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A busy 2019/2020 Formula E finale in store for the teams and Michelin

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Six e-prix in Berlin in nine days: a technical, logistical and sanitary challenge for the teams and for Michelin

Berlin is the only city that has hosted ABB FIA Formula E Championship action every season since the inaugural series in 2014/2015. As a consequence, Michelin's staff – like the teams – have built up a comprehensive grasp of the niceties of racing on the former Tempelhof Airport's abrasive concrete aprons. Situated in the German capital's centre, the venue has been chosen as the preferred location to conclude the 2019/2020 campaign safely as the Covid-19 pandemic continues to affect our lives, and the amount of open space available there has allowed the organisers to run different circuit configurations.

The result is a busy, nine-day extravaganza and a programme of no fewer than six e-prix – including four in the space of just five days – that is unprecedented in world-class motorsport. The first two clashes will see the drivers lap in one direction, while the next two will use the same loop in the opposite direction. The second layout will then be modified to incorporate a new section for the last two races of the season.

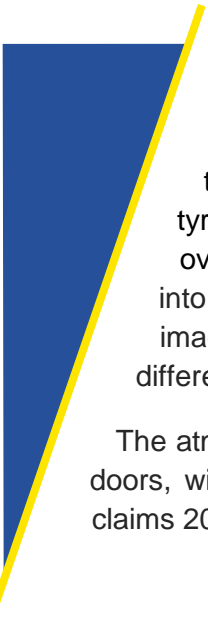
The teams and suppliers will need to observe a strict sanitary protocol, however, and a coronavirus test every five days will be a prerequisite to being authorised to enter the circuit. Accredited personnel will be advised of the test's result via their smartphone and the organisers have arranged for all participants to stay in the same hotel so that everyone can travel to and from the track together in frequently-disinfected shuttles.

“Above all, Berlin promises to be a considerable logistical challenge for our fitters whose numbers have been restricted to six,” says Michelin's Formula E programme manager **Jérôme Mondain**.



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“Their job will be to fit, inflate, balance and strip almost 900 tyres, plus a further 400 for the Jaguar I-Pace eTrophy rounds that are planned. In all, we will have around 1,300 tyres for Berlin’s six e-prix and seven Jaguar races. That’s got to be some sort of record over such a short period of time! We can’t wait to see how our facilities there look and get into the swing of the season’s grand finale which is a scenario that nobody could have imagined not so long ago. We’re looking forward to sharing the experience on Michelin’s different social media platforms.”

The atmosphere is guaranteed to be unique since all the action will take place behind closed doors, with no sponsor representatives or media in attendance either to see who eventually claims 2019/2020 FIA Formula E title...

Berlin’s former Tempelhof Airport: a single venue, three different track layouts

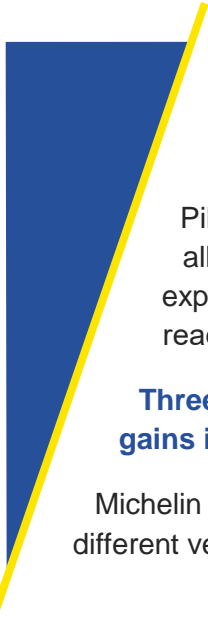
The former Tempelhof Airport’s surface area of 386 hectares makes it bigger than New York’s Central Park, while the 1.2-kilometre curved façade of its main building is the world’s third-longest. The edifice’s footprint is similarly the world’s third-biggest. The outside space comprises an expanse of flat land and two runways which last year enabled the ABB FIA Formula E Championship’s organisers to lay out a 10-turn, 2.475km circuit that gave spectators a view of practically all the track. This season, there will be no grandstand around the track, but the configuration remains unchanged for the first four races. The circuit will be run in clockwise direction on August 5 and 6, while on August 8 and 9 the 24 drivers will take the circuit in the opposite direction, i.e. in the same direction as in 2019. For the third series of two races, the organisers have designed several changes to the layout, which will be more twisty with the addition of six more bends. Teams will only be advised of the exact configurations in the build-up to the races, which will leave them with insufficient time to prepare on their respective simulators as they normally would.

Plenty of on-track action, but with fewer Michelin tyres

Michelin has long championed the use of fewer tyres in motorsport and the successive generations of the solution it has developed for the Formula E Championship have become increasingly energy efficient, lighter and faster. For the six e-prix in Berlin, the cursor has shifted yet again because the drivers will have fewer covers available. Previously, the allocation per race day amounted to two sets (four fronts and four rears). In addition to testifying to the longevity of Michelin’s Formula E tyre, this number provided teams with an opportunity to run different strategies by allowing them to switch between new and part-worn tyres for the two free-practice sessions, qualifying (plus the super pole shootout for the six fastest qualifiers) and the race itself (45 minutes plus one lap).

For Berlin, the quota has been reduced, however, and drivers will only have three sets of tyres available for each pair of e-prix. Given the notoriously hard-wearing nature of the former Tempelhof Airport’s track surface, tyres face an even stiffer challenge therefore, but the MICHELIN Pilot Sport is ready to rise to the occasion, whatever the weather. “Our Formula E tyre is durable in the dry and the track’s properties are likely to evolve as more and more rubber gets laid down.





This will gradually fill the surface's rugosities to make it less abrasive," notes **Jérôme Mondain**. "Rain for one or more races shouldn't pose a problem either. The MICHELIN Pilot Sport's tread pattern is capable of clearing considerable amounts of water, thereby allowing the drivers to compete safely. In the case of very heavy rain, we know from experience that the issue of visibility is likely to arise before the grip threshold of our tyre is reached."

Three generations of innovative MICHELIN Pilot Sport Formula E tyres with successive gains in terms of versatility/longevity, energy efficiency and low weight

Michelin is a founding partner of the ABB FIA Formula E Championship and has developed three different versions of its bespoke tyre for the all-electric series since 2014:

The original MICHELIN Pilot Sport EV: versatile and durable

The MICHELIN Pilot Sport EV established a new benchmark at the time of its introduction in 2014. In a first for a world-class single-seater racing series, it was designed for 18-inch wheels and looked very much like a road tyre, while its Michelin Premium Touch Technology sidewall markings exuded an incontestable high-end feel. Meanwhile, the newcomer's size (front: 255/40R18 / rear: 305/30R18) was similar to that of certain road cars, and its tread pattern was another feature it shared with road tyres. Even so, the MICHELIN Pilot Sport EV was an out-and-out racing tyre, with a confidential compound and casing which were the fruit of extensive research and development work. Some of its characteristics have since been carried over to Michelin's production tyres. The MICHELIN Pilot Sport EV was also the first single-seater racing tyre to be capable of competing in dry and wet conditions alike while delivering unprecedented longevity, a Michelin hallmark that enabled the first-generation Formula E's cars to run the same set of tyres for free practice, qualifying and the race itself for the first time.

Not only did this contribute to the championship's low environmental impact but it also served to support the sustainable mobility message Formula E has sought to promote ever since its all-electric cars started racing in city centres.


The MICHELIN Sport EV 2: energy efficiency

The MICHELIN Pilot Sport EV2 appeared at the start of the FIA Formula E Championship's third season (2016/2017) and marked a clear improvement over the initial tyre on a number of fronts, not the least of which being its superior energy efficiency. More than 25 percent of the energy consumed by a moving vehicle – whether powered by an electric motor or an internal combustion engine – is used to overcome the phenomenon of rolling resistance. Progress in this area can extend the vehicle's range with no adverse effect to any of the tyre's other performance parameters. Indeed, the work carried out by Michelin Motorsport's engineers in the course of the championship's first two seasons achieved significant results, since the MICHELIN Pilot Sport EV2's rolling resistance was 16 percent lower than that of its predecessor.



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The extended range this made possible meant the same tyre would have enabled the previous season's single-seaters to cover approximately two additional kilometres, the equivalent of an extra lap.

The MICHELIN Pilot Sport Formula E special: lighter

The version of the MICHELIN Pilot Sport that made its debut at the beginning of the 2018/2019 championship benefitted from five years of ongoing research work that obviously started upstream of the inaugural season in 2014/2015. Today's tyre combines superior performance with light weight and tips the scales at practically 2kg (front) and 2.5kg (rear) less than Michelin's original Formula E tyre. That's a saving of 9kg per car and a gain of almost 20 percent per set of four. Along with the improvements made to the design and specification of the cars themselves, the sum of all these developments has seen lap times tumble by as much as three seconds (Marrakech, free practice) since the competition's creation.

The progress achieved by the MICHELIN Pilot Sport's successive generations is indicative of the French firm's actions in favour of the environment. By developing a tyre that is capable of covering an entire race day and competing in dry and wet conditions alike, Michelin revolutionised the world of racing tyres. In contrast to competitions that require a high number of tyres to be entertaining, Formula E has championed the use of a single set of Michelins per race from the outset. At the same time, ongoing work on the MICHELIN Pilot Sport developed for the all-electric series has resulted in energy efficiency gains and therefore longer range, plus fewer tyres to transport and recycle. The weight reduction of 9kg for a set of four current-generation MICHELIN Pilot Sports equates to a 432kg saving in raw materials alone per race, which works out at 5.1 tonnes over the course of a 12-round season!

MICHELIN Pilot Sport sizes

Michelin believes that technology can only be carried over from the race track to the street if the tyres used in motorsport are similar in size to those fitted to road cars. It is for this reason that the sizes of its front and rear Formula E tyres are 24/64-18 and 27/68-18 respectively (Michelin Motorsport system, equivalent to 255/40R18 and 305/30R18), which is close to the sizes specified by sports car manufacturers.

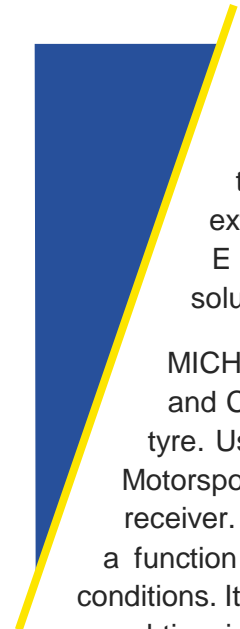
MICHELIN Track Connect: motorsport's first connected system

By enabling tyre pressures to be monitored accurately at race meetings in real time, hot or cold, MICHELIN Track Connect addresses a demand expressed by motorsport's governing body, the FIA (Fédération Internationale de l'Automobile), which incorporated its use into Formula E's regulations prior to the 2019/2020 season. It also meets a requirement of the teams and the championship's promoter. MICHELIN Track Connect employs a Michelin-designed-and-developed sensor embedded in a specific casing inside the MICHELIN Pilot Sport tyres which feature in the series. The data it collects is transmitted in encrypted form to the FIA and Michelin who are the only recipients. Not only does this ensure that the information remains confidential, but it also allows the FIA to check that competitors comply at all times with its minimum tyre pressure requirements.



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The system is yet another example of how Michelin uses motorsport as a high-tech lab to incubate and accelerate the development of new mobility-enhancing solutions in extreme conditions. The feedback and data acquired by Michelin's engineers in Formula E have contributed to the evolution of the company's commercially-marketed connected solutions.

MICHELIN Track Connect is already available to car enthusiasts in Europe, North America and China with the ultra-high-performance MICHELIN Pilot Sport Cup 2 Connect production tyre. Used in conjunction with a sophisticated but user-friendly, three-mode (Leisure, Expert, Motorsport) smartphone application, the system comprises four sensors (one per tyre) and a receiver. The app analyses the data that is collected to make tyre pressure recommendations as a function of the type of vehicle, type of use (road, circuit, rally stage) and ground/weather conditions. It also displays accurate tyre pressure information, while a colour-coded graphic provides a real-time indication of whether the tyres are operating within their ideal window. The data recorded by the smartphone application can be viewed, compared and shared at any time.

Michelin's Everything Sustainable plan in favour of the environment

Michelin sees opportunities to innovate for a better future in everything it undertakes. This pioneering spirit has been embedded in the Group's DNA ever since it was founded and applies equally to the tyres it manufactures and mobility-related services it provides, as well as to the fields of connectivity and motorsport. Michelin has long used its involvement in world class racing and rallying to put new technologies through their paces and finetune its high-end ranges, while at the same time helping to improve everyday travel by designing solutions that are tailored to its customers' needs and life style.

Michelin's advanced materials expertise in fields ranging from elastomers and technical fabrics, to biomaterials, resins and 3D metal printing allows it to innovate in the interests of mobility, while the raw materials and resources savings made possible by its innovations help to make its different activities more sustainable and respectful of the environment. Meanwhile, the pooling of knowledge by its development teams and the cutting-edge simulation tools they employ enable the design of the brand's new tyres to be optimised. Production processes benefit from race-proven innovations, as well. For example, manufacturing lighter tyres like the MICHELIN Pilot Sport used in Formula E is beneficial in numerous ways, including reduced CO₂ emissions and energy consumption. Lighter tyres are of course easier to recycle, too. By fostering a new, more environmentally-respectful ecosystem, from the choice of raw materials to the way end-of-life tyres are handled, Michelin has committed to an Everything Sustainable plan that favours both the planet and its inhabitants, while remaining compatible with the company's commercial realities.



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