



PRESS KIT PARIS E-PRIX



MOTORSPORT

WELCOME TO PARIS!



Pascal Couasnon
Director,
Michelin Motorsport

“As a founding partner of the FIA Formula E Championship, Michelin demonstrated its capacity for cutting-edge innovation by developing a single tyre for the single-seater cars that star in this exciting discipline.

Our Group believed in this pioneering competition from the very outset because it sends out a strong, positive message in favour of clean mobility. Promoting energy efficiency and electric vehicles by means of races that take place in the centre of major cities, including Paris, symbolises our environmental awareness and is a victory for modern motor racing.

“Michelin also competes in Formula E to collect data that contributes to the development of new technologies. Indeed, motorsport is an extremely

valuable laboratory that helps us to speed up the carry-over of technologies to our road tyres of tomorrow. The same reasoning is behind our participation in other world class disciplines like the World Rally Championship [WRC], the World Endurance Championship [WEC] and MotoGPTM. Yet however rational our involvement in all these sports may be, we still need to competitive and the long list of victories and titles we have won over the years points to how successful we have been on that front.

“In addition to opening up a new chapter in motor racing history, the first ePrix to take place in Paris provides Michelin with a further opportunity to communicate its passion for motorsport and showcase its position as a technological pioneer.”





THE FIVE REASONS BEHIND MICHELIN'S INVOLVEMENT IN FORMULA E

When the FIA (Fédération Internationale de l'Automobile) put its search for technical partners for its new Formula E Championship out to tender, Michelin was the first to submit a proposal. In terms of strategy, it was an obvious step for the Michelin Group and its motorsport department whose involvement is founded on five pillars.

1-Promoting mobility

"A Better Way Forward"... Michelin's slogan since the company's creation in 1889 expresses the emphasis it has always placed on mobility. Formula E fits perfectly with this philosophy.

2-City-centre racing

Formula E's unprecedented format sees free practice, qualifying and the race all happen on the same day. This, coupled with the fact that the action takes place in city centres, allows it to reach out to a new audience who follow more out of curiosity than because of an existing interest in motor racing.

The entertainment provided by the e-Villages at every round provides a valuable opportunity to explain the role tyres play in sustainable mobility.

3-Media interest

As a discipline with its sights set on the future, Formula E provides the Michelin Group with visibility across the globe. The Paris ePrix will no doubt be the French race that generates the most extensive media coverage this year and the championship enjoys a big following wherever it goes. Having a race in the French capital has sparked interest from the specialist and non-specialist media alike.

The MICHELIN Pilot Sport 4 is the first tyre to take advantage of technological lessons learned in Formula E



4-Technology transfer

Michelin uses all the types of motorsport in which it is active as laboratories to develop new technologies that will later be carried over to its road tyres.

Formula E, which features single-seater cars powered exclusively by powerful electric motors, provides the firm with an exciting opportunity to work in such important fields as energy efficiency and rolling resistance.

The recently-introduced MICHELIN Pilot Sport 4 is the first road tyre to benefit from technologies honed in Formula E.

5-Promoting awareness of the importance of tyres

On average, overcoming rolling resistance accounts for 25 percent of the fuel consumed by a vehicle. As a specialist working in favour of energy efficiency, Michelin has developed low-rolling resistance tyres that extend the operational range of electric and internal combustion-engined vehicles alike.

For example, the MICHELIN Energy EV improves the Renault ZOE's autonomy by six percent.



THE REVOLUTIONARY MICHELIN PILOT SPORT EV

Michelin Motorsport's engineers have developed a single, specific tyre for the electric single-seater racing cars which star in the Formula E Championship. This one-stop solution delivers exceptional performance whatever the conditions.

Because of its tread pattern, the MICHELIN Pilot Sport EV resembles road tyres like the MICHELIN Pilot Sport Cup 2 (seen on certain high-end Ferraris and Mercedes) and the Pilot Sport 4 which was launched last September and which incorporates some of the Formula E tyre's technologies.

The Pilot Sport EV's Michelin-developed Velvet Technology™ sidewalls and size (245/40R18) are other parallels with road tyres. Even so, it is a so-called 'confidential' tyre which incorporates numerous innovations covered by trade secrets, and its performance has been acclaimed by the teams and drivers since the championship's debut.

Indeed, the Pilot Sport EV proved so satisfactory during Formula E's inaugural season that the FIA asked Michelin to keep the same specification for Season 2.

Revolutionary

The MICHELIN Sport EV has revolutionised conventional racing tyre thinking. For the first time ever in world class single-seater racing, there is an allocation of just one set of tyres per car per meeting, whatever the weather. The MICHELIN Pilot Sport EV is effectively designed to cover the

two free practice sessions, qualifying and the race itself, whether the conditions are dry or wet. This means that Michelin has been able to bring down the number of tyres that need to be made and shipped to each race to just 200 for all 40 cars.

This in turn reduces the FIA Formula E Championship's environmental impact. In comparison, although allocations have come down by more than 40 percent in two years, an FIA World Rally Championship event requires between 1,000 and 1,200 tyres for the same number of cars.

Why an 18-inch tyre?

Another feature of the MICHELIN Pilot Sport EV is its size (18 inches, interior diameter) which is unique in the world of single-seater motor racing. In comparison, Formula 1 employs 13-inch tyres with very tall sidewalls. Michelin – which uses motorsport as a laboratory for the development of technologies of tomorrow – wanted a more conventional size, similar to that of road tyres, so that its customers would be able to benefit from its research work. The suggestion of the principle to the FIA therefore came from Michelin and the idea might be extended to other competitions in the future.



BEHIND THE SCENES OF THE MICHELIN PILOT SPORT EV'S DEVELOPMENT

The development of an exceptional tyre requires exceptional skills, extensive data, quality materials and first-class engineers.

In the case of the Pilot Sport EV, which is a bespoke tyre designed especially for Formula E, Michelin Motorsport started from a blank sheet of paper. The challenge was to combine high performance in both dry and wet conditions with energy-efficiency and low rolling resistance which is often believed to be antagonistic to braking capacity on wet ground.

By using advanced materials and technologies, Michelin Motorsport's engineers succeeded in taking all these parameters forward concurrently without compromising performance, in keeping with the company's Michelin Total Performance philosophy.

Formula E: a shop window

The weight distribution and power delivery of electric vehicles are very different to those of internal combustion-engined vehicles, and even more so when it comes to the Formula E single-seater racing cars. Michelin consequently conceived bespoke simulation, development and testing procedures to produce tyres that are capable not only of coping with high levels of torque and power from pull-

away, but also of ensuring the sort of braking performance expected of a racing car. To achieve this, the engineers made use of new production processes, new materials and secret compounds. Advanced simulation software replicating the forces the MICHELIN Pilot Sport EV was likely to face enabled performance to be analysed in thousands of situations. This groundwork was followed by track testing.

Under surveillance

Data is key to achieving success in motor racing and the MICHELIN Pilot Sport EV has an electronic chip embedded in its sidewall. Not only does this allow these confidential tyres to be tagged individually from their production to their return to the factory, but it also means that data concerning the constraints to which they are exposed can be collected thanks to temperature and pressure sensors. Michelin Motorsport's engineers are consequently able to analyse the tyre's performance in different configurations which in turn speeds up the learning process ahead of future development.



A NEW COMPETITION FOR A NEW AUDIENCE

La Formula E innove dans le monde du sport automobile avec des manifestations qui se déroulent en une seule journée, et au centre de grandes métropoles. Ce format inédit comporte de nombreux avantages, aussi bien pour les compétiteurs que pour le public, avec un autre grand gagnant : l'environnement.

Formula E's one-day format and city-centre races are an innovation in the world of motorsport and popular with competitors and fans alike, not to mention their environmental benefits.

If only because of the noise, rallies and conventional races rarely visit city centres and take place away from built-up areas, forcing spectators to travel to see the action. And that has an obvious ecological impact.

Choosing city-centre venues nearer people's homes and running a shorter timetable have minimised this phenomenon and Formula E boasts the best carbon footprint of any FIA-sanctioned series. On top of that, the championship's electric single-seater cars make hardly any noise at all!

This cocktail has not only appealed to existing motorsport fans but has also drawn a different type of spectator who attend races more out of curiosity or because of an interest in new technologies. Formula E is consequently able to promote electric vehicles and sustainable mobility to an audience that wouldn't necessarily have gone to a circuit. This trend provides Michelin with a chance to send out an extremely positive message.

The Green GT H2 on display at Paris ePrix

Michelin is a major player in the world of sustainable mobility. In addition to its role as organiser of the Challenge Bibendum, it has shares in Symbio F-Cell, a company which designs and manufactures fuel cells.

It is also the official tyre supplier to the first ever fuel cell-powered racing car, the Green GT H2. This car will be on display on the Michelin stand at the Paris ePrix and will perform laps of the circuit as part of the programme's parade of zero-emission vehicles.

The Green GT H2 runs on S8L (slick) or P2L (rain) tyres provided by Michelin Motorsport's customer competition division.





The MICHELIN Pilot Sport EV was designed to cover the entire meeting, from free practice and qualifying to the race itself, whatever the weather. This format is unprecedented in single-seater racing and means that Michelin needs to take less than 200 tyres to each round.

The combination of the advanced technology Formula E showcases and the different type of spectator it attracts (i.e. not necessarily racing fans) allows it to reach out to a broader public to promote sustainable mobility thanks to an entertaining show, and Michelin has been one of the competition's leading stakeholders from the outset.



From Punta Del Este (Uruguay) to Beijing (China), the Formula E is exported all over the world



ENERGY EFFICIENCY AND MOBILITY: TWO PRIORITIES FOR MICHELIN



Tyres have long helped to improve mobility and save fuel by becoming increasingly energy efficient.

These two priorities stem from a formula which Michelin's engineers have in mind at all times: lower rolling resistance + lighter, longer-lasting, more versatile tyres = enhanced energy efficiency, lower energy consumption, longer range and, therefore, enhanced mobility...

Lower rolling resistance: tyres account for almost 25 percent of the energy consumed by an internal combustion-engined vehicle, and 30 percent in the case of an electric vehicle. Lower rolling resistance means less energy is required for the vehicle to move.

Lighter: everything dovetails together, since moving less weight requires less energy. Michelin continues to optimise the construction of its tyres while at the same time improving their performance. Using fewer raw materials also contributes to cleaner mobility. Achieving more with less is possible thanks to Michelin's engineers.

Longer lasting: Michelin excels in the design long-lasting tyres which

deliver consistent performance as they wear. From the ecology angle, it goes without saying that changing tyres less frequently equates to using fewer tyres during a given vehicle's lifespan.

More versatile: this part of the equation refers more to motorsport than road tyres and is ideally illustrated by the FIA Formula E Championship. Indeed, not only do MICHELIN Pilot Sport EV tyres last the whole meeting but they are also designed to race in all weather conditions, wet or dry.

Motorsport's focus on greater versatility is clearly beneficial to the environment.

A DUAL FOCUS

Greater energy efficiency: Michelin's efforts to design lighter, more energy-efficient tyres with lower rolling resistance allow vehicle manufacturers to claim lower energy consumption.

Longer range: lower consumption of fossil fuel or electricity naturally extends the operating range of vehicles. For example, the MICHELIN Energy EV is original equipment for the electric Renault ZOE and has increased the model's autonomy by six percent





CLEANER TYRES THANKS TO MICHELIN'S PERFORMANCE AND RESPONSIBILITY PLAN

They may be black, but green tyres exist! Protecting the environment by minimising the ecological impact of its tyres during the different phases of their lifespan is a priority for Michelin, and energy savings are a direct benefit of this approach

Tyres play an important role in the automobile industry ecosystem and Michelin has a permanent eye on protecting the environment. In the world of motorsport, the way it approaches the Formula E Championship is an eloquent illustration of the Group's Performance and Responsibility plan. Michelin has invested significantly in this cross-company approach which is respected by all its staff.

The Performance and Responsibility plan and tyres

Protecting the environment is a key consideration in the development of all new Michelin tyres.

When designing the Pilot Sport EV, for example, Michelin set itself the objective of making it versatile enough to be used in wet and dry conditions alike, something that has been practically impossible in the world of single-seater racing to date. At the same time, Michelin has succeeded in making its Formula E tyre sufficiently durable for it to cover the full duration of every ePrix (free practice, qualifying and race). As a result, fewer tyres need to be made, transported and recycled.

The quantity of raw materials employed also brings a significant environmental benefit. By minimising the weight of

tyres, it is possible to lower their rolling resistance which is responsible for between 20 and 30 percent of the total energy (fossil fuel or electricity) consumed by vehicles.

Formula E provides Michelin with an opportunity to pursue its research in this domain and make its products even more energy efficient.

The Performance and Responsibility plan and processes

In addition to ensuring that its tyres are as respectful of the environment as possible, Michelin has carefully reviewed its different processes in order to identify areas for improvement. In the case of the Pilot Sport EV, Michelin used advanced digital modelling tools during the early development stage and, thanks to simulation software and testing rigs designed in-house, the Group is today capable of developing new tyres practically entirely in a laboratory. Only a small amount of track testing was required to sign off Michelin's Formula E tyre.

At the same time, the latter's entire production process has been conceived to minimise polluting emissions as a further illustration of the Michelin Performance and Responsibility plan.

ECO-RESPONSIBLE LOGISTICS AND PLANNING

Michelin commits significant resources to saving time and energy when it comes to developing, producing, transporting and recycling its tyres. Its involvement in Formula E eloquently illustrates this forward-looking eco-responsible approach.

Michelin permanently strives to streamline its logistics and planning procedures. As a global Group active in 170 countries, its road tyre and motorsport activities require its staff across the world to work closely together, and efficient, cost-controlled shipment is a vital part of this process. Meanwhile, the teams who work in Formula E are connected to the new Bib-Space network which is a virtual, extremely secure in-house tool that allows staff to collaborate and share documents at any time without having to travel, wherever they are in the world.

Eco responsible motorsport logistics

Michelin Motorsport's logistics experts are one step ahead, too. They plan the shipment of tyres to events at a very early stage and minimise the number of tyres that have to be made. For example, the Latin American

rounds of the FIA Formula E, World Rally and World Endurance Championships take place at a similar time of the year, so the tyres for all these events were shipped out together in advance to reduce costs and as part of a carbon-aware approach.

In parallel, Michelin Motorsport's engineers work permanently to develop tyres that are not only increasingly competitive but also more versatile and longer lasting. In addition to fitting perfectly with the Michelin Total Performance plan, this approach permits raw material savings, as well as less production-related waste, plus fewer tyres to ship and recycle.

Last but not least, reducing the number of tyres used at each meeting means that fewer Michelin technicians and support need to travel to events.





MOTORSPORT

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