the storage unit, the more energy it can absorb and deliver in a short period of time – and the lighter it will be. The reference figure used here is watts per kilogramme. Basically, the power density also automatically determines how fast the energy charging and discharging process will be. However, power density and energy density are contradictory parameters. In other words, it’s physically impossible to keep both at maximum levels. Energy density, in contrast, is the total amount of energy that can be stored. If energy density is low, recovered energy must be quickly used again in order to free up the energy storage unit for the absorption of new energy generated during the next braking sequence, for example. In terms of motor racing, however, it is desirable to be able to accumulate energy through a few curves and then put it to use with the boost function when the car enters a straight. Hitzinger decided to use highly advanced lithium-ion battery packs for energy storage. “Our batteries achieve a power density nearly as high as that of an ultracap, but have a much higher energy density,” Hitzinger explained. “In other words, we have a battery that can store and release a lot of power, but its weight is moderate and it also has a relatively high storage capacity.”

The battery cells were developed by A123 Systems in cooperation with Porsche. Nevertheless, whether it is cell development, battery management technology, cooling systems or packaging – all know-how is created at Porsche and remains within the company.

The intelligent management of available electrical energy is very important here. Drivers have to weigh their options because once they have drained the stored energy, it is not available anymore for the lap they are on and this could put them in a situation where they become helpless on a straight and are overtaken by another driver who is still able to use the boost function, for example.
The amount of fuel that may be used in a lap decreases in proportion to the amount of electrical energy a driver is able to employ. In this sense, the regulations favour innovative hybrid drives, but at the same time ensure a level playing field for the various systems. It’s a little like trying to square the circle, yet also a welcome challenge for dedicated engineers.

The racing rules distinguish between four levels ranging from 2 to 8 megajoules (MJ) of deployable energy. The calculation formula is based on the 13.629-kilometre lap in Le Mans, and the calculation is adjusted accordingly for the other seven racing circuits. If a team wants to utilise the 8 megajoules per lap that are permissible in the highest recuperation category, an FIA flowmeter device will limit the permitted amount of fuel per lap to 4.76 litres. By comparison, 5.07 litres of fuel can be used per lap in the 2-megajoule category. Engineers also have to take into account the fact that the more powerful the energy recovery and storage systems are, the bigger and heavier they tend to be. The Porsche 919 Hybrid was homologated for the top 8-megajoule category for the first time in 2015.

**Energy/fuel use formulas for one lap in Le Mans:**

2 megajoules recovered energy = 5.07 litres petrol = 3.94 litres diesel

4 megajoules recovered energy = 4.94 litres petrol = 3.84 litres diesel

6 megajoules recovered energy = 4.81 litres petrol = 3.74 litres diesel

8 megajoules recovered energy = 4.76 litres petrol = 3.65 litres diesel

**Chassis**

As is also the norm in Formula 1, the Porsche 919 Hybrid monocoque is a carbon-fibre sandwich construction that was completely redesigned for the 2015 season. It is now manufactured as a single unit, rather than in two sections. Its weight has been reduced significantly, and it has become more rigid thanks to the improved arrangement of the layers, while retaining its outstanding safety attributes.
A new structure for the chassis in general and the rear-body in particular also helped to increase rigidity and reduce weight. An important development goal with the all-new chassis was to improve handling, particularly in terms of counteracting understeering in corners.

**Aerodynamics**

The aerodynamic improvements made for 2015 were again focusing on maximum efficiency and had to follow a two-pronged approach again because the long straights of the Le Mans circuit necessitate very low drag, which means downforce must be limited to only what is absolutely necessary. Different requirements apply to the other WEC racing venues – i.e. more downforce is needed on those circuits. The experience gained during the first season in 2014 sharpened the view for the delicacy of the aerodynamics. The goal was to reduce to the greatest extent possible the 919 Hybrid's sensitivity to disturbances such as wind, cornering and extreme steering, slip, and roll angles. All of these change the flow of air around the vehicle, and thus the downforce. They also affect the driver's faith in the vehicle's stability, which will usually cause him to reduce speed.

The most noticeable changes to the carbon-fibre skin of the Porsche 919 Hybrid involve the new front end and the leaner engine cover in the rear. Changes to the wheel design were necessitated by the regulations. In order to limit aerodynamic benefits, 50 per cent of the wheel surface has to be open now.

Drivers and engineers all expressed their approval of the driving behaviour and handling of the 2015 919 Hybrid after the first test drive, and tyre tests conducted with Michelin also went well. “This is where you really notice the better balance of the new vehicle,” said Hitzinger. “The results are much more conclusive.”

**Parallel development**

The first decisions regarding the 919 Hybrid for the 2015 season had to be made before the new Porsche Team had even run a single race with the previous model. Back in April 2014, a small group of specialists got together to define the most important parameters for the second-generation monocoque and chassis. “The delivery time for the monocoque
is very long, and you can’t build it if you don’t have a rough layout for the chassis,” said Hitzinger. It was therefore important to define the suspension points for the wheels and the internal suspension components at an early stage. The 2014 model was refined in detail after the 24 Hours of Le Mans in June, but by that time the 2015 car had become the top priority. During the WEC summer break, the monocoque design for the 2015 vehicle was frozen. Now the team began working full steam on the second Porsche 919 Hybrid. It was no easy time, as the team was also expected to achieve success in the 2014 season, which it did by winning the final race, despite the double workload.

**Cooperation with production development specialists**

Along with battery technology and the major advances made with compact electric motors, the optimisation of combustion engines also holds great significance for future production models. The high-pressure turbocharged 2-litre V4 engine, which is a perfect example of downsizing, is equipped with an innovative direct injection system and displays pioneering combustion efficiency. “Our production car development specialists are directly involved in the LMP1 programme in this area,” Hitzinger explained. “Whether its calculations related to dynamics and charge cycles, or the design of the injector nozzles – our people work hand in hand with series production development teams. We do not even have our own dedicated test stands, but instead make use of the high-performance infrastructure at the research and development centre in Weissach. The two departments are located close to each other.” Expertise is thus developed where it is to be applied, and it also provides a valuable source of innovation for the company.

Cooperation on simulations runs in the opposite direction, as the most modern driving simulator at the Volkswagen Group was set up in Weissach for the LMP1 programme. It is now available for use by production vehicle development teams for driving dynamics tests and further research into hybrid system coordination and strategies. The efficiency gains lead to lower energy consumption, provided the driving style remains the same. A sportier driving style, on the other hand, does not immediately lead to increased energy consumption. Both aspects are reflected in the “Porsche Efficient Dynamics” brand core, in which the Porsche 919 Hybrid cars are literally enshrouded in 2015 as well.
Specifications • Porsche 919 Hybrid

Le Mans prototype LMP1 class

Monocoque: Composite material structure consisting of carbon fibres with an aluminium honeycomb core. The monocoque was developed on the basis of the 2015 LMP regulations and was tested in accordance with the 2015 FIA crash and safety standards. The cockpit is closed.

Combustion engine: V4 engine (90 degree cylinder bank angle), turbocharged, 4 valves per cylinder, DOHC, 1 Garrett turbocharger, direct petrol injection, fully load-bearing aluminium cylinder crankcase, dry sump lubrication
Max. engine speed: ≈ 9,000/min

Engine management: Bosch MS5

Displacement: 2,000 cm³ (V4 engine)

Output: Combustion engine: > 500 PS, rear axle
MGU: > 400 PS, front axle

Hybrid system: KERS with a motor generator unit (MGU) mounted on the front axle; ERS for recuperation of energy from exhaust gases.
Energy storage in a liquid-cooled lithium-ion battery (with cells from A123 Systems)

Drive system: Rear wheel drive, traction control (ASR), temporary all-wheel drive at the front axle via the electric motor when boosted, hydraulically operated sequential 7-speed racing gearbox

Chassis: Independent front and rear wheel suspension, push-rod system with adjustable dampers
Brake system: Hydraulic dual-circuit brake system, monoblock light alloy brake calipers, ventilated carbon fibre brake discs (front and rear), infinitely variable control of braking force distribution by driver.

Wheels and tyres: Forged magnesium wheel rims from BBS; Michelin Radial tyres, front and rear: 310/710-18

Dimensions/weights: Minimum weight: 870 kg
Length: 4,650 mm
Width: 1,900 mm
Height: 1,050 mm

Fuel tank capacity: 68.5 litres
From the racetrack to the road

The winner is always the customer

Motorsport is inextricably linked to Porsche DNA. This is why the battle on the racetrack is not an end in itself for the sports car specialist, rather it has fulfilled an important mission ever since the company was founded. It serves as a test laboratory for new technologies and sophisticated solutions, from which the customer always benefits in the end. Because at Porsche our goal has always been to ensure that innovations and advanced developments that have proven themselves under the severe conditions of racing will benefit the brand’s production models in a second or third iteration. With the new and revolutionary efficiency rules introduced in the FIA World Endurance Championship (WEC) in 2014, today, this is of greater importance than ever.

In 2014, Porsche returned to the top class of endurance motorsport and the 24 hours of Le Mans with the 919 Hybrid. At the same time, the manufacturer is represented by a GT factory team, which races the 911 RSR in this series. Both race cars serve as mobile research laboratories, even though they have different tasks. For instance, the Porsche 919 Hybrid – with its pioneering energy recovery and drive systems – offers a glimpse of the potential future and serves as a pre-development platform. The 911 RSR, on the other hand, produces findings that can be directly and quickly transferred to series production. The common theme of both cars is that Porsche uses them to test and study relevant technologies. In times of increasingly stringent emission and fuel economy standards – which pose great challenges to high-performance sports car manufacturers in particular – one thing is most important: efficiency, i.e. the best possible relationship between effort and results. Like no other subject matter, efficiency is the key to the countless Porsche successes in motorsport. Long before the brand won its first overall victories at Le Mans, the manufacturer had time and again seized efficiency trophies such as the “Index of Performance” and the “Index of Thermal Efficiency”. These were separate categories early on in the 24 hours of Le Mans. As early as 1955 Porsche secured the fuel consumption category for the first time with the 550 Spyder. Even the 917 was able to pocket efficiency prizes in the historic wins of 1970 and 1971. Most recently, between 2007 and 2011 the 911 GT3 was unbeaten in its class in terms of fuel efficiency and won the Michelin Green X Challenge. It all comes down to this: developments that prepare the groundwork for victories and titles also serve as models of very fuel-efficient and low-emission production models.
The fastest in the future: Porsche 919 Hybrid:

When the 2014 season began, a new and very progressive set of technology regulations was put into force for the top LMP1 category of the World Endurance Championship (WEC). The amount of energy available per lap serves as the primary limiting factor in the performance of works cars. In addition, rules specify that manufacturers must implement at least one hybrid system. The rule-makers, however, have allowed free choice of system type and of the method used to temporarily store the recovered energy. Design and displacement of the engine and mode of power transmission are also not prescribed. At the same time, the allowable fuel consumption is inversely proportional to the electrical energy that is re-invested into propulsion per lap (for more details, see the text “Porsche 919 Hybrid”). In the search for the best possible efficiency and the highest efficiency levels, Porsche engineers – under the direction of Technical Director Alexander Hitzinger – are thus allowed tremendous latitude in coming up with new and creative approaches. It was precisely these opportunities that provided the crucial argument for Porsche to return to top-level motorsport.

The result is the 919 Hybrid – a bold technical concept and the most complex race cars that the brand has ever put on wheels. It highlights relevant technologies that hold future significance for the development of production vehicles. Consider the hybrid drive, for example: unlike its direct competitor in the WEC, the 919 takes a dual approach here. The first is already being used in similar form in the Porsche 918 Spyder: during braking phases, a generator at the front axle converts the car's kinetic energy into electrical energy. The second concept, on the other hand, is unique. An auxiliary turbine generator unit, which is laid out in parallel to the turbocharger, recovers energy from the exhaust gas stream – as a result, the Porsche 919 Hybrid not only recovers surplus energy during braking, but also under full throttle.

Consider the storage technology, for example: Porsche developed the liquid-cooled lithium-ion battery of the 919 Hybrid in-house. However, it has partnered with the company A123 Systems to develop the cell technology. Thanks to continuous development Porsche has attained previously unheard of power densities. In the past season, the 919 was still running in the 6 megajoule category (amount of electrical energy that may be used per Le Mans lap for boosting). Within the WEC nobody used more energy than this. In the 2015 season,
Porsche has successfully made the leap to the top 8 MJ class – despite a significant reduction in the overall weight of the prototype. This is having a positive effect: the best-performing 919 Hybrid car completed 348 laps of racing last year and recovered 585 kilowatt-hours of energy, which it converted back into propulsive power. This amount of energy would be enough to power a Volkswagen e-Golf – one of the most efficient electric cars of the compact class – a distance of over 4,600 kilometres. This is approximately equivalent to the driving distance from New York to Los Angeles. If it were to cover the same racing distance in this season, the 919 Hybrid of the 8-MJ class would boost with 780 kilowatt-hours of energy. This would be enough to power the e-Golf for an additional 1,500 kilometres, corresponding to an increase of more than 30 per cent.

The know-how – which ranges from cell development to battery management, cooling systems and packaging – is created in-house, and that is where it remains. Production vehicle development specialists can access data from the LMP1 project. Some engineers even work in a dual role – on both the motorsport and street-legal vehicle sides. This assures direct transfer of information and experience.

Consider the combustion engine, for example: the direct-injection turbocharged petrol engine of the 919 Hybrid is based on an unconventional V4 layout, and it has a relatively low displacement of 2.0 litres. With a power output of more than 500 hp, it is the most advanced and efficient downsizing engine that Porsche has built so far and is a trailblazer in terms of its injection technology. The four-cylinder engine also impresses with exemplary efficiency in terms of its friction losses. The engine was comprehensively optimised for the 2015 season. Despite its lower weight and greater stiffness, it now offers even better combustion efficiency.

**On a direct path to series production – Porsche 911 RSR**

Porsche is also actively engaged in genuine works motorsport with the 911 RSR, which is competing both in the WEC and the 24 Hours of Le Mans in the LMGTE Pro class. Innovations developed for this race car often benefit the 911 GT3 RS after just a brief time. It serves as a direct link between the circuit racetrack and everyday driving, before other road models benefit as well. Here too, the primary focus is on relevant technologies and efficiency.
Keyword aerodynamics: here too, many specific details from the race car make their way into production vehicles. They range from the contour of the front spoiler lip to the geometry of cooling air channels, temperature management and aerodynamic design of the underbody and the two wings.

Keyword driving dynamics: the dynamic engine mounts that are standard in the new GT3 RS were also derived from the 911 RSR. The electronically controlled system prevents undesirable engine movements that could disturb turn-in characteristics while driving in a sporty style. As a result, the GT3 RS reacts less to load alteration, and it is much more stable in fast bends. At the same time, it reduces the transmission of vibrations and noises to the body, especially at idling speed, which contributes to the refinement of the vehicle.

Keyword lightweight design: the new 911 GT3 RS, which was presented at this year’s Geneva International Motor Show, is ten kilograms lighter than the 911 GT3, making it a prime example of systematic weight reduction. The front and rear lids are made of carbon fibre, the rear window is made of a thin polycarbonate material, and other lightweight components made of alternative materials were derived from the 911 RSR, in which they were tested. The magnesium roof of the GT3 RS also follows an idea from the RSR. The same applies to the weight-optimised 12-Volt lightweight battery, which replaces conventional and much heavier lead batteries. This know-how from the LMP1 prototype has proven itself and was transferred successfully to the RSR and then to the Porsche GT road models.

To sum up: whatever the Porsche engineers develop to notch up successes in motorsport – in the end customers benefit as well. This is because efficiency-boosting technologies, which have a positive effect on the competitiveness of a race car, also benefit the production models. In the medium to long term this pays off in the form of even greater driving pleasure and improved performance data, and also with optimised fuel consumption and emission figures. At Porsche, the sports car of the future is being created at racing speed.
Technology transfer in the rear view mirror

There is a race car inside every Porsche

Sporty ambition is what has inspired Porsche engineers from the start. The race course has been the merciless test platform for sports car technology for seven decades now. Examples of technology transfer include the mid-engine, aerodynamics, turbocharging, PDK, regulated all-wheel drive and hybridisation.

Mid-engine, synchronisation, dual ignition

The Porsche 550 was created for the company's first factory racing programme, and it immediately won the Nürburgring race in 1953. Positioning of the four-cylinder flat engine in front of the rear axle made the Spyder very agile. In 1996, the mid-engine concept was continued in the Boxster. A five-speed transmission with Porsche synchronisation was used in the 550; it is similar to the transmission introduced to 901/911 production cars in 1963. For good measure, two spark plugs were used per combustion chamber in the 550 for optimised combustion – this type of dual ignition was introduced to Porsche production cars in 1988 in the 911 Carrera (type 964).

Trailing edge, duck tail, active aerodynamics

Ferdinand Alexander Porsche sketched the 904 Carrera GTS Coupé of 1963 with a trailing aerodynamic edge at the rear of the car. The first front spoiler was introduced on the 911 S in 1971. It accelerated air flow under the vehicle and diverted a portion of the air to the sides; this reduced lifting force at the front of the car. In 1972, the Carrera RS 2.7, which was designed for motorsport, set new standards: not only was it equipped with a front apron that extended low to the ground; it also had a distinctive spoiler over the engine lid – the legendary “duck tail”. However, the really phenomenal technology platform of the 1970s – in terms of its aerodynamics too – was the Porsche 917. The 12-cylinder race car was built in two versions: one with a short rear section and high downforce for race courses with lots of corners, and one with a long rear section that was optimised for low air drag intended for high-speed race courses. To increase downforce in corners, adjustable flaps were added.
at the rear, which were connected via rods to the wheel suspensions. When the driver steered into a corner, the flap above the unloaded rear wheel at the inside of the corner would be extended to increase wheel load by wind pressure, improving stability. The first step had been taken towards active aerodynamics, which Porsche introduced to production cars in 1988 with the automatically extending rear spoiler of the 911 Carrera. On the 911 Turbo presented in 2013, the Porsche Active Aerodynamic (PAA) system was used to adjust the rear wing and for the first time the front spoiler. The extensive system of adjustable aerodynamic elements in the 918 Spyder represents pure racing technology on the street.

**Turbocharging and intercooling**

For the American Can-Am series, Porsche further developed the 917 Coupé into the convertible Spyder, but the 560 hp output of the 4.5-litre V12 engine was inferior to the 750 hp engine displacement giants of the U.S. competition. Porsche reacted and developed both a 16-cylinder engine and a forced induction system for the 12-cylinder engine. The pressure build-up of the charging air would be regulated to make it suitable for high dynamic load changes and speed changes in the racing engine. The engineers turned away from increasing charge pressure in the induction air, opting instead for the use of turbocharging. Undesirable excess pressure was diverted from the charger via a bypass valve. The 917/10, initially with 850 hp, was the dominating race car of the Can-Am series, and the introduction of turbocharging to Porsche production sports cars became legendary. The 911 Turbo went into production in 1974. Meanwhile, turbocharging technology in the 917/10 went one step further: intercoolers reduced the temperature of the compressed air for better cylinder filling and increased power. The 911 Turbo 3.3 benefited from this technology in 1977.

**Porsche double-clutch transmission**

Back in 1964, Porsche worked on a powershifting dual-clutch transmission. Four years later, tests were conducted on an automatic four-speed transmission based on the dual-clutch principle, and other designs followed in 1979. Finally, the Porsche Doppelkupplungsgetriebe (PDK) was created in 1981. In 1986, the electronically-controlled powershifting spur gear transmission was tested in the Group C Porsche 956 race car, as well as in production sports
cars. The ability to offer shifting without interruption in the flow of power was especially advantageous for turbocharged engines, because the driver was able to continue to push the accelerator pedal during shifting to avoid a drop in charge pressure. Initial tests of the direct shifting transmission were conducted in 1983 in the Group C Porsche 956.003 race car. In 1986, the 962 C PDK won the World Championship race in Monza. Progress in the engineering of the control electronics finally enabled the introduction of the PDK to production cars. In 2008, Porsche introduced PDK in the 911 Carrera.

**All-wheel drive control**

The 959, developed in 1983 for what was known as Group B at that time, had an advanced all-wheel drive system with variable control of the centre differential lock; it controlled the distribution of torque between the two axles as a function of load and friction values at the wheels. This control strategy proved to be so successful that Porsche developed it further and adapted it for use in the Carrera 4 in 1988. To optimise vehicle dynamics further, the engineers equipped it with a basic torque distribution of 31 to 69 per cent (front to rear axle) via a planetary distribution gear. The system also had a hydraulically activated centre differential lock and transverse differential lock for nearly stepless adjustment of the distribution ratio. Its operation was controlled by electronics that embodied technical know-how from the 959.

**Race cars with hybrid drives**

In 2010, Porsche nearly achieved a sensational race upset with its 911 GT3 R Hybrid that embodied promising future technology: this GT3 – with a power output of 465 hp from a 4-litre 6-cylinder rear engine and two electric motors at the front axle, each producing 75 kW of power – was in the lead until just two hours before the end of the 24-hour race on the Nürburgring. This innovative front wheel drive was also an object of testing: the hybrid concept of the 918 Spyder, which also included an electric motor drive at the front axle, is a direct advanced development of the system used in the 911 GT3 R Hybrid. The highly innovative 919 Hybrid will write a new chapter in this tale.
### Porsche motorsport innovations for production cars (excerpt)

<table>
<thead>
<tr>
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<th>First use in a race car</th>
<th>First use in a production car</th>
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<td>1952 356</td>
<td>1952 356</td>
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<tr>
<td>Dual ignition</td>
<td>1953 550</td>
<td>1955 356 A 1500 GS Carrera</td>
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<td>Five-speed gearbox</td>
<td>1955 550 A Spyder</td>
<td>1963 901/911</td>
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<td>Mid engine</td>
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<td>Disc brakes, internally gripping</td>
<td>1959 356 B 1600 GS Carrera GT</td>
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<td>Multi-joint rear axle</td>
<td>1961 718 RS 61 Spyder</td>
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<tr>
<td>Fuel injection</td>
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<td>Internally ventilated brake discs</td>
<td>1965 Porsche 906-8 Mountain Spyder</td>
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<td>1973 911 E, S, RS, 2,7</td>
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<td>1970 908/03</td>
<td>1974 911 Carrera RS 3.0</td>
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<td>ABS</td>
<td>1968 908/02</td>
<td>1983 928 S</td>
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<tr>
<td>Adjustable stabiliser</td>
<td>1971 917</td>
<td>2007 Cayenne Turbo (PDCC)</td>
</tr>
<tr>
<td>Feature</td>
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<td>Model</td>
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<td>----------------------------------------------</td>
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<tr>
<td>Turbocharging with bypass valve</td>
<td>1972</td>
<td>917/10</td>
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<tr>
<td>Four-piston aluminium brake calipers</td>
<td>1973</td>
<td>917/30</td>
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<td>Intercooling</td>
<td>1974</td>
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<td>Four-valve cylinder head, water-cooled</td>
<td>1978</td>
<td>935-78</td>
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<td>Tyre pressure monitoring (TPM)</td>
<td>1980</td>
<td>924 GTP Le Mans</td>
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<td>Aluminium monocoque</td>
<td>1981</td>
<td>956</td>
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<tr>
<td>Monoblock aluminium brake caliper</td>
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<td>956</td>
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<td>Motronic</td>
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<td>Titanium connecting rods</td>
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<td>Ceramic brakes</td>
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<tr>
<td>Carbon fibre monocoque</td>
<td>1998</td>
<td>911 GT1</td>
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<tr>
<td>Hybrid drive with e-motor on front axle</td>
<td>2010</td>
<td>911 GT3</td>
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Steering wheel

The Porsche 919 Hybrid’s control centre

Setting the direction is the most trivial task of the steering wheel in the Porsche 919 Hybrid. The drivers have a computer in their hands. They operate 24 buttons and switches on the front as well as six paddles on the reverse side to control the most complex racing car.

Although it is called a steering wheel, it is not round but a flat rectangle. The shape is due to the space required during driver changes. Tall drivers such as Mark Webber or Brendon Hartley, in particular, would otherwise have difficulties in accommodating their long legs quickly. There is a large display in the centre, which displays a multitude of information to the driver. This includes the speed, what gear is engaged, the currently selected motor management, and the charge status of the lithium ion battery, i.e. how much electrical energy is available to be called up to drive the front axle. The electric motor on the front axle supplements the turbo charged 2-litre, 4-cylinder combustion motor, which drives the rear wheels. The control button at the top left is used to select the displayed information, while the drivers use the control button in the right grip handle to dim down the display brightness at night. The identical control button in the left grip handle is for the volume of the pit radio, and the fourth rotary-type control at the top right varies the interval timing of the windscreen wiper.

The buttons and switches on the steering wheel were carefully positioned in co-operation with the drivers, to facilitate reliable operation at racing pace. The most frequently used buttons are positioned along the top outside edge, so they are easily reached with the thumb. The blue button at the top right, which is almost always in use, is the headlight flasher, used by the fast prototypes to warn the slower vehicles in the WEC field before they are lapped. When pushed once, it causes the headlights to flash three times. In daylight, the drivers keep their thumb on it almost permanently, as naturally the headlight signal is more difficult to perceive at that time.

The red button at the top left is also highly frequented. It is used to demand electrical power from the battery, the so-called “boost”. The drivers can boost to pass but must be clever about rationing the power. The amount of energy per lap is specified. The yardstick is one lap in Le Mans, where eight megajoules are available. The amounts are converted accordingly for shorter circuits. The amount of energy a driver uses in the middle of a lap to get free of the traffic will not be available at the end in the straights.
A bit further inside on the right and left are the plus and minus switches to adjust the front and rear traction control and to distribute the brake balance between the front and rear axle. These (yellow, blue and pink) are not used quite as frequently.

The orange buttons further down operate the drinking system (on left) and put the transmission in neutral (on right). The red button at the bottom left is for the windscreen washer, the red one on the right side activates the cruise control to restrict the speed in the pit lane.

At the top centre, there are the green buttons for radio communication (on the left) as well as the OK button on the right. Drivers use the latter to confirm they have performed a setting change, which was requested from them via the pit radio. For these settings, they use the rotary switches, and usually only in the straights as they need to pull one hand out of the steering wheel grip for this purpose.

The two rotary switches called ‘Multi’ correspond with one another. The left one is available for ABC settings, the right one is number-based. Programmes for engine management or fuel management are designated by combinations such as A2 or B3. Three other rotary switches are available to pre-select the brake balance, set the traction control for wet or dry conditions and the hybrid strategy.

To make the switches easier to recognise in the dark, their colours are fluorescent and respond to a black light lamp, which is situated above the driver’s helmet.

The steering wheel is made of carbon, the grip handles are covered in slip-resistant rubber. Thanks to the power steering system, drivers can steer the car without any difficulty, even with the relatively narrow grips. When reaching through the openings, their fingers touch six paddles on the reverse side of the steering wheel. The centre paddles are used for changing gears – pulling the right paddle is for upshifting, and pulling the left paddle is for downshifting. The lowermost paddles operate the clutch and their function is identical on either side. Depending on whether the driver just entered a right or left corner, he can decide which side is easier to operate. The paddle at the top left operates the boost; whether the drivers use this paddle or the button described on the front is purely a matter of preference. The drivers use the paddle at the top right to initiate manual energy recuperation. This feels like a slightly engaged hand brake and supplies the battery reservoir with electric energy gained from kinetic energy.
Logistics

Efficient world tour

Entering the two highly complex Porsche 919 Hybrids for the overseas races of the 2014 FIA World Endurance Championship does pose logistic challenges for the Weissach based Porsche Team. The team’s air freight is 35 tons. Nevertheless, only indispensible items are taken on board. The team’s hospitality, for example, isn’t one of the essentials. The works team eats in the paddock canteen.

Air cargo is complex. Like in the classic computer game Tetris, items have to be stacked without gaps, using the aircraft’s hold including any sloping sections. The area for the Porsche freight is limited to 12 units. Each of them measures 304 by 230 centimetres and, when fully loaded, should not be heavier than 3000 kilograms, otherwise the basic costs increase. Months ago it was calculated it was 12 units that would be needed. The cargo list contains several thousand items. In order to ensure that everything fits into the limited space, the team always had the air freight requirements in mind when making decisions over what to purchase – whether for a tool cabinet, packaging for the drivers’ helmets, or an engine box. Furthermore, similar to moving house, the rule is: whatever is needed first at the destination, must be immediately available. Perfect organisation is essential to build up the garage on time, and once a three-ton container has been unloaded in a freight packed pit lane it sits there until it is empty.

For the Porsche Team ten tailor made containers have been purchased. Six of them, the so called Q7, have sloping tops, two are the flatter Q6 and two are “winged lowers”, shaped especially for the lower cargo space in the aircraft. They are more efficient than anything you can buy ready-made, and save a lot of packing material compared to stacking single boxes one on top of another. Each Q7, for example, is 120 kilos lighter than those normally used in Formula One. Plus, it can be loaded onto the aircraft with no net around it, which saves another 1.3 centimetres in height. Alongside the ten lightweight containers, the remaining two units accommodate the big parts, such as the flight case with the spare chassis or the hundred wheel rims.
Each of the 12 units has a unique worldwide number plate and each component packed inside the containers has a QR code, so that by using a scanner everything can be located. This painstaking organisation doesn’t just achieve labour and cost efficiency. Customs officers, too, have a need for information. Whether the serial numbers of the 120 radios, the number of chassis components, packets of screws, or rolls of tape – Porsche puts a lot of effort in reliable documentation. Everything imported into the various countries has to be exported out again. The containers are x-rayed, and customs officers may, of course, want to unpack them. Time for this is factored into the schedules.

The two race cars don’t fit into containers. The Porsche 919 Hybrids travel securely strapped down onto extra car racks. All of their fluids have been drained, fragile body parts, such as the wing mirrors and front and rear wings, have been packed safely elsewhere. A set of used tyres is fitted.

Between the races some components go back and forth. For example, the 2-litre 4-cylinder engines for rebuilding in Weissach. Hazardous materials go separately. These include adhesives and resins, as well as spray cans and the lithium-ion batteries for the hybrid drive systems. These batteries even require permission from federal aviation administration offices in the various countries. The fact that Porsche possesses considerable expertise in hybrid matters helps the race team, but the procedures are time-consuming nonetheless. The hazardous materials also have to stay in a secure room for 48 hours before and after every flight without being moved.

The team also ships some items by sea, which is considerably less expensive, but also much slower. Equipment shipped in August will only return in January. But then this doubles or triples what is needed. Because of the long distances there are three sets of sea freight on the high seas. The contents consist of relatively inexpensive but heavy equipment. Metal posts, for example. Instead of flying 20 of those heavy Tensator barriers around the world, it is cheaper to buy sixty of them and load them onto three vessels. It’s all about efficiency.
Time line

End of 2011

Recruiting begins (status those days: Fritz Enzinger plus five more employees).

2012

An office building and the workshop are built.

Timo Bernhard and Romain Dumas are announced as the first drivers.

12.06.2013

Roll-out of the first 919 Hybrid on the test ground in Weissach with Timo Bernhard at the wheel.

2013

Testing on various race tracks in different countries, team preparation in Weissach going on with, for example, 1053 pit stops practiced. Drivers Neel Jani, Mark Webber, Brendon Hartley and Marc Lieb are announced.

The team of Fritz Enzinger, Vice President LMP1, grows to 230 people. Alexander Hitzinger is Technical Director, Andreas Seidl becomes Team Principal.

February 2014

The driver combinations are confirmed:
Bernhard/Hartley/Webber and Dumas/Jani/Lieb.

04.03.2014

Presentation of the Porsche 919 Hybrid alongside the 911 RSR at the International Auto Salon in Geneva.

20.04.2014

Podium finish at the race debut: Bernhard/Hartley/Webber come third at the six-hour race at Silverstone.

02.05.2014

First pole position in the second race:
Jani/Lieb dominate qualifying in Spa-Francorchamps.
15.06.2014  Le Mans: Marc Lieb crosses the line in 11th place overall. Less than two hours before the car was fourth when it had to pit for a long repair because of a gearbox issue. Almost at the same time Mark Webber, second in the race, had to give up due to an engine failure. Both 919 Hybrids had problems earlier in the race as well (fuel system No 14, suspension No 20), but caught up brilliantly. Towards the end of the race car number 20 was leading for a long time.

12.10.2014  In Fuji a 919 sets the fastest race lap for the first time (Webber).

15.11.2014  For the first time both car crews make it onto the podium: In Bahrain Dumas/Jani/Lieb finish second in front of Bernhard/Hartley/Webber.

25.11.2014  Announcement to enter a third Porsche 919 Hybrid in Spa and Le Mans in 2015.


29.11.2014  For the first time the two 919s lock out the front row: In São Paulo Bernhard/Webber manage to achieve the fourth pole position for the 919 Hybrid.

30.11.2014  In São Paulo Dumas/Jani/Lieb achieve the maiden win for the 919. It is the sixth podium finish in the debut season and a success under dramatic circumstances, because Mark Webber suffers a heavy accident with less than 30 minutes race time left. Luckily he escapes without any severe injuries.

15.12.2014  First roll-out of the 2015 Porsche 919 Hybrid on the test ground in Weissach with Marc Lieb at the wheel.
05.02.2015   In Paris Porsche announces Earl Bamber and Nick Tandy will complete the crew for the third 919 Hybrid.

26.03.2015   Presentation of the second generation Porsche 919 Hybrid in Paul Ricard.
Porsche Team – Team management

Fritz Enzinger
Vice President LMP1
(Austria)

The Austrian (born on 15th September 1956 in the Styrian city of Oberwölz, Austria) worked for BMW for 30 years. He played an important role in the touring car championships, in the overall victory in Le Mans in 1999 and in the Formula One successes. He has always been someone who shies away from the limelight – and that hasn't changed. The mechanical engineer's door is always open for his staff, and he feels more comfortable in jeans and a shirt than in a collar and tie. It wasn't the prestige or the accolade that drew him to Porsche – what drew him to Weissach was the terrific opportunity to be able to shape a project of this magnitude from its infancy.

At the end of 2011 he started to forge the project with a new building, new staff and new vehicle. He joined Porsche equipped with a wealth of experience, ranging from company strategy, sponsoring, personnel structure and team management through to driver contracts. There are two ambitions that drive him: firstly, to develop sustainable top-level sport structures for the enterprise and secondly to win the 17th overall victory for Porsche in Le Mans as quickly as possible. Since joining Porsche in Winter 2011/2012 on free weekends he commutes back to Munich to his family. Icelandic horses are a hobby he shares with his wife and daughter when he wants to step off the fast track.
Alexander Hitzinger  
Technical Director  
(Germany)

Born on 23rd October 1971 in Passau, Germany, Alexander Hitzinger was already gripped by an interest in automotive engineering at an early age. He recognised in motorsport the ideal environment for fast and ambitious implementation of innovations within a constantly tough competitive setting. He sees the key to success lying in moulding a team from creative, talented people and then leading and supporting that team with great personal commitment. Decisions are taken based on facts, implementation is quick and consistent and his management style is focussed on targets and performance. He brought this method of management with him from his MBA studies. It is one that he was also already using when he developed the first Formula One engine to achieve a maximum speed of 20,000 revolutions per minute at English engine-makers Cosworth, and it was also on this premise that he built up the Advanced Technologies department at Red Bull Racing.

At the end of 2011, Hitzinger joined Porsche. He was attracted by the chance of being able to carry on the brand's great motor racing history. As technical director of the LMP1 team, the mechanical engineer is responsible for the entire development of the 919 Hybrid – a vehicle of extreme complexity with enormous potential for genuine innovations. Hitzinger created the Porsche 919 Hybrid's radical and successful concept. He draws the energy for this from his family of a wife and two children.
Andreas Seidl
Team Principal
(Germany)

It’s the immediate feedback that Andreas Seidl (born on 6th January 1976 in Passau, Germany) loves about motorsport. Everything goes through the ultimate endurance test in the competition and this test result is a public one. The Bavarian knows this and can face the challenge. It’s the result that counts. This engineer is a perfectionist, whether it is in project planning or on the race track. Every movement of the pit crew is studied, rehearsed countless times and tested so that nothing is left to chance. The choreography can make or break a race. Seidl isn’t a great believer in good or bad luck. He first wants to ascertain who is best suited where. There is not an area he doesn’t know like the back of his hand, and no detail goes unnoticed.

Seidl was responsible for Formula One testing and racing at BMW Sauber. Then he went to Switzerland where he gained recognition and success. When BMW withdrew from Formula 1 he became Director of Race Operations for the BMW DTM comeback. He played a leading role in finding the set-up for winning his company the title on its first attempt in 2012. Mission accomplished. At Porsche the father of two has now found a new challenge.
Porsche Team – Drivers

Earl Bamber
(New Zealand)

Earl Bamber made the ascent to the summit of endurance motorsport in record time. As winner of the Porsche Motorsport International Cup Scholarship, one of the most comprehensive and complete new driver development schemes in the automotive sector, he achieved double success in 2014, with both overall victory in the Porsche Mobil 1 Supercup and the Carrera Cup Asia, the latter a repeat of his victory there a year earlier. He impressed again and again: when he won his debut race in the Supercup in Barcelona, when at Silverstone, despite a mistake in qualifying, he came in third, when in Spa he recovered the car following a sideways skid coming out of Eau Rouge and still won. In his race debut driving the 911 RSR the New Zealander impressed again: he came in second in the ‘Petit Le Mans‘ race, the North American endurance classic in Road Atlanta. As a result of these successes he was promoted in December 2014 to works driver for the new season.

It was all going well. But it was to get even better: a day before Christmas he received the invitation to test the Porsche 919 Hybrid in January 2015 in Abu Dhabi. “An enormous honour,” said Bamber. “Every racing driver in the world wanted to drive this car.” Bamber rapidly got to grips with the complex prototype, quickly doing good lap times – and was promptly promoted into the LMP1 team. He will be driving the third Porsche 919 Hybrid alongside Nico Hülkenberg and Nick Tandy at Spa and Le Mans.

Earl Bamber took up residence in Kuala Lumpur. In terms of flight time, the Malaysian capital is about halfway between his home in New Zealand and Porsche’s home.

Bamber grew up on a farm, 75 kilometres from the nearest town, Wanganui, on the southern tip of North Island. It takes two hours to get to Wellington. He’s been sitting behind a wheel since he was two. Sitting on his father’s lap, he used to steer the family pick-up truck to the postbox and later drove karts and single-seaters. With numerous guest starts, including
Daytona 2015, he has already contested 60 races in a Porsche. “I love these cars and the support from Porsche was for me the great chance of my motor racing life,” he said. “I've achieved a new level in every area and will do my best to justify this faith in me again this season.”

Vita

Date of Birth: 9th July 1990
Place of Birth: Wanganui (NZ)
Nationality: New Zealander
Residence: Kuala Lumpur (MAL)
Marital status: Single
Height/Weight: 1.83 m/74 kg
Hobbies: fitness, surfing, skiing
Internet: www.earlbambermotorsport.com
Twitter: @earlbamber

Earl Bamber competes for the Porsche Team with the Porsche 919 Hybrid in the WEC races in Spa-Francorchamps and Le Mans. Furthermore he competes in the TUDOR United SportsCar Championship with the Porsche 911 RSR.

Career

2015
Porsche works driver

2014
Winner Porsche Motorsport International Cup Scholarship
Winner of the Porsche Mobil 1 Supercup (2 wins, 7 podiums)
Winner of the Porsche Carrera Cup Asia (8 wins, 10 podiums)
2nd Petit Le Mans (GTLM)
Porsche Carrera Cup Deutschland (2 wins)

2013
Winner Porsche Carrera Cup Asia (4 wins, 8 podiums)
Winner Audi R8 LMS Cup Korea
2nd Porsche Mobil 1 Supercup Abu Dhabi
<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>2012</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt; World Time Attack Challenge (overall)</td>
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</table>
| 2011 | 7<sup>th</sup> Superleague Formula  
10<sup>th</sup> World Time Attack Challenge  
3<sup>rd</sup> Porsche GT3 Cup Challenge race in New Zealand |
| 2010 | 2<sup>nd</sup> Toyota Racing Series NZ (6 wins)  
Winner New Zealand Grand Prix |
| 2009 | A1GP Series for New Zealand  
(3 podiums, A1GP award for best overtaking move)  
GP2 Asia Series |
| 2008 | Winner Toyota Racing Series International Championship  
2<sup>nd</sup> Toyota Racing Series NZ  
2<sup>nd</sup> Formula Renault V6 Asia, |
| 2007 | 7<sup>th</sup> Toyota Racing Series NZ  
11<sup>th</sup> Formula Renault V6 Asia |
| 2006 | Winner Formula BMW Asia (10 wins) |
| 2005 | 4<sup>th</sup> Formula Ford NZ |
| 2004 | Karting |
**Timo Bernhard**  
_(Germany)_

He has won them all, the major sports car endurance competitions: Le Mans, Daytona, Sebring, he has even won overall victory in the 24-hour race in the Nürburgring no less than five times. He gained major international recognition after the overall victory in Le Mans in 2010, which he won with Romain Dumas and Mike Rockenfeller for Audi. Back then, Porsche lent him to its group partner, but with its own LMP1 project, Porsche wouldn’t give him up now.

"Winning the 17th Porsche overall victory in Le Mans," pondered Bernhard, “that would be such a huge thing. One can't even imagine." He tells us about his first race for Porsche at the Sarthe. It was back in 2002 winning the GT class at the first go. “This class victory was very emotional, but I had my first moving Le Mans moment before the race: Back then, when we had the technical inspection in the town the Porsche fans showed so much interest surrounding the question about a return to the premier class, that I realised: The record breaking winner Porsche and Le Mans go hand in glove like no other.” In 2014 he experienced more emotional moments. "I will never forget when the race engineer got onto the radio after 20 hours to tell me I had just taken the lead. However, the retirement two hours later I won't forget either."

Bernhard began his successful Porsche career in 1999 as a Junior. But endurance racing is not his only passion – in his leisure time he is becoming more and more involved in rallies. In 2013 he won an event in the German rally championships in a 911 GT3 in his home area in the Saarland. In 2014 he went on to win the Homburger ADAC hill climb – once again in a 911 GT3 Cup and on home ground. Home also includes “Team 75 Bernhard” which is managed by his father Rüdiger. No matter how many victories he has in other countries and on other continents: Bernhard is and remains a down-to-earth person, a typical trait for the people of his home region. He has an open and cheerful disposition, but he is a focused perfectionist when push comes to shove. 24-hour races have enormous potential to be emotional roller-coasters. However, these emotions that the public love so much are not something a driver can afford to indulge in. It's simply too dangerous. Timo Bernhard is someone who can blank that all out at the crucial moment.
His home in Bruchmühlbach-Miesau is brimming with trophies, but at home he is just Timo. The internationally successful racing driver stays on track, just where he belongs. And since 2013 there is all the more reason to look forward to going home: he and his wife Katharina now have a new addition to their family – their son Paul.

The fact that Berhard and his team colleague Romain Dumas embraced fatherhood in the same year is one of many cornerstones that match up in both of their lives. Together they have often made an invincible team. Bernhard and Dumas attracted a lot of attention with their successes in the RS Spyder in the American Le Mans Series in 2007 and 2008. In the LMP1 project the wealth of experience of both drivers is divided between the two cars.

Timo Bernhard drove for the roll out of the first 919 Hybrid on 12th June 2013. “An honour,” he said, and explained: “This was not just a new Le Mans racing car, it was a Porsche.” He reminisced: “When I drove my very first company car in the village, there were children standing around. I couldn’t hear them, but I could see by their mouths what they were saying: It’s a Porsche!”

**Vita**

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<td>Marital status:</td>
<td>Married to Katharina, one son (Paul)</td>
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<td>Hobbies:</td>
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<tr>
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<td><a href="http://www.timo-bernhard.de">www.timo-bernhard.de</a></td>
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Timo Bernhard competes in the FIA World Endurance Championship WEC, including the Le Mans 24 Hours, in a Porsche 919 Hybrid for the Porsche Team.
Career

2015
Porsche works driver WEC, LMP1

2014
Porsche works driver WEC, LMP1
3rd Silverstone, Fuji and Bahrain
Pole position São Paulo

2013
Porsche works driver
2nd Le Mans 24 Hours (GT)
1st Nürburgring 24 Hours (SP7 class, 7th overall)
LMP1 test programme
1st ADAC Saarland Rally (German Rally Championship)

2012
Porsche works driver
2nd Sebring 12 Hours (overall)
Endurance Cup Nürburgring-Nordschleife, 2 podiums

2011
Porsche works driver
1st Nürburgring 24 Hours (overall)
5th Sebring 12 Hours (overall)
Le Mans 24 Hours (LMP1)

2010
Porsche works driver
1st Le Mans 24 Hours (overall, Audi)
ADAC Motorsport Personality of the Year

2009
Porsche works driver
1st Nürburgring 24 Hours (overall)
4th Grand-Am Series (DP), 4 podiums
Le Mans 24 Hours (LMP1)
<table>
<thead>
<tr>
<th>Year</th>
<th>Title</th>
<th>Wins</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>Porsche works driver</td>
<td>Winner American Le Mans Series (LMP2), 4 wins, 1st Sebring 12 Hours (ALMS, overall), 1st Nürburgring 24 Hours (overall)</td>
</tr>
<tr>
<td>2007</td>
<td>Porsche works driver</td>
<td>Winner American Le Mans Series (LMP2), 8 wins, 1st Nürburgring 24 Hours (overall)</td>
</tr>
<tr>
<td>2006</td>
<td>Porsche works driver</td>
<td>3rd American Le Mans Series (LMP2), 4 wins, 1st Nürburgring 24 Hours (overall)</td>
</tr>
<tr>
<td>2005</td>
<td>Porsche works driver</td>
<td>2nd American Le Mans Series (GT2), 5 wins, 2nd Le Mans 24 Hours (GT2)</td>
</tr>
<tr>
<td>2004</td>
<td>Porsche works driver</td>
<td>Winner American Le Mans Series (GT), 2 wins, 1st Sebring 12 Hours (ALMS, GT), 1st Petit Le Mans (ALMS, GT), 3rd Nürburgring 24 Hours (overall), 2nd Spa 24 Hours (N-GT)</td>
</tr>
<tr>
<td>2003</td>
<td>Porsche works driver</td>
<td>2nd American Le Mans Series (GT), 1st Petit Le Mans (ALMS, GT), 1st Daytona 24 Hours (overall), 1st Nürburgring 24 Hours (overall)</td>
</tr>
</tbody>
</table>
2002
Porsche works driver
3rd Porsche Michelin Supercup
4th American Le Mans Series (GT)
1st Daytona 24 Hours (GT)
1st Le Mans 24 Hours (GT)
2nd Nürburgring 24 Hours (overall)

2001
Porsche Junior
Winner Porsche Carrera Cup Deutschland
2nd Sebring 12 Hours (ALMS, GT)
Porsche Pirelli Supercup, 1 win

2000
Porsche Junior
3rd Porsche Carrera Cup Deutschland

1999
Porsche Junior
12th Porsche Carrera Cup Deutschland
3rd German Formula Ford Championship

1998
6th German Formula Ford Championship, 2 wins
6th Formula Ford Euro Cup

1991-1997
Karting
Romain Dumas
(France)

What else could he have become? He grew up with Porsche. His father drove a Porsche in the European Hill Climb championships. “I was still small, but my father sat me in a 962 Le Mans racing car. He closed the door and I thought: Wow, is this an aeroplane?” Romain Dumas lives and breathes Porsche. And not just for work.

When the man from Alès in the south of the French Cévennes, now living in Switzerland, is not on the road for Porsche, he is doing just that for a hobby. So he could be at Pikes Peak, on the breath-taking street circuit of Macau, in the French Rally Championship or even in the World Rally Championship as he was in January 2015, when he came second in the R-GT class at the Monte Carlo Rally in his Porsche 911 GT3 RS 4.0 l. Only days before that he had been busy with a buggy in the Dakar Rally.

Also in 2014 he took the overall win at the Pikes Peak International Hill Climb in Colorado, USA in a prototype. Drivers face 156 hair-pin bends and a 1,400 metre climb to 4,300 metres on the 19.99 kilometre Pikes Peak track. “I blow all the money I make as a company driver on my private events,” he admitted, shrugging his shoulders and smiling. “Cars and racing are my passion,” he explained. “Long distance racing is what I do for a living. Hill Climbing and Rallying are what I do for fun!”

He has clocked up seven overall wins in 24-hour races – the Le Mans success in the Audi together with Timo Bernhard and Mike Rockenfeller in 2010, four at the Nürburgring-Nordschleife and two at the circuit in Spa with Porsche.

He calls Le Mans his second home. He won a young talent competition here at 16 – and stayed on. He went to school in Le Mans, made new friends, found sponsors and took his driving licence. Since then every year he has been collecting his racing licence from the Automobile Club de l’Ouest (ACO), the host of the 24-hour race. Le Mans is always different, always dramatic. This is where the Mediterranean character meets the Atlantic low pressure trough. It tends to rain heavily and persistently at the 24-hour race. Dumas knows every inch
of it. In 2015 he enters for the 15th time. The GTE-Pro class victory in the Porsche 911 RSR in 2013 was one of his ambitions. “My ultimate dream,” said the funster, now deadly serious, “is to win the overall victory here with Porsche.” Patriotism also has its part to play. “For a Frenchman,” he explained, “Le Mans is always going to be the greatest. But because it is so hard to win, manufacturers and the world think so too.”

He knows only too well that nobody can conquer Le Mans alone. “Yes, you have to be fast. But you also have to be a team player, careful with the car, and you need the best team. Even if only one of these things is missing, it’s not going to work.”

With his team mate Timo Bernhard he has celebrated numerous successes. They share their passion for rallying and sometimes swap baby photos. Both became fathers in 2013. Elysia and Romain have a little boy named Gabin. On one of Romain’s pictures the baby is practicing to stand up – he does so on a driver’s seat of a 911 race car with the steering wheel in his small hands.

Vita

Date of Birth: 14th December 1977
Place of Birth: Alès (F)
Nationality: French
Residence: Basel (CH)
Marital Status: Partner Elysia, one son (Gabin)
Height/Weight: 1.74 m/62 kg
Hobbies: Rallying, jet-ski, jogging, squash
Internet: www.romaindumas.com
Twitter: @RomainDumas

Romain Dumas competes in the FIA World Endurance Championship WEC, including the Le Mans 24 Hours, in a Porsche 919 Hybrid for the Porsche Team.
Career

2015  
Porsche works driver WEC, LMP1

2014  
Porsche works driver WEC, LMP1  
1st São Paulo, 2nd Bahrain, 3rd Shanghai  
Pole positions Shanghai, Bahrain

2013  
Porsche works driver  
1st Le Mans 24 Hours (GT)  
1st Nürburgring 24 Hours (SP7 class, 7th overall)  
LMP1 test programme  
10th WRC Rally de France Alsace  
French Rally Championship (4 wins in a Porsche 911 RS)

2012  
Porsche works driver  
1st Spa (WEC, overall)  
2nd Sebring 12 Hours (WEC/ALMS, overall)  
Pikes Peak International Hill Climb:  
1st Pikes Peak Open class, Rookie of the Year

2011  
Porsche works driver  
1st Nürburgring 24 Hours (overall)  
1st Laguna Seca (ALMS, GTH)  
Le Mans 24 Hours

2010  
Porsche works driver  
1st Le Mans 24 Hours (overall, Audi)  
1st Spa 24 Hours (overall)  
1st Mosport (ALMS, LMP2)  
Nürburgring 24 Hours
2009
Porsche works driver
1st Nürburgring 24 Hours (overall)
4th Grand-Am Series (DP), 4 poles
6th Daytona 24 Hours (overall)
Le Mans 24 Hours

2008
Porsche works driver
Winner American Le Mans Series (LMP2), 4 wins
1st Sebring 12 Hours (overall)
1st Nürburgring 24 Hours (overall)
3rd Daytona 24 Hours
3rd Silverstone (LMS, overall)
Le Mans 24 Hours

2007
Porsche works driver
Winner American Le Mans Series (LMP2), 8 wins
1st Nürburgring 24 Hours (overall)
3rd Le Mans 24 Hours (overall)

2006
Porsche works driver
3rd American Le Mans Series (LMP2), 4 wins
Le Mans 24 Hours

2005
Porsche works driver
2nd American Le Mans Series (GT2), 4 wins
4th Le Mans 24 Hours (GT2)

2004
Porsche works driver
4th American Le Mans Series (GT)
2nd Sebring 12 Hours (ALMS, GT)
3rd Le Mans 24 Hours (GT)
1st Spa 24 Hours (N-GT)
1st Monza (LMES, LMP1)
2003  
3rd Porsche Carrera Cup Deutschland  
1st Spa 24 Hours (overall)  
1st Petit Le Mans (ALMS, GT)

2002  
2nd Euro Formula 3000  
1st 1000 km Suzuka (GT)  
1st Spa 24 Hours (N-GT)  
2nd Le Mans 24 Hours (GT)  
3rd Daytona 24 Hours (GT)  
1st Donington (FIA GT, N-GT)

2001  
2nd Le Mans 24 Hours (GT)  
1st Estoril (ELMS, GT)  
2nd Vallelunga (ELMS, GT)  
5th Euro Formula 3000

2000  
6th French Formula 3 Championship

1999  
International Formula 3000 Championship  
5th Formula Palmer Audi Series

1998  
French Formula 3 Championship

1997  
3rd French Formula Renault  
1st Zhuhai (Formula Renault)  
2nd Macao (Formula Renault)

1996  
9th French Formula Renault

1995  
4th French Formula Renault Campus Cup

1994  
1st Volant Elf ACO in Le Mans

1992-1994  
Karting
Brendon Hartley  
(New Zealand)

When he first turned up in the Formula One paddock back in 2008, he looked more like an aspiring rock star with his blond hair and baggy jeans than a test driver. He can actually play the guitar, but he prefers to leave the live performance to someone else. Behind the cool exterior was a shy young man. He was only 19, but already had 13 years of experience as a racing driver. He started with go-karts at the age of six, inspired by his father Bryan, who drove in various racing series. Brendon’s older brother Nelson, named after Nelson Piquet, was already ten when Brendon was allowed to join him for the first time. His older brother was faster, and Brendon still remembers the sleepless night that followed. “That was when I realised that I can’t lose. I want to win. In everything I do.”

Back home in New Zealand – Brendon Hartley grew up in Palmerston North on the North Island – he launched into formula racing. After a series of wins in Formula Ford and further successes it was soon evident that he had the talent to make a career of it, but lived at the wrong end of the world. At the age of 16 he jumped in at the deep end – Europe. He took up residence in the east of Germany and raced in a two litre Formula Renault in the German and European Championships. In 2007 he won the World Series by Renault. That was a defining time for him in a foreign country. He joined the Red Bull talent pool and worked hard. “It’s quite simple. If you don’t put the effort in, nobody is going to invest in you. I couldn’t have got on without it. There was a lot of pressure, but most of it was from me anyway.”

Then he had a coup de main in 2008 at the Formula 3 Grand Prix in Macau: started 20th on the grid, finished third, including fastest lap. He was still taken by complete surprise when the phone call came from Red Bull asking if he could stand in for the injured Mark Webber at a Formula One test. “Wow, this was what I had been working for all my life. I phoned home straight away and let the phone ring until I had woken my whole family.” And he did well. 83 laps. That was a torture for the neck, being exposed to these kinds of g forces for the first time. He moved from Germany to Milton Keynes in the UK, near his team, and it at least gave him the chance to live somewhere where they spoke his language.
He had a Formula One contract up to and including 2013 – first as a tester for Red Bull Racing, and then for the Mercedes Team. His simulator work was highly regarded, which the F1 teams used to bolster the restrictive test requirements. But a racing driver has to race. In 2012 he started his second career as a long distance racer. European Le Mans Series, Grand Am, 12 hours in Bathurst, 24 hours in Daytona and in Le Mans are series and races he has had under his belt for some time now. “There are so many great races left,” he said. “I am open for anything with four wheels and an engine. But my goal and hope was that one day I would attract the attention of a manufacturer. The fact that it is Porsche, the most successful brand at Le Mans – it’s a dream come true. When I was racing in Silverstone in 2014 for the first time wearing my Porsche overalls, I wanted to burst with pride.” The 24 hours of Le Mans is the most emotional race in the world for him: “It’s an emotional roller-coaster – I’ve never seen so many grown men with tears in their eyes.”

**Vita**

Date of Birth: 10th November 1989  
Place of Birth: Palmerston North (NZ)  
Nationality: New Zealander  
Residence: Milton Keynes (GB)  
Height/weight: 1.84 m/65 kg  
Hobbies: Playing the Guitar, fitness, poker, squash, tennis, mountain biking  
Internet: www.brendonhartley.co.nz  
Twitter: @BrendonHartley

Brendon Hartley competes in the FIA World Endurance Championship WEC, including the Le Mans 24 Hours, in a Porsche 919 Hybrid for the Porsche Team.
Career

2015
Porsche works driver WEC, LMP1

2014
Porsche works driver WEC, LMP1
3rd Silverstone, Fuji and Bahrain

2013
European Le Mans Series (LMP2)
Grand Am Series
Le Mans 24 Hours (LMP2)
Bathurst 12 Hours
Daytona 24 Hours
Formula One simulator development driver
(Mercedes AMG Petronas)

2012
3rd Spa (WEC, LMP2)
3rd Donington (ELMS, LMP2)
GP2 (2 races)
Formula One simulator development driver
(Mercedes AMG Petronas)

2011
World Series by Renault 3.5 (4 podiums)
5th Spa (GP2)

2010
Formula One reserve driver (Red Bull Racing, Scuderia Toro Rosso)
World Series by Renault 3.5
GP2 (2 races)

2009
Formula One test driver (Scuderia Toro Rosso)
World Series by Renault 3.5
Formula 3 Euro Series (1 win)
Macau Formula 3 Grand Prix
<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>Formula One test driver (Red Bull Racing)</td>
</tr>
<tr>
<td></td>
<td>3\textsuperscript{rd} British Formula 3 Championship</td>
</tr>
<tr>
<td></td>
<td>(5 wins, 12 podium finishes, 5 poles)</td>
</tr>
<tr>
<td></td>
<td>3\textsuperscript{rd} Macau Formula 3 Grand Prix (also set fastest lap)</td>
</tr>
<tr>
<td></td>
<td>5\textsuperscript{th} Zandvoort Formula 3 Masters</td>
</tr>
<tr>
<td>2007</td>
<td>Winner World Series by Renault Eurocup 2.0</td>
</tr>
<tr>
<td></td>
<td>(5 wins, 13 podium finishes, 7 poles)</td>
</tr>
<tr>
<td></td>
<td>3\textsuperscript{rd} Italian Formula Renault 2.0 series</td>
</tr>
<tr>
<td></td>
<td>4\textsuperscript{th} Zandvoort Formula 3 Masters</td>
</tr>
<tr>
<td></td>
<td>Macau Formula 3 Grand Prix</td>
</tr>
<tr>
<td>2006</td>
<td>Winner Dan Higgins Memorial Trophy, New Zealand</td>
</tr>
<tr>
<td></td>
<td>Toyota Racing Series, New Zealand</td>
</tr>
<tr>
<td>2005</td>
<td>Winner of the first ever Toyota Racing Series race in New Zealand</td>
</tr>
<tr>
<td></td>
<td>Winner of the Elite Motorsport Academy Award, New Zealand</td>
</tr>
<tr>
<td>2004</td>
<td>Awarded with the Steel Trophy, New Zealand</td>
</tr>
<tr>
<td>2003/04</td>
<td>2\textsuperscript{nd} New Zealand Formula Ford Championship (6 wins)</td>
</tr>
<tr>
<td></td>
<td>Winner Formula Ford Winter Series (7 wins)</td>
</tr>
<tr>
<td></td>
<td>Youngest ever winner of a Formula Ford race</td>
</tr>
<tr>
<td></td>
<td>(23\textsuperscript{rd} November 2003)</td>
</tr>
<tr>
<td>2002-2003</td>
<td>Karting</td>
</tr>
</tbody>
</table>
Nico Hülkenberg
(Germany)

Nico Hülkenberg, 27, will drive his first endurance race for Porsche on 2nd May 2015 at the 6 Hours of Spa-Francochamps in Belgium in preparation for the 24 Hours of Le Mans six weeks later. Hülkenberg is familiar with Spa, but he’s never been to Le Mans. He, therefore, listens and absorbs everything his team mates have to tell him. This is important because when he pays his first visit to the Circuit de la Sarthe, Hülkenberg will be getting behind the wheel of a Class 1 prototype – and driving it day and night on the spectacular circuit. The closed cockpit, the all-wheel drive system and the complex hybrid drive were initially all unfamiliar to the Formula 1 driver. “I figured everything out rather quickly, though,” said Hülkenberg, who hails from Emmerich, Germany, after his first test drive with the Porsche 919 Hybrid in December 2014 in Aragon, Spain. “We didn’t expect anything different,” was how Team Principal Andreas Seidl wrapped up his compliments.

Aside from testing, Hülkenberg will also make use of the ultra-modern driving simulator in Weissach as he prepares for the 2015 season. Still, there are certain key aspects that will remain unfamiliar until his first race. For one thing, he will be sharing a car with two other drivers for the first time (Earl Bamber and Nick Tandy). The racing field will be more congested than what Hülkenberg is used to, and there’s also the night driving, of course. The Le Mans race has 56 cars – and a fast LMP1 prototype like the Porsche 919 Hybrid has to be able to find a way to continually overtake 75 per cent of them.

Hülkenberg will race in the Canadian Grand Prix with his Sahara Force India Formula One team the weekend before the 24 Hours of Le Mans, and will also head to the Austrian Grand Prix the weekend after. He certainly cannot complain about any lack of racing activity – and Le Mans will be really hard work. So, why is he subjecting himself to all this stress? “I’d like to experience Le Mans and find out for myself just how much of the legend is true,” he said. “I’ve been a Porsche fan for a long time, so the combination of Porsche and Le Mans is perfect. Another reason is that the LMP1 category is top-notch in terms of technology and driving and it has very demanding regulations and highly dedicated teams. I’m not the only Formula One driver who has noticed this, and I’m very grateful to my Sahara Force India team for allowing me to participate in the WEC.”
Landing in the right car at the right time hasn’t always been easy for Hülkenberg. In Formula One, he had to watch as drivers who were able to deliver imposing sums of sponsorship money were favoured over him. It didn’t seem to make any difference that team principals repeatedly praised him for possessing qualities above and beyond his outstanding speed – things like determination, solid technical knowledge, a knack for coming out on top in one-on-one duels, and an ability to work effectively in a team. 2014 was his best Formula One season so far, as he finished ninth for Force India in the Drivers’ Championship. However, the best single result in his career so far was fourth place with the Sauber F1 Team in the 2013 Korean Grand Prix. He captured his first – and through to 2014 only – pole position on a drying track in a Williams F1 car in 2010 in Interlagos.

Hülkenberg lives in the Swiss canton of Thurgau on Lake Constance, but still has close ties to his home town of Emmerich in the German state of North Rhine-Westphalia, where his parents operate a freight-forwarding company. Hülkenberg also completed training as a shipping specialist just to be on the safe side. “Without the support of my parents, I never would have made it to Formula One,” he said. His father, Klaus Dieter, is a big motor racing fan, and after Nico displayed extraordinary talent and determination in kart racing, his father was prepared to do whatever was necessary to help him.

**Vita**

Date of Birth: 19th August 1987  
Place of Birth: Emmerich (D)  
Nationality: German  
Residence: Ermatingen (CH)  
Marital status: single  
Height/Weight: 1.84 m/74 kg  
Hobbies: running, tennis, cinema  
Internet: www.nicohulkenberg.net  
Twitter: @NicoHulkenberg

Nico Hülkenberg competes for the Porsche Team with the Porsche 919 Hybrid in the WEC races in Spa-Francorchamps and Le Mans.
### Career

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>FIA Formula One World Championship (Sahara Force India) LMP1 tests and races Porsche Team</td>
</tr>
<tr>
<td>2014</td>
<td>9th FIA Formula One World Championship (Sahara Force India)</td>
</tr>
<tr>
<td>2013</td>
<td>10th FIA Formula One World Championship (Sauber F1 Team)</td>
</tr>
<tr>
<td>2012</td>
<td>11th FIA Formula One World Championship (Sahara Force India)</td>
</tr>
<tr>
<td>2011</td>
<td>Formula One test driver (Sahara Force India)</td>
</tr>
<tr>
<td>2010</td>
<td>14th FIA Formula One World Championship (Williams F1 Team), one pole position</td>
</tr>
<tr>
<td>2009</td>
<td>Winner GP2 series</td>
</tr>
<tr>
<td>2008</td>
<td>Winner Formula 3 Euroseries</td>
</tr>
</tbody>
</table>
| 2007 | Winner A1GP series  
3rd Formula 3 Euroseries |
| 2006 | 5th German Formula 3 Championship |
| 2005 | Winner Formula BMW  
Winner Speed Academy  
3rd Formula BMW world finale in Bahrain |
<p>| 2004 | 2nd German Kart Championship |
| 2003 | Winner German Kart Championship |</p>
<table>
<thead>
<tr>
<th>Year</th>
<th>Achievements</th>
</tr>
</thead>
</table>
| 2002 | Winner German Junior Kart Championship  
      | 8th European Kart Championship  
      | Winner Italian Kart Championship |
| 2001 | 2nd European Kart Championship (Cadets) |
| 1997 | Began Karting |
Neel Jani  
(Switzerland)

The Swiss driver with Indian roots lives up to the image of what a race car driver used to be – more bon vivant than robot, more casual than driven. At least that’s what he’s like outside the cockpit. At work the objectives are clearly drawn: “I want to win the overall victory in Le Mans and to become the world champion in the next few years. With a top works team like Porsche that should be possible.” Neel Jani is demanding. If a driver delivers lap records like he does, he wants to get results too, but he knows in the WEC this can never happen on just his own merits. “Without my team mates I couldn’t have achieved that,” he said after the Porsche 919 Hybrid’s maiden 2014 win in Brazil. “It was a great feeling to be the one to bring the car home.”

Going out on a Sunday for a drive in a Porsche has always been his passion. “I have wonderful childhood memories,” said Jani. “On Sundays my sister Reena and I would climb onto the back seat of my father’s 911 2.7 RS and he would take us out for a drive. These trips were real highlights for us. Unfortunately we later had to sell the car, because my racing was so expensive.”

Neel Jani moved from Formula Renault, GP-2 and the A1GP series to Formula One. In 2004 he tested for Red Bull Racing for the first time and in 2006 he was third driver in the sister team, Scuderia Toro Rosso. He took part in testing and raced in the American ChampCar series and the A1GP series. In 2008 he was a guest starter in the Porsche Supercup. “I unfortunately did not get to finish the race,” he recalled, “but I got to drive a 911 GT3 RS for two weeks beforehand. That was quite something for me as a 24-year-old. The car has so much power and the steering is so precise – an impressive performance.” He likes calculation and precision. The question as to what he would have done for a living if he hadn’t become a racing driver yields an unexpected answer: “an accountant, I like numbers.”

In 2009 he started in Le Mans for the first time and since then has done so every year – including 2013 – always with Rebellion in the LMP1 class. In 2011 he won the Le Mans Series with the team, and in 2012 he narrowly missed the Le Mans podium when he came in fourth. In 2012 and 2013 he took victory in the ten hour race in Road Atlanta, better known as “Petit Le Mans”. Jani has long been considered one of the experienced players in endurance racing. “The WEC has developed very well,” he said, “the level of technology and drivers is absolutely world class, the competition is tight and the racing is serious.”
In June 2013 he was signed by Porsche as a works driver for its return to top-level sport. “It's an outstanding chance, being able to be involved from the very start. When I think Porsche, I think racing cars,” he explained. “Now everything fits together.”

Does he miss his time in Formula One? “Not at all, because things always work out as they should. I'm happy to have good memories.” He married the most beautiful of those: Lauren from Indianapolis. It can also be a good thing if you are only involved in practice on a Friday during a Grand Prix weekend and have the rest of the time off. C'est la vie.

Vita

Date of Birth: 8th December 1983
Place of Birth: Rorschach (CH)
Nationality: Swiss
Residence: Port (CH)
Height/weight: 1.72 m/62 kg
Marital status: Married to Lauren
Hobbies: Sports, cross-country skiing, tennis, cycling
Website: www.neel-jani.com
Twitter: @neeljani

Neel Jani competes in the FIA World Endurance Championship WEC, including the Le Mans 24 Hours race, in a Porsche 919 Hybrid for the Porsche Team.

Career

2015 Porsche works driver WEC, LMP1

2014 Porsche works driver WEC, LMP1
1st São Paulo, 2nd Bahrain, 3rd Shanghai
Pole positions Spa, Shanghai, Bahrain
<table>
<thead>
<tr>
<th>Year</th>
<th>Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; Road Atlanta “Petit Le Mans” (ALMS, overall)</td>
</tr>
<tr>
<td></td>
<td>3&lt;sup&gt;rd&lt;/sup&gt; Sebring 12 Hours (ALMS, overall)</td>
</tr>
<tr>
<td></td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; Laguna Seca (ALMS, overall)</td>
</tr>
<tr>
<td></td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; Long Beach (ALMS, overall)</td>
</tr>
<tr>
<td></td>
<td>Porsche works driver since June</td>
</tr>
<tr>
<td>2012</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; Road Atlanta “Petit Le Mans” (ALMS, overall)</td>
</tr>
<tr>
<td></td>
<td>4&lt;sup&gt;th&lt;/sup&gt; WEC (overall)</td>
</tr>
<tr>
<td></td>
<td>4&lt;sup&gt;th&lt;/sup&gt; Le Mans 24 Hours (overall)</td>
</tr>
<tr>
<td>2011</td>
<td>Winner Le Mans Series (LMP1)</td>
</tr>
<tr>
<td></td>
<td>6&lt;sup&gt;th&lt;/sup&gt; Le Mans 24 Hours (overall)</td>
</tr>
<tr>
<td></td>
<td>Formula One show runs (Red Bull Racing)</td>
</tr>
<tr>
<td>2010</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt; Le Mans Series (LMP1, Rebellion)</td>
</tr>
<tr>
<td></td>
<td>Le Mans 24 Hours</td>
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<tr>
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<td>Formula One show runs (Red Bull Racing)</td>
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<tr>
<td></td>
<td>GT1 Championship (3 races)</td>
</tr>
<tr>
<td></td>
<td>Superleague Formula (2 races, 1 win)</td>
</tr>
<tr>
<td>2009</td>
<td>Le Mans 24 Hours (LMP1)</td>
</tr>
<tr>
<td></td>
<td>Formula One tests (Red Bull Racing)</td>
</tr>
<tr>
<td>2008/09</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; A1GP (4 wins)</td>
</tr>
<tr>
<td>2008</td>
<td>Formula One tests (Red Bull Racing)</td>
</tr>
<tr>
<td></td>
<td>Porsche test (LMP2)</td>
</tr>
<tr>
<td>2007/08</td>
<td>Winner A1GP Series (4 wins)</td>
</tr>
<tr>
<td>2007</td>
<td>ChampCar World Series (3 podium finishes)</td>
</tr>
<tr>
<td>Year</td>
<td>Event Description</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>2006</td>
<td>Formula One test and reserve driver (Scuderia Toro Rosso)</td>
</tr>
<tr>
<td>2005/06</td>
<td>2nd A1GP series</td>
</tr>
<tr>
<td>2005</td>
<td>GP2 series (2 wins)</td>
</tr>
<tr>
<td>2004</td>
<td>Formula Renault V6 Eurocup (5 wins)</td>
</tr>
<tr>
<td></td>
<td>Formula One test (Red Bull Racing)</td>
</tr>
<tr>
<td>2003</td>
<td>2nd Formula Renault V6 Eurocup (4 wins)</td>
</tr>
<tr>
<td></td>
<td>Formula One test (Sauber-Petronas)</td>
</tr>
<tr>
<td>2002</td>
<td>2nd Formula Renault 2000 Eurocup (3 wins)</td>
</tr>
<tr>
<td>2001</td>
<td>Formula Renault 2000 Eurocup</td>
</tr>
<tr>
<td></td>
<td>Italian Formula Renault</td>
</tr>
<tr>
<td>2002</td>
<td>Winner Formula Lista Junior, Switzerland</td>
</tr>
<tr>
<td>1996-2000</td>
<td>Karting</td>
</tr>
</tbody>
</table>
Marc Lieb
(Germany)

At the age of 20 the native Stuttgarter won the Porsche Junior driver selection. Since then he has been celebrating Porsche victories around the world, including five overall wins in 24-hour races: four times on the Nürburgring and once in Spa. His first Le Mans race was in 2003, where he has had a string of GT class victories. Since the 2014 season he has competed in the top category LMP1 with Porsche for overall victory.

Marc’s family name translates as ‘endearing’ and this is how he comes across. Racing at exotic locations around the globe have done nothing to change his down-to-earth attitude. When you see him with his two young sons, you can sense what he wants to pass on what he has experienced. His father, a qualified car mechanic at Porsche, supported him in every way he could. They would travel to go-kart tracks in their VW van. “I have always loved the smell of petrol,” Marc Lieb reminisced. Father and son would get the last milliseconds out of battered up formula race cars. A more modern car was just not an option and neither was any major damage to the car. Being careful with the material was the be all and end all. But he still had to be fast. Can there be a better training for an endurance driver?

After winning the Porsche Junior selection he won the Carrera Cup Germany and was promoted to become a works driver. This is usually a full-time job. But Lieb had other plans. He enrolled at the Esslingen technical college to study automotive engineering.

After seven semesters and a dissertation on differential locks, he got his degree as an automotive engineer. While he was studying he won international GT2 titles and victories on the Nürburgring-Nordschleife. He married, and the first of his two sons was born. Marc Lieb’s life seems to be a string of contradictions. The colourful and glamorous world of racing in the USA on the one hand, and the return to his young family back home on the other. His passionate competitive spirit as a driver versus sober analysis as an engineer. The combination of theoretical knowledge and practical vehicle control release a fascinating potential for the sports car manufacturer Porsche. After graduating, Lieb worked part-time in the Porsche Performance Department. Two of the vehicles he has been involved in are the 911 GT3 R Hybrid and the 918 Spyder. In 2013 he set a track record on the Nürburgring-Nordschleife.
with the super sports car – under seven minutes in a production-spec vehicle. It was only in 2012 when the plan of action was really taking shape and he started getting excited about the prototype project that Marc Lieb felt he owed it to himself to become “only” a professional racing driver. The LMP1 programme fascinates him from an engineering perspective too. “The speed of development is amazing, the young engineers are excited and passionate. Whenever we drivers question something, they’ll have a solution at the next event.”

And what do you need to know about Le Mans? “You could go on and on about the history of the race. The feat of man and machine twice round the clock, the country roads, the long straight stretches, the short night. But it doesn’t make the slightest difference how much you know or how often you have been there. When you get there you are just blown away by the atmosphere. It’s not something you can explain – you have to feel it.”

**Vita**

Date of Birth: 4th July 1980  
Place of Birth: Stuttgart (D)  
Residence: Ludwigsburg (D)  
Nationality: German  
Marital Status: Married to Alexandra, two sons (Benedict and Jonathan)  
Height/Weight: 1.82 m/74 kg  
Hobbies: Football, jogging, reading  
Internet: www.marc-lieb.de  
Twitter: @LiebMarc

Marc Lieb competes in the FIA World Endurance Championship WEC, including the Le Mans 24 Hours race, in a Porsche 919 Hybrid for the Porsche Team.
Career

2015  
Porsche works driver WEC, LMP1

2014  
Porsche works driver WEC, LMP1
1st São Paulo, 2nd Bahrain, 3rd Shanghai
Pole position Spa

2013  
Porsche works driver
1st Le Mans 24 Hours (GT)
2nd Spa 24 Hours (overall)
4th Silverstone, São Paulo, Austin, Fuji, Bahrain (WEC, GT)
4th World Endurance Cup (WEC)

2012  
Porsche works driver
3rd Daytona 24 Hours (GT)
1st Spa (WEC, GTE Pro)
1st Fuji (WEC, GTE Pro)

2011  
Porsche works driver
1st Nürburgring 24 Hours (overall)
3rd Le Mans Series (GT)

2010  
Porsche works driver
Winner Le Mans Series (GT2)
1st Le Mans 24 Hours (GT2)

2009  
Porsche works driver
Winner Le Mans Series (GT2)
1st Nürburgring 24 Hours (overall)
2nd Salt Lake City (ALMS GT2)
2008

Porsche works driver
1st Nürburgring 24 Hours (overall)
2nd Le Mans Series (GT2), 4 podiums
1st Sebring 12 Hours (ALMS GT2)
2nd Petit Le Mans (ALMS GT2)
2nd Spa 24 Hours (GT2)

2007

Porsche works driver
1st Nürburgring 24 Hours (overall)
2nd Le Mans Series (GT2), 3 wins
1st Spa 24 Hours (GT2)
1st Petit Le Mans (ALMS, GT2)
2nd Sebring 12 Hours (ALMS, GT2)

2006

Porsche works driver
1st Le Mans Series (GT2)
2nd Sebring 12 Hours (ALMS, GT2)

2005

Porsche works driver
Winner FIA GT Championship (N-GT), 5 wins
Winner Le Mans Series (GT), 3 wins
1st Le Mans 24 Hours (GT)
1st Spa 24 Hours (N-GT)

2004

Porsche works driver
1st Daytona 24 Hours (SGS)
2nd Sebring 12 Hours (ALMS, GT)
3rd Spa 24 Hours (N-GT)

2003

Porsche works driver
Winner Porsche Cup
1st FIA GT Championship (N-GT)
1st Spa 24 Hours (overall)
2nd Le Mans 24 Hours (GT)
2002  Porsche Junior
Winner Porsche Carrera Cup Deutschland, 4 wins
3rd Spa 24 Hours (N-GT)

2001  Porsche Junior
7th Porsche Carrera Cup Deutschland

2000  1st Porsche Junior selection process
5th Porsche Carrera Cup Deutschland

1999  3rd Formula Renault 2000 Championship

1998  Formula Renault 2000 Championship

1997  2nd Formula Renault 1800 Championship

1996  Formula Renault 1800 Championship

1992-1995  Karting
Nick Tandy  
(Great Britain)

The Briton doesn't believe in making a lot of noise. Banging his own drum is not his style. The only place he makes a bang is on the track – preferably with wins in big races like the Petit Le Mans (2013) and the 24 Hours of Daytona (2014). They were two of the most important successes in his career, which began in 1996 with Oval Stock Cars and led the ambitious amateur golfer and mountain biker via Formula Ford and Formula 3 into the Porsche Carrera Cup Deutschland, where he took overall victory in 2011.

As the most successful privateer, he won the prestigious Porsche Cup in 2012 in a 911. A year later, he became a Porsche works driver. The young father now wants to fulfil his next racing driver dream at Le Mans. He is taking on the classic endurance race this year in the Porsche 919 Hybrid. A great opportunity, which has been hard-earned – not least with strong performances in testing with the innovative prototypes ahead of the season.

“The Hybrid 919’s acceleration and the sheer power initially hit you for six,” he said after the first test session. “The LMP1 is by far the fastest car that I’ve ever driven. But once you’ve got used to the speed, you cope remarkably well. In the end, despite all its complexity, the 919 is a Porsche and, therefore, intuitive to drive.”

However, the most important thing about this car for Tandy is: “In the greatest car races of the world it’s up in the top league and thus competing for overall victory. Every racing driver dreams of such a drive. And it’s fantastic the way you are watched and supported within the global Porsche family. In 2014, Marc Lieb was able to prove that a great GT driver can be a great LMP1 driver, too.”

Whenever Nick Tandy is not at the wheel of a racing car himself, he looks after the affairs and fortunes of the JTR race team. It was set up by his brother Joe, who died in 2009 in a motoring accident.
Vita

Date of Birth: 5th November 1984
Place of Birth: Bedford (GB)
Nationality: British
Residence: Bedford (GB)
Marital status: married, one child
Height/Weight: 1.78 m/71 kg
Hobbies: badminton, darts, golf, iRacing
Twitter: @NickTandyR

Nick Tandy competes for the Porsche Team with the Porsche 919 Hybrid in the WEC races in Spa-Francorchamps and Le Mans, he also competes in other races as Porsche works driver with the Porsche 911 RSR.

Career

2015
Porsche works driver

2014
Porsche works driver
1st Daytona 24 Hours (GTLM)
2nd WEC Silverstone (GTE-Pro)

2013
Porsche works driver
1st Petit Le Mans (ALMS, GT)
3rd Sebring 12 Hours (ALMS, GT)
3rd European Le Mans Series (GT)
1st Silverstone, Budapest (ELMS, GT)

2012
Winner Porsche Cup
2nd International GT Open, 5 wins
3rd team classification ADAC GT Masters, 4 wins
<table>
<thead>
<tr>
<th>Year</th>
<th>成就</th>
</tr>
</thead>
</table>
| 2011 | Winner Porsche Carrera Cup Deutschland, 3 wins  
      | 5th Porsche Mobil 1 Supercup, 1 win, 6 podiums  
      | Porsche Carrera Cup Great Britain, 3 wins |
| 2010 | 2nd Porsche Carrera Cup Deutschland, 5 wins |
| 2009 | 10th British Formula 3 Championship, 1 win, 3 podiums |
| 2008 | 9th British Formula 3 Championship, 3 podiums  
      | Porsche Carrera Cup Great Britain (1 race, 1 win) |
| 2007 | 3rd British Formula Ford Championship, 6 wins, 16 podiums  
      | Winner Formula Ford Festival  
      | Winner Formula Palmer Audi Autumn trophy  
      | Finalist McLaren Autosport BRDC Award |
| 2006 | 2nd British Formula Ford Championship, 3 wins, 11 podiums |
| 2005 | Winner BRDC Single Seater Series, 11 wins  
      | Winner Silverstone Scholarship |
             and Mini Se7en Championship (Champion 2003) |
Mark Webber
(Australia)

It is a year now since Mark Webber has had a roof over his head but not a car on his own anymore. After 215 Formula One Grands Prix, and having won nine of them, he left the F1 paddock to become a Porsche works driver. “It was a big change and a challenge to adapt to LMP1 and the team, an entirely new experience,” the Australian admitted. Sharing the Porsche 919 Hybrid with two other drivers requires compromises for seats, pedal systems and set-up. The better a driver feels, the faster he is. Because this is vital and beneficial for all three of them, they certainly take good care of each other. “I surprised myself by how much I enjoyed the sharing after a short period of familiarisation,” he said. “Le Mans was an emotional roller coaster with leading and retiring, it was overwhelming. After all the highs and lows of my first season with Porsche, I have now one hundred per cent arrived in the team.”

Webber is a straightforward man and honest with himself. He left his home in Queanbeyan in New South Wales, Australia, at the age of 19 with a clear goal – to further his career as a racing driver in England. He was one of many and one of those without a sponsor, just natural talent. He won the prestigious Formula Ford Festival in Brands Hatch, drove Formula 3 and Formula 3000. He was invited to join the sports car programme at Mercedes. The 24-hour Le Mans race was set to be the highlight of the 1999 season. The car and the team were considered favourites. But the aerodynamics were treacherous, air caught on to the underbody of the car and it became airborne. Webber lost control of the car first in the qualifying session and then in the warm-up. He survived two dramatic crashes unharmed, but his career seemed to have run out of steam. The page turned, however, with a successful Formula One test drive for the Benetton team, which secured him a test and reserve driver position with the team in 2001.

Webber’s Formula One debut was distinctive: he finished fifth in 2002 in Melbourne – with an inferior Minardi. In 2005 he scored his first podium with the former BMW WilliamsF1 team. He had his first F1 win at the 2009 German Grand Prix with Red Bull Racing in his 131st race. In 2010 and 2012 he won the Monaco Grand Prix. This is one of the races to win in order to get to the hall of fame of racing. Le Mans is another one of these races.
In 2014, after 15 years, it was an older and more mature Webber who returned to La Sarthe. His incident packed experience from 1999 seemed far away, but 2014 didn't have a happy ending either. “When I was driving in second with only two more hours to go and heard that bang from the powertrain, I knew this was the sound of the end of a dream. Only half an hour later we had the sister car in the garage as well. There was bewilderment and shock on the tired faces, but we also had the feeling we had done a good job altogether – it was moving. When the mechanics then managed to get the other car back on track shortly before the end of the race, the other teams were applauding. This was huge for me. This race is back-breaking, everyone is dead tyred and just knows what it means to bring a car home after 24 hours. We want to win this race for Porsche.”

His affinity to Porsche, however, is nothing new. As a teenager he drove a 911, borrowed from a friend, and when he bought his own first Porsche he went straight for a Turbo model. Nowadays his garage is home to a 911 GT2 RS and a GT3 RS – the four-litre model, one of only 600 built. What Porsche means to him: “Highly developed sports cars that make the grade without being overstated – perfect for every atmosphere and in every scenario.”

Vita

Date of Birth: 27th August 1976
Place of Birth: Queanbeyan (AUS)
Nationality: Australian
Residence: Buckinghamshire (GB)
Height/weight: 1.83 m/76 kg
Marital status: Partner Ann Neal
Hobbies: Sports, mountain biking, flying helicopters
Website: www.markwebber.com
Twitter: @AussieGrit

Mark Webber competes in the FIA World Endurance Championship WEC, including the Le Mans 24 Hours, in a Porsche 919 Hybrid for the Porsche Team.
Career

2015  Porsche works driver WEC, LMP1

2014  Porsche works driver WEC, LMP1
       3rd Silverstone, Fuji and Bahrain
       Pole position São Paulo

2013  3rd Formula One World Championship (Infiniti Red Bull Racing)

2012  6th Formula One World Championship (Red Bull Racing)
       1st Monaco, Silverstone

2011  3rd Formula One World Championship (Red Bull Racing)
       1st São Paulo

2010  3rd Formula One World Championship (Red Bull Racing)
       1st Barcelona, Monaco, Silverstone, Budapest

2009  4th Formula One World Championship (Red Bull Racing)
       1st Nürburgring, São Paulo

2008  11th Formula One World Championship (Red Bull Racing)

2007  12th Formula One World Championship (Red Bull Racing)

2006  14th Formula One World Championship (WilliamsF1 Team)

2005  10th Formula One World Championship (BMW WilliamsF1 Team)

2004  13th Formula One World Championship (Jaguar Racing)
2003  10th Formula One World Championship (Jaguar Racing)
2002  16th Formula One World Championship (KL Minardi Asiatech)
2001  2nd Formula 3000 Championship (3 wins)
        Formula One test driver (Benetton Renault)
2000  3rd Formula 3000 Championship (EFR/Arrows, 1 win)
        Formula One test driver (Arrows)
1999  FIA GT Championship
        (AMG Mercedes, opt out after the Le Mans 24 Hours)
1998  2nd FIA GT Championship (AMG Mercedes, 5 wins)
1997  4th British Formula 3 Championship (1 win)
1996  2nd British Formula Ford Championship (4 wins)
        Winner Formula Ford Festival Brands Hatch
1995  4th Australian Formula Ford Championship
        3rd Formula Ford Festival Brands Hatch
1994  Debut Australian Formula Ford Championship
1991-1993  Karting
Regulations

Several changes were made to the regulations for the 2015 season, all of which Porsche supported.

• The LMP1 qualifying session in the WEC has been shortened from 25 to 20 minutes. Two drivers will still participate in each session. However, the qualifying time will be calculated by adding each of their fastest laps together and then dividing the result by two. The rules for 2014 used the average of a total of four laps – the two fastest ones for each driver. In 2015, every driver can use a fresh set of tyres, which enables a true comparison of the results.

• The number of engines that may be used per season has been limited to five. This is a cost-control measure, especially as it prevents the possible development of engines with a specific Le Mans specification.

• An assumed average weight of 80 kilogrammes per driver has been introduced for the 2015 season. This continues to give lighter drivers a small advantage in their respective cars. But in general it helps favour the fastest drivers rather than just the lightest ones, and thus serves to counteract drivers’ attempts to gain an edge through extreme dieting.

• New limitations have been placed on the test days in 2015. A team may only conduct totally private tests on a maximum of ten days. On another ten days, tests can be conducted “openly”, provided the dates are announced 30 days in advance. On these days, other competing teams may also test their vehicles. The largest segment of test days – an additional 30 – must be planned well in advance and registered 90 days beforehand. Here, as well, the competition must be allowed to participate.

• As part of the effort to control costs, the maximum number of team members working on-site has been limited to 65 for a two-car team for the races following Le Mans.
### Results 2014 (WEC, LMP1, Porsche 919 Hybrid)

<table>
<thead>
<tr>
<th>Event</th>
<th>#14 Dumas/Jani/Lieb</th>
<th>#20 Bernhard/Hartley/Webber</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Qualifying</td>
<td>Race</td>
</tr>
<tr>
<td><strong>6 Hrs Silverstone</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>winner’s distance:</td>
<td>167 laps (red flag)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3rd place (DUM/JAN)</td>
<td>DNF (failure)</td>
</tr>
<tr>
<td></td>
<td>1:43.087</td>
<td></td>
</tr>
<tr>
<td><strong>6 Hrs Spa</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>winner’s distance:</td>
<td>171 laps</td>
<td>4th place (JAN/LIE) (1 lap)</td>
</tr>
<tr>
<td></td>
<td>1st place (JAN/LIE)</td>
<td>2:01.198 (failure)</td>
</tr>
<tr>
<td></td>
<td>2:01.198</td>
<td></td>
</tr>
<tr>
<td><strong>24 Hrs Le Mans</strong></td>
<td></td>
<td></td>
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<tr>
<td>winner’s distance:</td>
<td>379 laps</td>
<td>11th place (DUM) (31 laps)</td>
</tr>
<tr>
<td></td>
<td>2nd place (DUM)</td>
<td>3:22.146 (failure)</td>
</tr>
<tr>
<td></td>
<td>3:22.146</td>
<td></td>
</tr>
<tr>
<td><strong>6 Hrs Austin</strong></td>
<td></td>
<td></td>
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<tr>
<td>winner’s distance:</td>
<td>157 laps</td>
<td>4th place (DUM/JAN) (1 lap)</td>
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<tr>
<td></td>
<td>2nd place (DUM/JAN)</td>
<td>1:50.283 (failure)</td>
</tr>
<tr>
<td></td>
<td>1:50.283</td>
<td></td>
</tr>
<tr>
<td><strong>6 Hrs Fuji</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>winner’s distance:</td>
<td>236 laps</td>
<td>4th place (JAN/LIE) (2 laps)</td>
</tr>
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<td></td>
<td>3rd place (JAN/LIE)</td>
<td>1:27.306 (failure)</td>
</tr>
<tr>
<td></td>
<td>1:27.306</td>
<td></td>
</tr>
<tr>
<td><strong>6 Hrs Shanghai</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>winner’s distance:</td>
<td>188 laps</td>
<td>3rd place (DUM/JAN) (1 lap)</td>
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<tr>
<td></td>
<td>1st place (DUM/JAN)</td>
<td>1:48.300 (failure)</td>
</tr>
<tr>
<td></td>
<td>1:48.300</td>
<td></td>
</tr>
<tr>
<td><strong>6 Hrs Bahrain</strong></td>
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<td></td>
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<tr>
<td>winner’s distance:</td>
<td>195 laps</td>
<td>2nd place (DUM/JAN) (50.460 sec)</td>
</tr>
<tr>
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<td>1st place (DUM/JAN)</td>
<td>1:43.145</td>
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<tr>
<td></td>
<td>1:43.145</td>
<td>- 50.460 sec</td>
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<tr>
<td><strong>6 Hrs São Paulo</strong></td>
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<tr>
<td>winner’s distance:</td>
<td>249 laps</td>
<td>1st place (JAN/LIE) (1 lap)</td>
</tr>
<tr>
<td></td>
<td>2nd place (JAN/LIE)</td>
<td>1:17.783</td>
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<tr>
<td></td>
<td>1:17.783</td>
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</tr>
</tbody>
</table>
Final World Championship positions 2014:

3rd place for Porsche in the manufacturers’ championship (193 points)
3rd place for Dumas/Jani/Lieb in the drivers’ championship (117 points)
9th place for Bernhard/Hartley/Webber in the drivers’ championship (64.5 points)