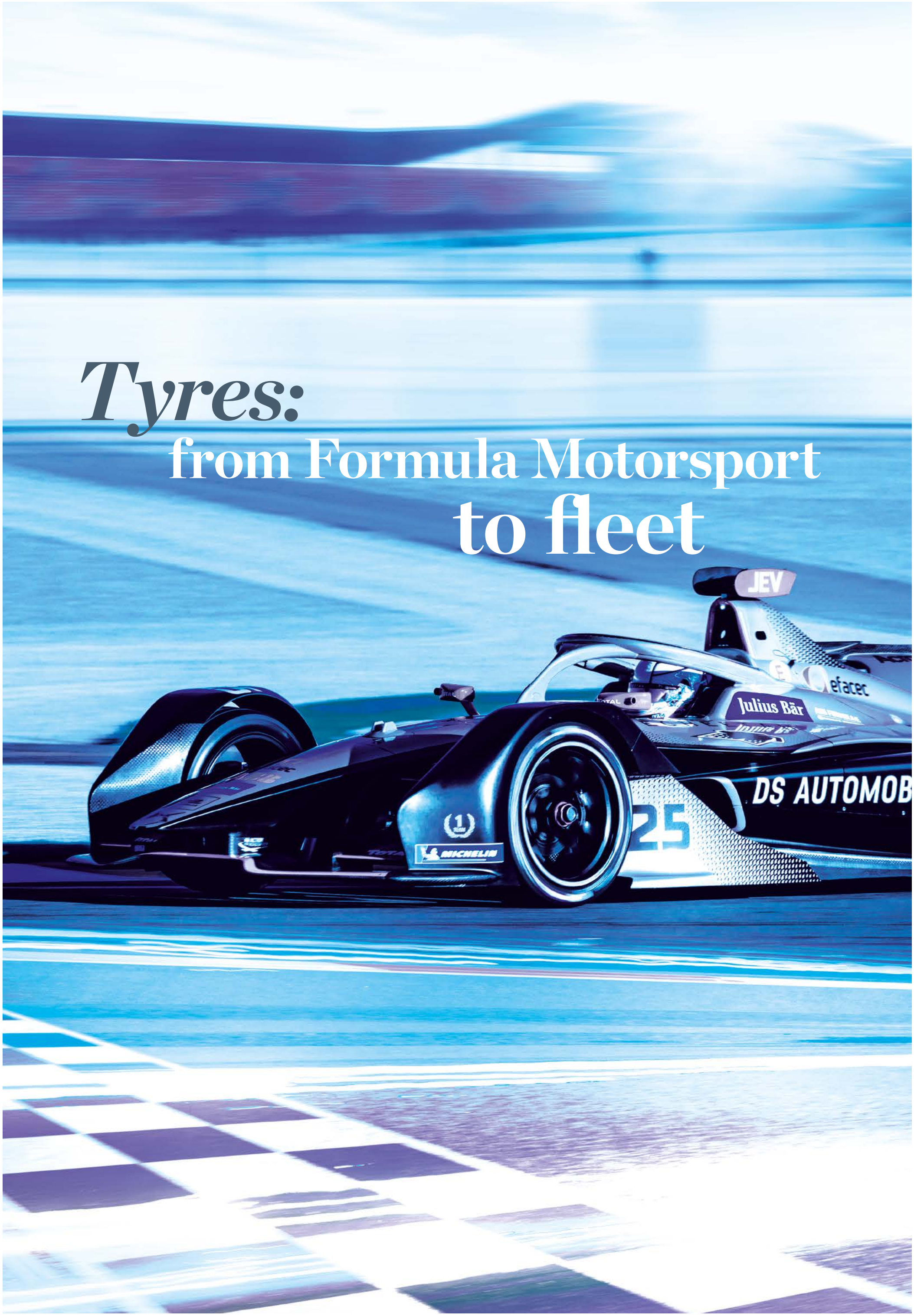
Tyres:
from Formula Motorsport to fleet



Introduction

Fleet decision-makers and company car and van drivers can spend hours looking for, test driving and ultimately speccing their next vehicle.

However, it is almost a racing certainty that in searching out the very latest technology and available 'bells and whistles' the one feature they probably ignore is tyres.

Yet, in many ways, tyres are perhaps the most critical feature or item of equipment on any vehicle. After all the essential 'contact area' – no larger than the palm of a hand – is all that is linking the car or van to the road.

What's more, tyres are essential for safe driving, providing grip for braking and acceleration, steering and directional control.

It is against that background that tyre manufacturers are collectively ploughing hundreds of millions of pounds into developing tyre technology.

Just as motor manufacturers are jointly spending hundreds of millions of pounds researching and developing electric and autonomous vehicles, so the world's major tyre manufacturers are also looking to the future.

What that means is:

- *The arrival of the intelligent tyre – the so-called tyre with a 'brain'*
- *QR codes perhaps engraved on tyres to aid fleet tyre management*
- *New solutions in an era when the arrival of plug-in vehicles is putting added pressure on tyres*
- *Fleet operators having to make tough decisions on whether 'summer', 'winter' or the fast-emerging breed of 'all-season' tyres should be fitted to vehicles*
- *Understanding tyre procurement and why buying tyres online may not always be what it seems.*

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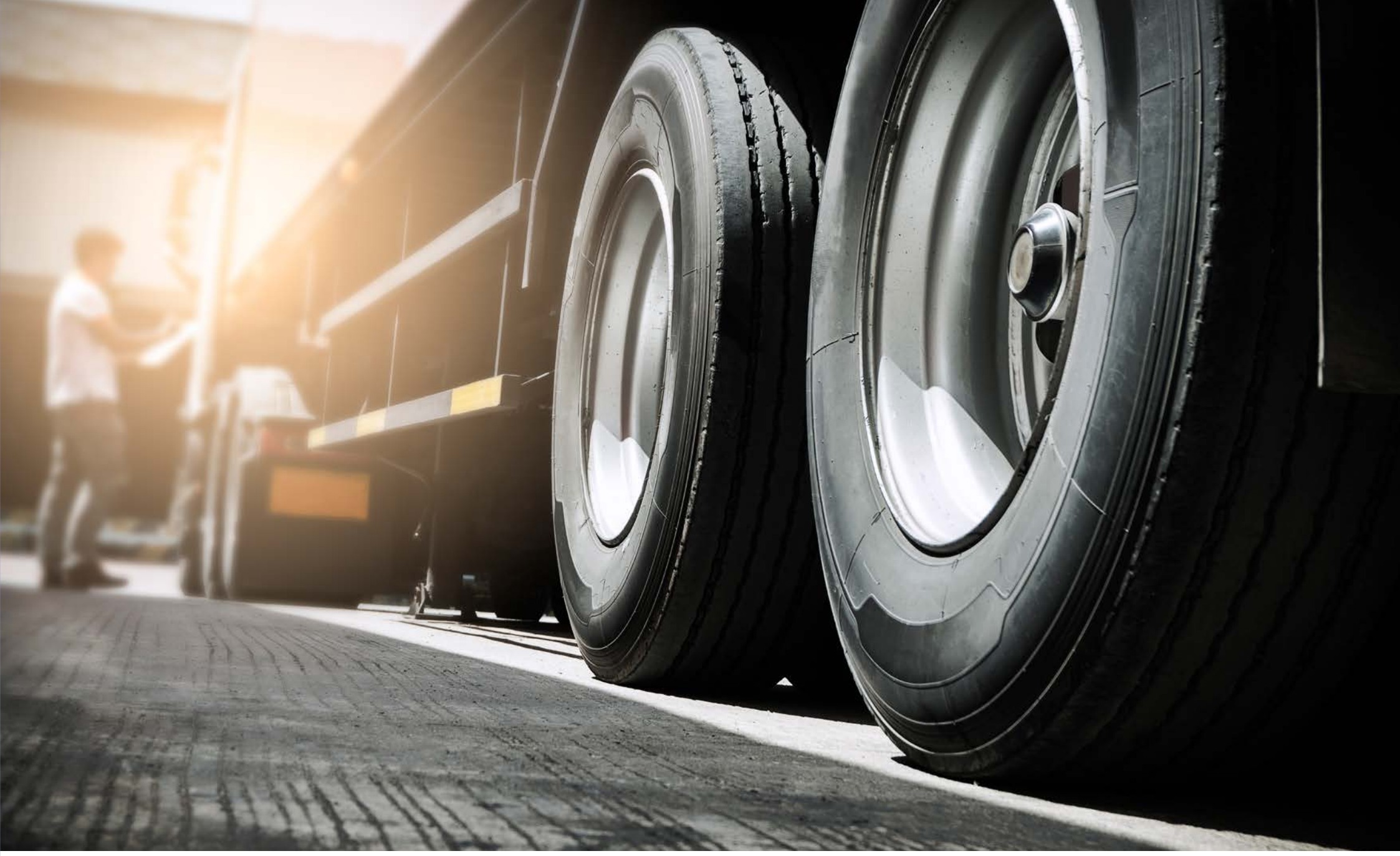


This white paper looks at all those issues against a background of reams of industry data suggesting that tyre condition is an Achilles heel for fleets and drivers – both company and private. Surveys invariably highlight thousands of cars and vans fitted with tyres with illegal tread depths, badly damaged and with pressure either under or over recommended levels – all issues putting vehicle occupants and other road users at risk.

About 40% of tyres across Venson Automotive Solutions' leased and managed vehicles are replaced prematurely due to tyre damage with a bias towards light commercial vehicles, which account for around 60% of the company's fleet.

Tyre damage is principally due to driver-induced failures, perhaps kerbing tyres, as well as the potholed condition of much of the UK's road network.

It is for that reason that typically Venson Automotive Solutions advises fleet customers to "look at price" with Lee O'Neill, head of operations, arguing: **"The whole debate around what is a premium, mid-range or budget tyre is not as clear cut as it sounds."**

What's more, it is also critical for fleet decision-makers to take account of vehicle use and age/mileage in the replacement cycle.

He said: **"As fleets are not always getting maximum benefit from their investment in premium brand tyres, operators are sometimes choosing to limit their cost exposure and opting to fit a higher percentage of mid-range tyres to vans."**

However, above all else the business-critical message for fleet operators is to ensure that drivers check tyres on a regular basis – every two weeks is the industry recommendation – for excessive and uneven tread wear, damage and pressure.

Mr O'Neill said: **"Far too often we find that company car and van drivers are failing to check their tyres and are running on illegal tread depths. Too frequently drivers only give their vehicle tyres a cursory glance and do not put the steering wheel on full lock to check across the full width."**

The minimum legal tread depth is 1.6mm across the central three-quarters of the breadth of the tyre and around the entire circumference. The current fine for driving on illegal tyres is £2,500 per tyre and three points per tyre on a driving licence.

At 70 mph the stopping distance of a car fitted with a new tyre with 8mm of tread is calculated to be almost 100 metres; with 3mm of tread remaining a car's stopping distance increases to 150 metres; with 1.6mm of tread remaining a car's stopping distance is 200 metres – double that of a vehicle fitted with a new tyre – and with just 1mm of a tread remaining a car's stopping distance is 250 metres.

Ultimately, technology, it seems, is likely to remove the responsibility for tyre condition checks away from drivers. They will then only have to respond to information transmitted – but even now that sometimes proves to be too difficult a task as warning lights are ignored – so probably 'intelligent' are the future solution as they will be able to 'self-manage' and thus remove the driver from any care requirement.

So what is the tyre industry doing, when will 'intelligent' tyres be available and what should fleet operators look to do now in terms of tyre fitment and procurement? This white paper looks at the present and the future.

'Intelligent' tyres:
The coming reality or science fiction?

Tyres with a 'brain' may seem like science fiction, but they are set to become a real-world reality providing a wealth of information designed to maximise longevity and reduce maintenance costs.

Indeed Bridgestone Corporation, which claims to be the world's largest tyre and rubber company, says the tyre with a 'brain' is already here and points to its Smart Strain Sensor technology developed for all vehicle tyres as well as tomorrow's autonomous models.

What's more, artificial intelligence could enable tomorrow's tyres to "re-shape the individual sections of the tyre's tread design, adding 'dimples' for wet conditions or 'smoothing' the tread for dry conditions".

If that all sounds like fantasy – and miles more advanced than today's mandatory in-vehicle Tyre Pressure Monitoring Systems – it is not as the world's leading tyre manufacturers are collectively pumping billions of pounds into transforming tyres just as vehicle producers are making cars and vans ever more 'intelligent'.

Data fed back from numerous sensors located around vehicles and telemetry devices are fast becoming the norm delivering back a raft of information to the 'cockpit' and fleet operators and, in some cases to manufacturers, enabling 'proactive' rather than 'reactive' vehicle maintenance.

Now tyre manufacturers believe that sensors, microchips and radio frequency identification (RFID) tags fitted to the 'black round rubber' will provide drivers and fleet operators with a wealth of information including tread depth, condition and pressure as well as even sensing hot, wet or icy road conditions before instantly altering their pressure and grip to guarantee best performance.

'Intelligent' tyres will ultimately save fleets money as data feeds will deliver remedial action alerts thus reducing maintenance costs, while also improving road safety and limiting risk exposure, aiding fuel economy and reducing carbon dioxide (CO_2) emissions.

As motor industry connectivity moves rapidly towards the arrival of autonomous vehicles, Jean-Claude Kihn, president of Goodyear Europe, Middle East and Africa, said when its Eagle 360 Urban tyre was unveiled at the Geneva Motor Show: **"A revolution will take place at the intersection of autonomy, mobility and connectivity.**

"As this unfolds, tyre technology will be even more important than it is today. To safely navigate their surroundings, the autonomous vehicles of the future will need to learn to cope with the millions of possible unknowns we face in every day driving scenarios. To do so they will need access to data and the ability to learn and adapt."

That was almost three years ago with Goodyear describing the tyre as "powered by artificial intelligence". It was the maker's long-term vision for future smart, 'connected' tyres with the ability to "sense, decide, transform and interact" with its surroundings.

Equipped with a 'brain' and a 'bionic skin' and 'morphing' tread, Goodyear envisages a future tyre becoming part of a vehicle's 'nervous system' and the connected world of the Internet of Things. As a result, it is ready to rapidly adapt to changing circumstances, as well as the evolving needs of Mobility as a Service (MaaS) for fleets and their users.

The tyre features a 'bionic' skin, with a sensor network that allows it to check on its own status and gather information on its environment, including the road surface.

Through connectivity with other vehicles, buildings and road structure, as well as traffic and mobility management systems, the concept also captures information on its surroundings in real-time.

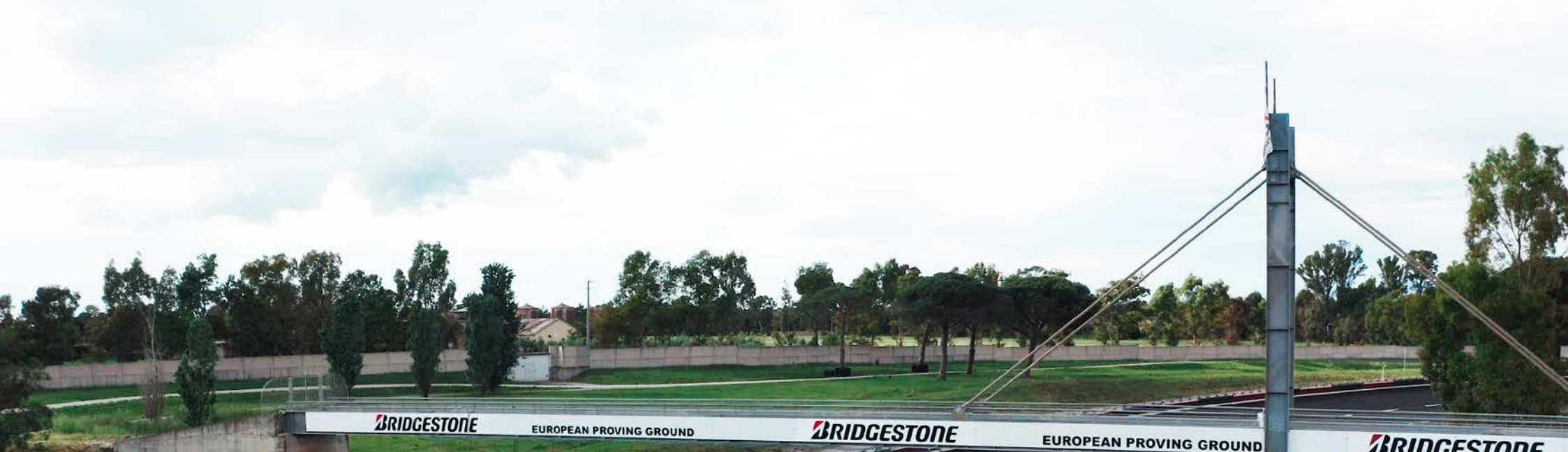
By combining that data, the tyre is able to react in a number of ways such as contracting and expanding its super-elastic polymer skin to suit conditions. For example, it can add 'dimples' for wet conditions, or 'smooth the tread' for dry surfaces.

When the tyre's skin is damaged, the sensors in the tread can locate the puncture. The tyre then rotates to create a different contact patch which reduces pressure on the puncture and allows the self-healing process to start.

The self-healing works thanks to materials which are specifically designed to be able to flow towards the puncture. They react physically and chemically with each other to form new molecular bonds, closing the puncture.

Another Goodyear prototype tyre, the IntelliGrip Urban, unveiled at the same event it featured technology that sensed road and weather conditions. By gathering such critical data and sending it directly to a vehicle's computer system, it enables a car to optimise speed, braking, handling and stability.

Furthermore, fleet operators would benefit from the tyre's tall and narrow shape, which reduces rolling resistance to increase energy efficiency and range of electric vehicle fleets. The IntelliGrip Urban's sensor technology would also allow operators to precisely identify and resolve tyre-related issues before they happen.



The Society of Motor Manufacturers and Traders (SMMT) in an article said that the end result would effectively be **"a smart tyre that could virtually manage itself – or at least flag up any issues without requiring a physical examination".**

Tyres installed with sensors, microchips and RFID tags are being developed so that every minute of every day drivers and fleet operators know the exact condition of any tyre on any vehicle enabling preventative maintenance to be taken prior to any disastrous blow out.

What's more there has even been speculation that an 'intelligent' will be able to determine that it is under-inflated and self-inflate.

Jamie McWhir, at the time Michelin's technical manager for car, van and 4×4, told the SMMT, that while tyres capable of 'communicating' would be available "in the next decade or so" there was still work to do before mass production.

As with most things that comes down to cost, he said: **"While the technology exists at the moment, you have to make something that you can put in the tyre easily enough, industrially, that's robust and accurate but also doesn't make a £100 tyre into a £300 tyre overnight. So the technology's there, but it's a bit like smartphones; you need to get it to a point where it's easy to make, it's robust enough, it's the right price and it works in practice to tick all the boxes."**

Fast-fit National Tyres and Autocare agreed that "smart tyres were coming" with information being sent to a vehicle's engine control unit.

Jonathan Quinn, national account director, National Fleet, said: **"Developments are at a very early stage and it is our view that it will be sometime before we see this technology as standard."**

If data is provided on current temperature, air pressure inside a wheel, tread depth and a number of other readings, he said: **"It will help drivers pre-empt potential tyre failure and would deliver an enhancement over the current Tyre Pressure Management System.**

"Lack of knowledge of tread depth from drivers is still a key issue as fleet drivers do not generally undertake checks as frequently as they should. Additionally, build-up of heat due to side wall damage on the inside of a tyre can be a cause of blow outs, which if warned through a signal to the dashboard would allow a driver to instigate remedial action."

Bridgestone's Smart Strain Sensor was announced at the end of 2019. The technology is capable of estimating a wheel axle load and tyre wear condition by using sensors, attached inside tyres, which measure the change in strain that occurs when a tyre makes contact with the road while in motion.

Claimed to be unique to Bridgestone and the first of its kind in the world, the development incorporates next-generation Internet of Things (IoT) technologies. It also tracks tyre inflation pressure and temperature. A proprietary algorithm is applied to convert data gathered by the Smart Strain Sensor into tyre load and wear information, which is then collected and sent to the cloud.

Furthermore, said Bridgestone, the algorithm contributed to substantial improvements in battery lifespan of the Smart Strain Sensor, which was critically important for practical implementation.

The Smart Strain Sensor technology, measures strain independent to speed and, therefore, is claimed to be able to acquire highly reliable data even at low speeds. Bridgestone says that is especially important, as autonomous vehicles are expected to operate at low speeds for enhanced safety.

Gary Powell, technical manager, Bridgestone UK, said: **"Detecting a potential tyre-related issue before it occurs helps ensure that drivers and their vehicles are able to safely reach their destinations. Equipping tyres with Smart Strain Sensors allows vehicle managers to remotely monitor such information as tyre air pressure, load and wear in real time. By monitoring tyres and predicting maintenance issues before they occur, Bridgestone expects this technology to contribute to improved safety and productivity, for fleets and all vehicle types as well as autonomous cars in the future."**

He continued: **"Further enhancements in Smart Sensors are expected, as Bridgestone grows and develops in digital technologies, and the company is committed to advancing future mobility solutions. This growth will also benefit unit price as demand grows for Smart Sensor technology. A tyre with a brain is already here."**

Continental has been offering 'intelligent' tyres and digital solutions for truck and bus fleets for a number of years.

ContiPressureCheck delivers live information either in a driver's cab or sends it to the vehicle operator via a telematics system and provides immediate notification and warnings of any problems detected. However, that technology has yet to make its way into tyres for car and van fleets.

The tyre manufacturer highlighted that truck and bus tyres came complete with a pre-mounted sensor which constantly monitored tyre pressure and temperature. The sensors can be purchased separately and retrofitted to a vehicle's tyres.

Additionally, ContiConnect is the company's digital tyre monitoring platform for truck and bus fleets. The manufacturer's 'intelligent' tyres can transmit pressure and temperature data to a yard reader station installed at an operator's premises and report the tyre status to the web portal.

Tracey Mortimer, marketing director UK and Ireland, said: **"Continental has a number of 'intelligent' tyre developments well underway. We expect to have 'intelligent' tyres and digital solutions that can monitor tyre pressure, temperature and tread depth available for car and van fleets within the next few years."**

Nevertheless, recent technological developments by Continental reveal what's in the pipeline. For example:

- Conti C.A.R.E (connected, autonomous, reliable electrified) is billed as a 'comprehensive technology system'. Tyres feature sensors that are built into the structure. The sensors generate and continuously evaluate data concerning tread depth, possible damage, tyre temperature and pressure. The monitoring system, known as ContiSense (see below), transmits information on tyre condition to the web-based ContiConnect Live application, facilitating efficient mobility management for fleet operators;
- ContiSense is based on the development of electrically conductive rubber compounds that enable electric signals to be sent from a sensor in a tyre to a receiver in a car. Rubber-based sensors continuously monitor both tread depth and temperature. If the measured values are above or below predefined limits, the system at once alerts a driver. If anything penetrates the tread, a circuit in the tyre is closed, also triggering an immediate warning for a driver – faster than the systems used to date, which only warn a driver when tyre pressure has already begun to fall. In the future, the ContiSense system is expected to feature additional sensors that can also be utilised individually. Information about the road surface, such as its temperature or the presence of snow, can be 'felt' by the tyre and passed on to a driver. The data can be transmitted to a vehicle electronics or via Bluetooth to a smartphone;
- ContiAdapt combines micro-compressors integrated into a wheel to adjust tyre pressure with a variable-width rim. The system can modify the size of the contact patch, which under different road conditions is a decisive factor for both safety and comfort. Four different combinations allow adaptation to wet, uneven, slippery and normal conditions. For example, a smaller contact patch combined with high tyre pressure make for low rolling resistance and energy-efficient driving on smooth, dry roads. By contrast, the combination of a larger contact patch with lower tyre pressure delivers ideal grip on slippery roads. The system also permits very low tyre pressures of below one bar to be set, to help ease the vehicle out of a parking space in deep snow, for example, or traverse a dangerous stretch of black ice;
- PressureProof technology actively adjusts tyre pressures by means of centrifugal pumps built into the wheel. As a vehicle accelerates, the centrifugal forces within the wheel act on the pump to generate compressed air thus keeping tyre pressure constantly within the 'ideal range' and helping achieve a sustainable drop in carbon dioxide (CO_2) emissions as any excess compressed air is stored in an integrated tank. PressureBoost technology then uses the air to rapidly adapt the tyre pressures to various driving situations.

Ms Mortimer said that Continental considered both ContiSense and ContiAdapt to be **"promising solutions for the mobility of the future as tyres are adapted to meet the needs of automated driving and electrification".**

She continued: **"Low rolling resistance, for example, makes it possible for electric cars to cover greater distances on a single charge. At the same time, the tyres can be adapted to suit a driver's personal preferences or in response to sudden changes in the weather. These concepts are the logical next step."**

'Intelligent' tyres for trucks are also already available from Goodyear and the company says that the technology is being trialled with car and light commercial vehicle fleets in the United States of America and "could easily transpose to car fleets in the future". Goodyear is also working with automakers to provide tyre information to vehicle control systems to enhance safety and performance.

At this year's Las Vegas Consumer Electronics Show, which sets the global stage for revealing next-generation innovations and is viewed as the technology industry event of the year, Goodyear unveiled its 'AndGo' fleet servicing platform. Available in the United States and set to arrive in other markets in mid-2020 it includes tyre monitoring leveraging the company's intelligent tyres.

At the heart of Goodyear's 'intelligent' tyre technology is a complete tyre information system, marketed under the banner Proactive Solutions, that includes a tyre, sensors and cloud-based algorithms that all work together to communicate in real-time with fleet operators via a mobile app. The company says the technology allows for continuous connectivity and real-time data sharing, enabling optimal tyre usage for safer and more cost-efficient mobility and maximised uptime.

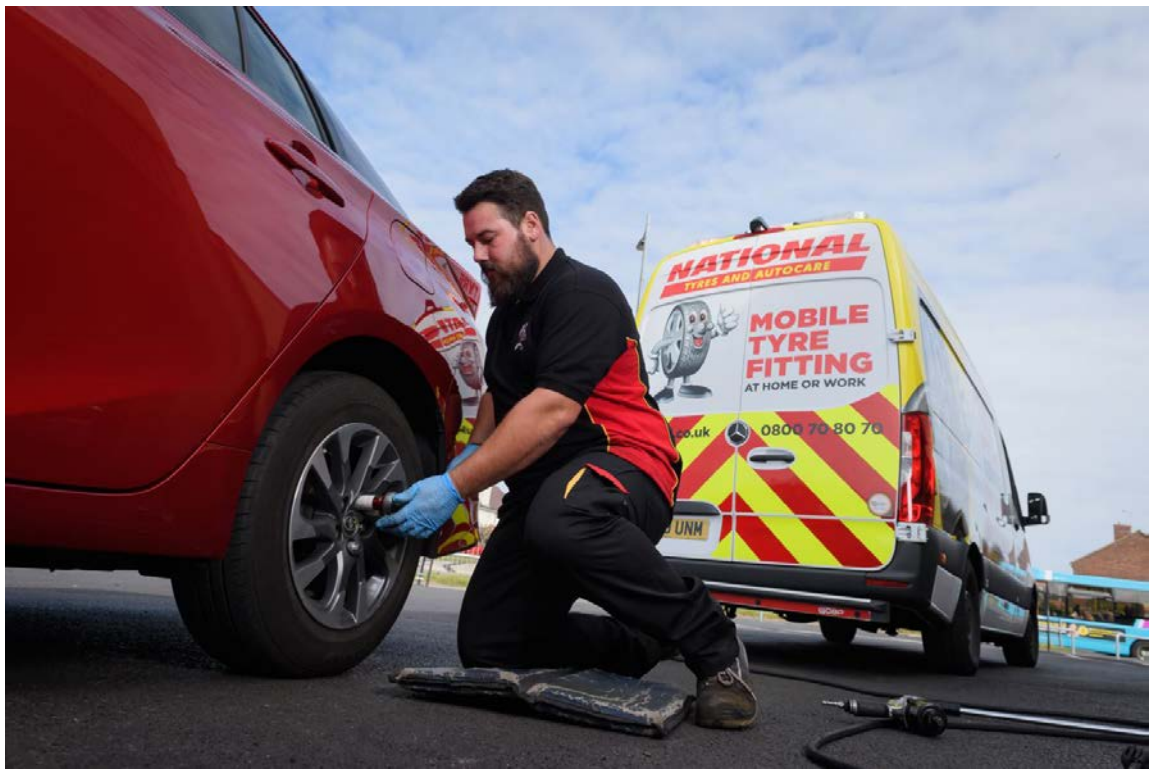
The sensors in Goodyear's intelligent tyre, together with the vehicle and third-party information, provide real-time data to Goodyear's proprietary algorithms. Information on tyre ID and status – including wear, temperature and pressure – is then continuously updated and shared with fleet operators.

Chris Delaney, president of Goodyear Europe, Middle East and Africa, said at the international unveiling of the technology at the Geneva Motor Show in 2018: **"Tyre performance and wear information provide a real-time signal for when a tyre needs service to extend its life, fuel economy and performance attributes. This kind of proactive maintenance allows fleet operators to precisely identify and resolve tyre-related and potential service issues before they happen."**

QR codes:

Will they be an aid to fleet tyre management?

The engraving of a QR code on every tyre could help improve fleet tyre management strategies and reduce vehicle downtime, it is claimed.



A QR code – abbreviated from Quick Response code – has become established as a machine-readable code consisting of an array of black and white squares, typically used for information for reading by a smartphone or camera.

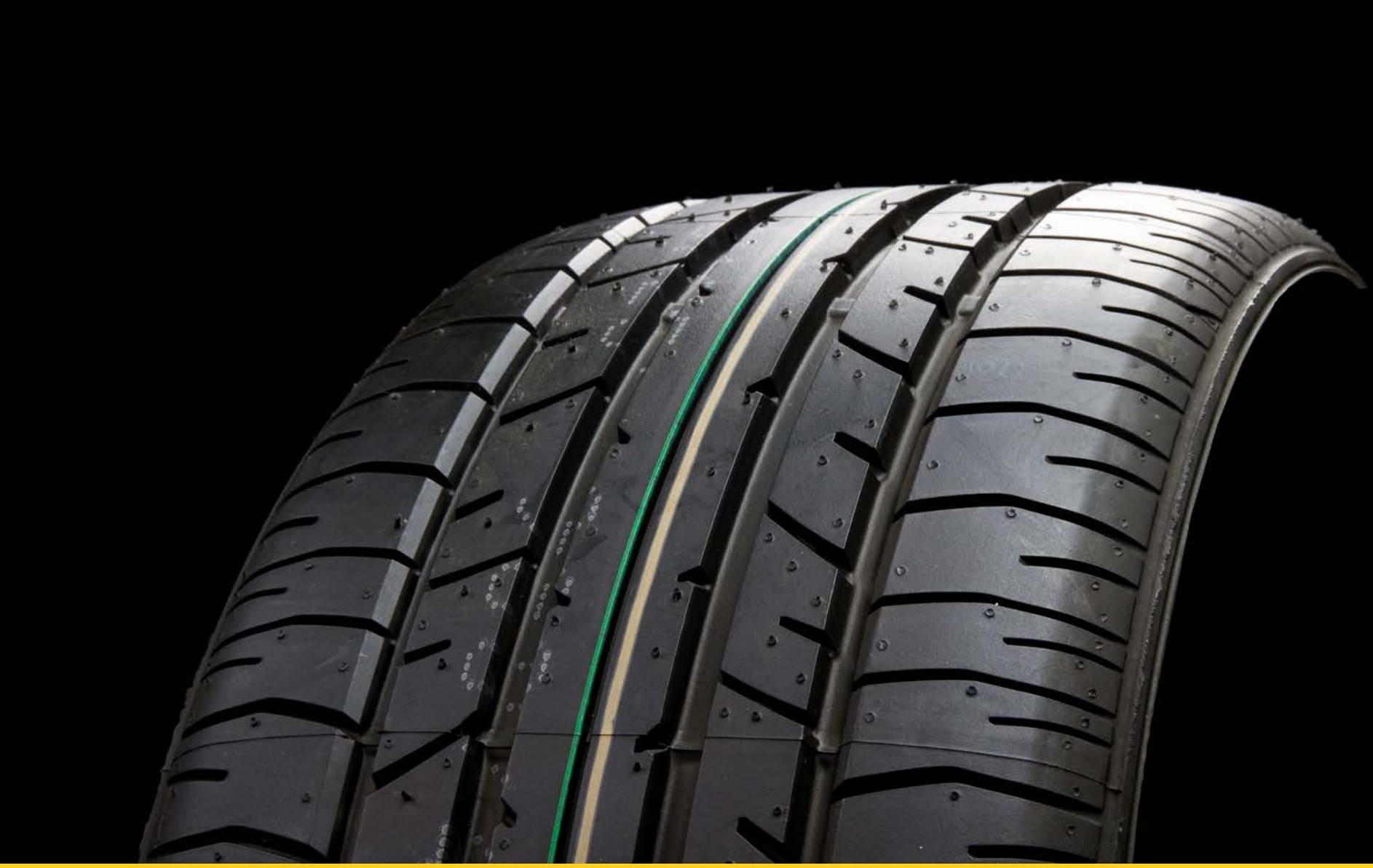
Now the matrix barcode, first designed for the automotive industry in Japan, is starting to appear on tyres, although not presently for use by fleets or consumers.

Continental Tyre Group said "certain vehicle manufacturers" did request QR codes on the tyre sidewall, which were used for "internal purposes only". Furthermore, Bridgestone said QR codes were already being used by one of its "major premium" motor manufacturer customers.

Meanwhile, German vehicle manufacturers Audi and BMW have been reported as being in the forefront of QR codes being introduced on tyres to allow "full traceability". However, Audi UK confirmed that it did not currently use QR codes as part of its tyre programme, while BMW Group UK was unable to provide any comment.

QR codes would help to distinguish a genuine original equipment part from another similar product, according to Bridgestone. Different tyres are developed by manufacturers for different regions or countries and would therefore have different performance and wear characteristics. Consequently that could lead to compromised ride quality, handling performance or even wear life, if they appeared within the wrong location.

> Mr Powell said: **"Bridgestone tyres may look the same, but there are critical differences, that may compromise specific original equipment vehicle performance. Therefore, the QR code is a state of the art identifier, that ensures quality and suitability are delivered for a given market and vehicle. This then reassures fleet operators that they are receiving the correct original equipment part for their specific vehicle."**



Individually, it is claimed, that marking every tyre with a unique and permanent QR code on both the interior and exterior sidewall during manufacturing or at point-of-sale would mean each could be easily identified with a QR reader – including smartphone camera apps.

Supporters say that the technology would spell the end of stickers with barcodes that got damaged or lost, moulded QR codes that were not unique to an individual tyre, radio frequency identification (RFID) tags that required specific hardware to read and engraved plain text serial codes that required users to type in numbers offline.

Every tyre displays three measurements – size of the wheel, tyre diameter and the distance between the edge of the tyre and the rim (the lower a wheel's profile the lower the number) – along with load and speed ratings.

That information, as well as chosen tyre brand and model must be provided when replacement tyres are ordered. However, frequently, drivers misread the numbers on the tyre sidewall and, as a result, the wrong tyre is ordered, particularly if a run flat tyre is required.

The advantage of a QR technology is, it is suggested, that all the required information would be stored within the code so once scanned appropriate replacement tyres could be ordered.

What's more, said National Tyres and Autocare's Mr Quinn: **"A total of 638,376 premium tyres across seven brands were sold in 2019 by National through its UK network.**

"The market is driven by brand choice from end users, with some of that choice being about matching the brand of tyre that originally fitted to the vehicle when it was manufactured.

"Every one of the premium tyre brands tries to engage with car manufacturers in an attempt to capture volume at the point of production, and to support the attempt to renew product at the end of an individual tyre's life span, which can be anything between 10,000 and 40,000 miles.

"QR codes could be engraved either at the tyre plant, after the remolding or prior to delivery. The QR code could then be scanned by a supplying dealer and forwarded to a fleet operator and driver as well as a fleet's contract hire and leasing or fleet management company or by the driver. It could also be shared with a fleet's fast-fit partner."

Presently, due to the volume of different vehicles and tyres in the marketplace it can be difficult for outright purchase fleets, contract hire and leasing companies and fleet management organisations to have advanced knowledge of the make, brand and size of tyre fitted. For example, a driver may have 'up specced' the size of wheels when ordering a vehicle.

Mr Quinn said: **"That lack of knowledge impacts on the ability to forward plan for tyre replacement because organisations are completely reliant on the driver providing the information. But introduction of QR codes would allow drivers or the supplying dealer to capture tyre data at the point of vehicle delivery and then send that information to the company fleet decision-maker or directly to a fleet's leasing or fleet management company.**

"Assuming that a QR code was 100% accurate it would enable fleet managers, leasing and fleet management companies to benefit by better managing tyre replacement. We envisage a lot of traction being gained with customers as to the value it will bring to the overall management of a fleet and tyre management specifically."

For example, used in tandem with known tyre replacement cycles for individual vehicles, the exact tyres could be advanced ordered for stocking by a fast-fit or garage thus reducing vehicle downtime and ensuring a 'fit-first-time' policy.

Goodyear uses RFID 'chips' in truck tyres and has introduced the technology to provide live tyre information during the annual Le Mans 24-hour race. Indeed it was the first tyre manufacturer to introduce the technology in motorsport more than a decade ago.

Tyre strategies form a fundamental part of the Le Mans 24-hour race and the organisers have been able to able to access and broadcast tyre choice and number of stints completed on each set of tyres for the teams competing in the endurance epic. RFID, said Goodyear, provided a cost effective way of managing availability and use given the thousands of tyres involved in Le Mans.

Meanwhile, Michelin introduced QR codes on concept tyres fitted to agricultural machinery, which it billed as "a first step toward the communicating tyre".

The manufacturer said: **"In today's farming vehicles, a growing number of functions are interconnected and provide information that the farmer needs to do his job right. Farmers know that in the field they must be able to count on the right tyre for each type of use. They also know that the right pressure for the right load is essential both for safety and for soil protection. Because loads vary quickly throughout the working day, Michelin has developed a communicating concept tyre."**

It features a QR code that is moulded directly in the tyre's sidewall. Via a smartphone that reads the data matrix, it sends the information directly to users to ensure correct tyre pressure and usage on farm machinery, trailers and tankers.

Utilising a 'smart, communicating tyre', Michelin said provided farmers with **"tangible, innovative, intelligent solutions that helped them optimise their crop output".**

While Michelin declined to say whether or not QR codes would find their way on to car and van tyres, the company did say that the development of 'smart, communicating tyres' for agricultural machinery **"illustrated the extent of the Group's efforts to develop future applications that enable a tyre to be constantly in phase with all of a vehicle's responsibilities and applications".**

Maximising plug-in vehicle performance puts *pressure on tyres*

Electric vehicles are regarded as good for the planet, but the unique characteristics of plug-in cars and vans could have significant repercussions for tyre wear and consumption during a model's life.

That's because electric battery packs powering 100% electric and plug-in hybrid vehicles means cars and vans are heavier – up to 20-30% – than equivalent internal combustion engine models.

That extra weight means more strain is placed on tyres – the only part of a vehicle in contact with the road – and a heavier vehicle takes longer to stop.

Furthermore, to maximise the range of electric vehicles the lower a tyre's rolling resistance the greater the mileage between charges, which is critical for driver satisfaction. Rolling resistance on tyres is a force that acts against a vehicle's travelling direction. It is primarily caused by the deformation of tyres while rolling.

Terry Gettys, research and development director for the Michelin Group, said: **"Range is the main concern of battery electric vehicle designers. Slimline tyres – also called tall and narrow tyres – are a good solution to decrease both aerodynamic drag (by width reduction) and rolling resistance (by diameter increase).**

"The number of batteries necessary to maintain a good range adds weight to the vehicle. This is creating a need for tyres that are capable of carrying such extra load, or simply the use of bigger tyres."

Tyre selection and in-life maintenance is safety critical as well as to maximise performance and longevity and, consequently, those factors are even more important for fleet decision-makers and company car and van drivers to take into account as more and more electric vehicles are driven on business journeys.

Sales of plug-in cars are increasing month-on-month with the corporate sector leading the charge – battery electric vehicle registrations were up 144% in 2019, according to figures from the SMMT. However, battery electric and plug-in hybrid vehicle registrations only accounted for a combined near-73,000 units last year to take just a 3.1% share of the new car market.

Nevertheless, Go Ultra Low, the collaborative campaign group bringing together the Government, SMMT and motor manufacturers, said 2019 was the most successful year for electric car registrations to date. At the end of last year the number of 100% electric and plug-in hybrid cars registered in the UK was 271,524.

What's more vehicle choice is set to further expand in 2020 as a further 23 zero emission cars and 11 plug-in hybrid models are set to make their showroom debuts including the Peugeot e-208, Volkswagen ID.3, Mercedes-Benz EQC, Vauxhall Corsa-e, Skoda CITIGO E, and Mini Electric.

To maximise electric vehicle performance, premium brand tyre manufacturers are, in some cases, developing dedicated tyres and that choice will increase as more plug-in cars as well as zero-emission capable light commercial vehicles are introduced to the market in 2020 and beyond.

First generation electric vehicles have been invariably equipped with 'narrow' tyres, but while the reduced contact patch with the road aids rolling resistance it increases the performance demand of tyres which can potentially increase wear rates.

Crucially tyre manufacturers are focused on ensuring the right balance between grip and rolling resistance, while also reducing tyre noise when compared with that generated by tyres fitted to petrol and diesel vehicles – the silence of electric vehicles means tyre/road noise is perceived to be 'louder'.

That means limiting driver and passenger exposure to noise inside a 'silent' electric car or van to ensure a 'comfortable experience'. Although, since July 2019 it is mandatory under European Union law for electric vehicles to be equipped with an 'acoustic vehicle alert system', essentially a fake noise of at least 56 decibels any time the vehicle is moving 12mph or slower principally so that it can be heard by pedestrians.

Tyres labelling introduced in November 2012 classifies performance in respect of fuel efficiency (rolling resistance), wet grip and noise levels.

A tyre with a low rolling resistance will therefore help to reduce the amount of power that is used up from a battery, compared with a tyre that has high rolling resistance. Consequently, as with selecting tyres for petrol and diesel vehicles, choosing the best performing for plug-in vehicles will boost longevity.

However, to maximise tyre life and ensure optimum performance and longevity, it is important for drivers to adopt a smooth style of driving and to regularly undertake tyre safety checks.

Harsh acceleration and cornering in an electric vehicle coupled with its additional weight will have a major impact on tyre wear and tear so smooth driving will improve tyre life.

But, drivers of plug-in vehicles typically adopt a smoother driving style with an increased focus on efficiency to preserve battery range thus potentially helping to off-set increased tyre wear.

Further helping to preserve tyre life is that electric vehicles deliver power in a more linear way therefore, removing the spikes of power delivery via say, a turbo powered internal combustion engine.

However, electric vehicles have a tendency to wear the inside edge of a tyre, so wheel alignment should be checked regularly, as should the inside edge of the tyres for signs of wear. Consequently, correct wheel alignment can boost tyre life.

What's more, as with any vehicle, ensuring that the correct tyre pressure for the vehicle is maintained will also maximise tyre life. Electric vehicles often have higher inflation pressures than internal combustion engine models due to their additional weight.

Tyre longevity is influenced by numerous factors - tyre selection, in-life maintenance and driver behaviour - and those characteristics will have a greater dominance in respect of electric vehicles due to their added weight versus internal combustion engine models.

Invariably, premium brand tyres will deliver maximum longevity when compared with cheaper tyres, while rolling resistance assumes a greater importance if zero-emission range is to be maximised.

National Tyres and Autocare's Mr Quinn said: **"Data presented by industry experts such as CAP HPI is that wear on the current models of tyres being produced by manufacturers increases with electric and plug-in hybrid vehicles due to the extra weight, and increased torque.**

"Our understanding is the premium tyre manufacturers are working closely with car manufacturers to design specific tyres for future electric vehicle and plug-in hybrid models that will deliver maximum performance in traction, wear, noise, etc.

"There have been suggestions that there may be a change in tyre profile, moving away from 18-inch and 19-inch tyres, which typically support the larger market car sectors, such as the upper medium, to a larger 21-inch or 22-inch wheel, but with narrower tyres. However, there has not been any conclusive guidance provided by either side of the vehicle market to allow us to be certain as to the direction of travel in tyre production."

Bridgestone has developed dedicated tyres for electric vehicles. The company supplies what it says is a "fuel efficient" tyre called Ologic for BMW i3 and i8 models.

Fuel economy, said the tyre manufacturer, was improved by two features:

- Large tyre diameter and high inflation pressure to significantly mitigate deformation of a tyre in contact with the road surface and thus reduce rolling resistance
- Narrow tyre width to reduce aero-dynamic resistance, which was an important factor in the improvement of a vehicle's fuel efficiency.

Furthermore, Bridgestone said that by optimising rubbers and other materials of reinforcement layers, tyre structures and tread patterns, a 30% reduction of rolling resistance coefficient along with a 10% improvement of braking on wet roads could be achieved compared with a conventional tyre.

Bridgestone said that continued development of Ologic technology would see further growth not only for car tyres but also other product groups, thereby maintaining the company's longstanding commitment to reduce CO2 emission through improving vehicle fuel efficiency.

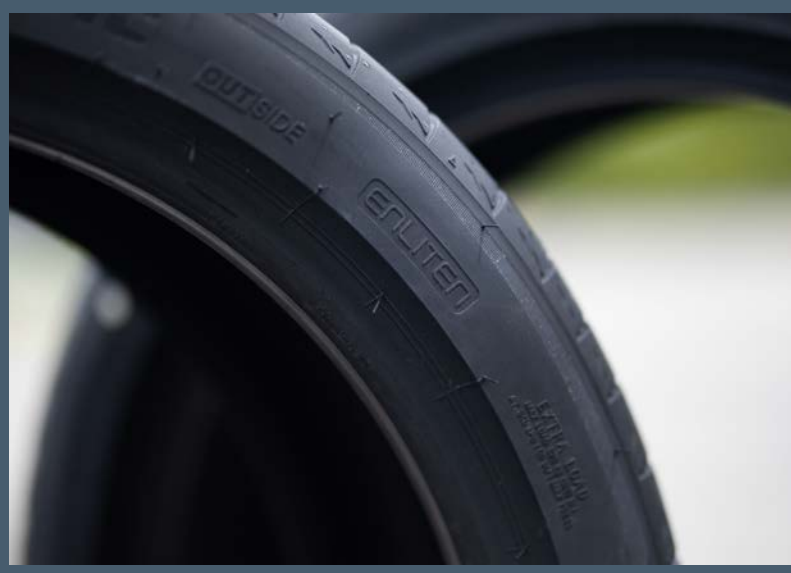
What's more Bridgestone's new lightweight tyre technology, Enliten, is due to make its debut as original equipment on Volkswagen models later in 2020.

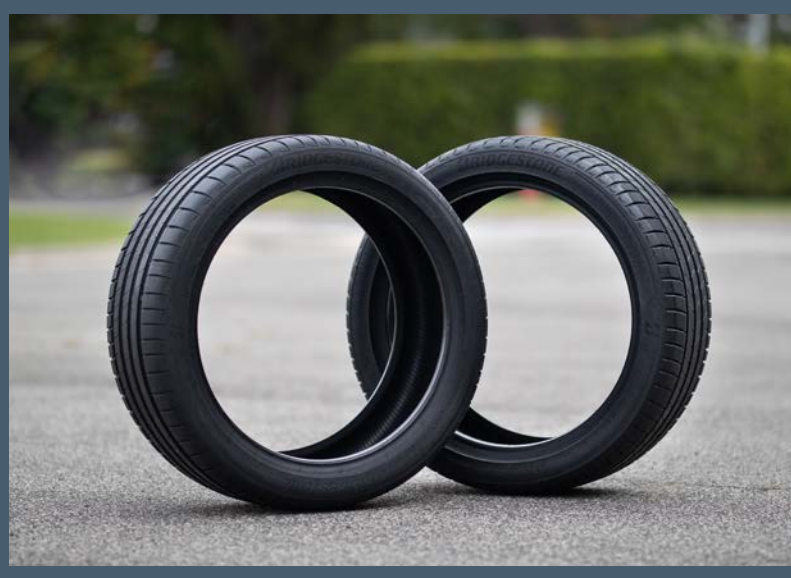
Enliten is claimed to reduce the rolling resistance of a passenger car tyre by, on average, 20% from a standard premium 'summer' touring tyre. That, said Bridgestone, enabled tyres with embedded Enliten technology to help reduce fuel consumption and CO2 emissions in combustion vehicles, while also extending battery life and vehicle range in electric vehicles.

Bridgestone, also said that Enliten enabled passenger tyres to be reduced in weight by, on average, 10% from a standard premium 'summer' touring tyre, which also contributed to the reduced rolling resistance.

The company said: **"Enliten is able to achieve all that without any trade-off on tyre wear or safety. The technology even improves the vehicle's handling and stability to increase driving pleasure."**

Those attributes, said Bridgestone, were due to the fact that the technology combined a proprietary compound mix that enables improved wear performance and a decreased tread depth, a reduced and reinforced inner liner thickness, and a new dedicated mould design concept.





Testing by Goodyear reveals that traditional tyres can wear out up to 30% faster on electric vehicles due to the powerful, instant torque from electric motors and the additional vehicle weight from heavy battery packs.

As a result, the tyre company has worked with motor manufacturers to introduce its Electric Drive Technology, which is designed to address the unique performance requirements of the growing vehicle segment.

In addition to tyre durability, automakers are pressing for enhanced rolling resistance on electric vehicles. Increasing range is a high priority for fleets and drivers due to an underdeveloped electric recharging infrastructure in most countries, including in the UK. What's more, quietness and comfort from tyres are further considerations as, at low speeds, electric vehicles generated as little as half the amount of noise as traditional vehicles.

Goodyear's EfficientGrip Performance tyres with Electric Drive Technology have been specially developed to meet the unique characteristics of electric vehicles versus petrol and diesel models. Launched in the UK last year, features include:

- Extended mileage from innovative tread design that allow for a larger rubber contact patch on the road surface than traditional radial grooves. With more rubber on the road, a tyre can better cope with high levels of torque while maintaining high performance in wet conditions. The tread design also prevents sound waves from entering its grooves, reducing interior and exterior tyre noise
- A high-load-carrying construction to support the additional vehicle weight from batteries while maintaining an optimal tread footprint for high performance
- The material properties of the tread compound tuned for ultra-low rolling resistance to extend vehicle range while coping with high levels of torque. In addition, the sidewall has been designed to reduce aerodynamic drag and the profile yields less rotating mass, resulting in reduced energy consumption.

Goodyear is working with a range of motor manufacturers, including Audi, Citroen, Porsche and Tesla, on numerous electric vehicle projects to develop specific tyres for specific plug-in cars.

For example, the Audi e-tron fully electric five-door SUV is fitted with Goodyear Eagle F1 Asymmetric 3 SUV tyres to meet mileage requirements. It has a range of up to 310 miles.

As electric vehicles operate with higher torque compared to cars with an internal combustion engine, tyre wear is said to be up to 25% higher. However, it is claimed that due to technically advanced construction, the Goodyear Eagle F1 Asymmetric 3 SUV is able to address those challenges as well as optimising braking and handling performance in all conditions, improve cornering stiffness, decrease tread wear and reduce interior car noise by half.

Michelin proposes two tyre options for battery electric vehicles:

- A dedicated tyre range, Michelin Energy EV, which offers ultra-low rolling resistance
- Adaption of existing ranges to the specific needs of vehicles, such as offering Michelin Pilot Sport tyres for Tesla models.

Mr Gettys said: "**There is a strong link between the rolling resistance of a tyre and the range of a battery electric vehicle.**

"Since 1992, Michelin has understood the link between the vehicle efficiency and the rolling resistance of the tyre, which is why we have invested heavily to develop and improve the rolling resistance of our products, more specifically in our Energy ranges, to provide best-in-class rolling resistance levels.

"On the technical side, the challenges with battery electric vehicles are related to noise, range, torque and vehicle weight.

"Such challenges comes from the lack of engine noise, meaning tyres are generally the loudest single part of the vehicle heard by the driver. Michelin has developed technologies in partnership with motor manufacturers to reduce this, taking advantage of Michelin 'acoustic' technology to reduce internal noise or specific sculpture design to reduce sculpture noise.

"Torque challenges related to the electric motor are covered with specific compound and tread pattern design that improve rigidity of the sculpture and friction in the contact area.

For extra load requirements, Michelin has developed innovations that make extra load and rolling resistance compatible."

Continental does not have a dedicated tyre for electric vehicles, however the company says its EcoContact 6 is an "extremely popular choice by vehicle manufacturers for electric vehicles due to its outstanding low rolling resistance and good mileage". It is, for example, fitted to the Volkswagen ID.3.

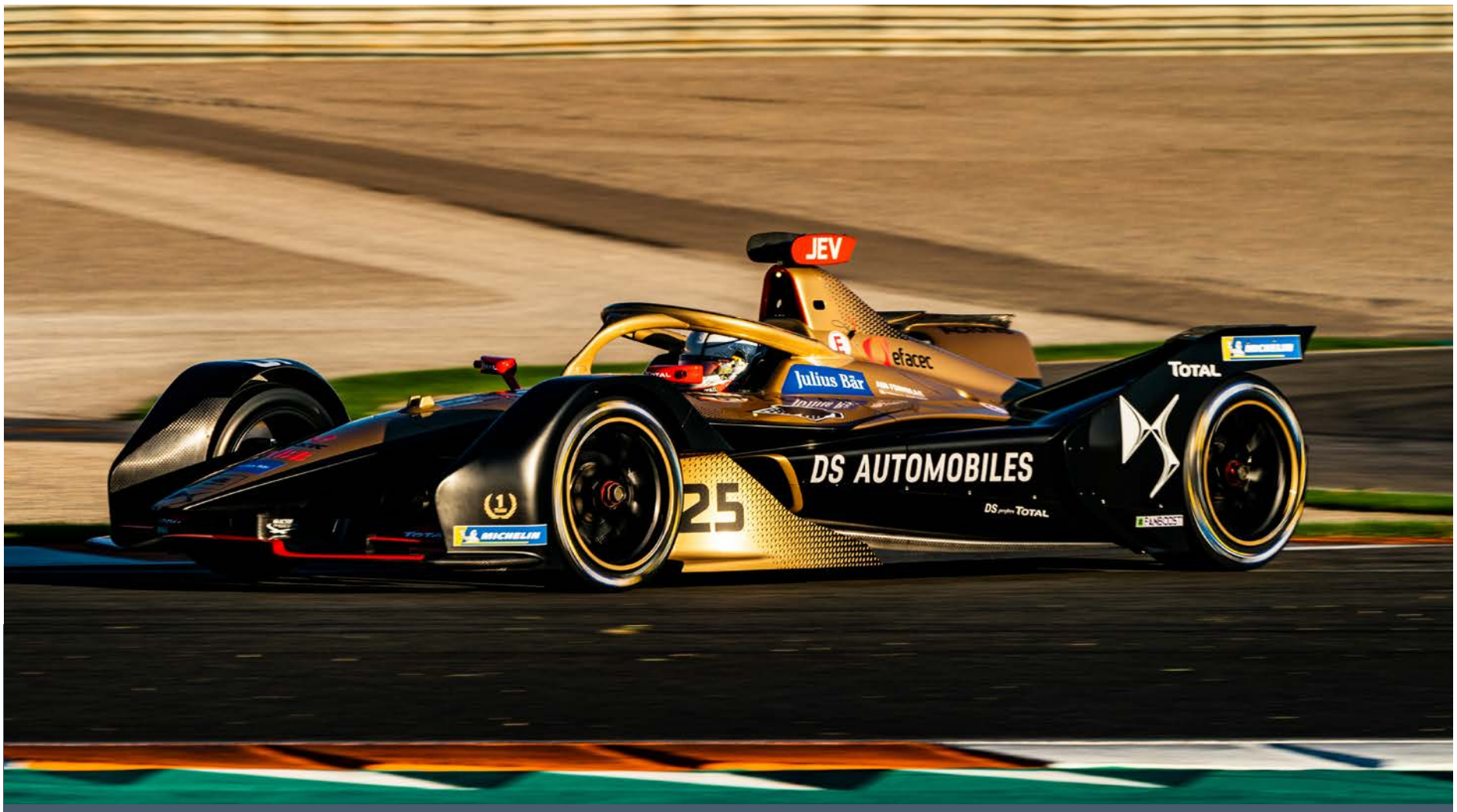
The tyre manufacturer also points out that its ContiSeal, for the automatic sealing of punctures, and ContiSilent, for a reduction in tyre/road noise, technologies can also help vehicle manufacturers reduce weight and interior noise from tyres fitted to plug-in models.

Electric vehicle tyre wear – reasons for possible lower rates versus internal combustion engine models:

- **Driving style** – a tendency to drive more carefully with an increased focus on vehicle efficiency (battery range protection).
- **Linear power delivery** – power is more equally distributed throughout a vehicle's rev range.

Electric vehicle tyre wear – reasons for possible increased rates versus internal combustion engine models:

- **Weight** – electric vehicles can be up to 30% heavier than a conventional internal combustion engine derivative.
- **Narrow tyres** – a smaller contact patch improves rolling resistance and thus mileage range but places additional stress upon a tyre per square centimetre of contact patch.



Technology developed for motor sport frequently finds its way into road-going vehicles and that is no different with Michelin's tyre developments.

In 2013, Michelin committed to the FIA Formula E Championship, an international single-seater race series using only electric cars.

One of the reasons for that commitment was to aid the development of tyres specifically for road-going electric vehicles, while rising to the challenge of designing a revolutionary racing tyre for an equally revolutionary car.

Consequently, over the years the race series has effectively provided Michelin with an opportunity to showcase solutions, including the use of 18-inch tyres for single-seaters, a size that facilitates the carry-over of technology from the racetrack to the road.

Michelin says **"Formula E is a laboratory for progress and technological innovation"** and the result has been the gradual evolution over the years of the Pilot Sport tyres.

By reducing the rolling resistance of the tyres, Michelin has enabled longer distances to be covered between battery charging stops. From one season to another, the manufacturer has calculated that continuing development enabled the previous season's cars to complete an extra lap with the same technology package.

What's more, in motorsport, excess weight is hunted down and eliminated whenever possible, in the interests of both performance and the environment. Michelin calculates that its work has resulted in a tyre weight reduction of 20%.

As tyres account for 20-25% of the energy consumed by road-going vehicles, weight reduction has a direct impact on distance travelled.

Michelin says its Pilot Sport tyres used in Formula E are **"the closest version yet to its road-going counterpart" and "wouldn't look remotely out of place on a standard road car".** The manufacturer continued: **"The information gleaned from the tyres used over the course of Formula E seasons has led to technologies being carried over to Michelin road tyre ranges.**

"Racing is a 'lab' in which we can take advantage of extreme use conditions to bring the best technologies to our mass-market tyres."

THE BIG DEBATE:

'Summer' versus 'winter' versus 'all-season' tyres. Is there a winner?

In the depths of fleet history, type procurement used to be so simple. Pop into the local fast-fit and invariably have a replacement tyre(s) fitted from stock. That's because a generation ago 19 tyre sizes accounted for up to 90% of company car tyre fitments.

However, times have changed and today around 120 tyre sizes account for 90% of fitments with the remaining 10% comprising a staggering 1,030 sizes – and that choice and complexity is continuing to increase.

Tyre choice is rising by around 10% per year, according to industry estimates, as vehicle manufacturers increasingly fit bespoke tyres to their new vehicles.

Additionally, take into account the choice of 'summer', 'winter' and increasingly 'all-season' (also known as 'all-weather') tyres and the option of premium, mid and budget brands across a wide-range of sizes and available choice has never been greater.

A decade ago 'winter' tyres, which are mandatory in some 'cold' European countries during the November to March period, were being touted as a coming force in the UK by some suppliers.

Supporters of 'winter' tyres claimed their benefits as:

- Due to being composed of more rubber and less silicone they did not harden so much when it was cold, working best in temperatures under 7°Celsius
- Wider grooves gave greater grip in snow and slush and more sideways grooves gave more edges and contact with the road surface
- A combination of composition and groove styling translated into shorter braking distances reducing the risk of a crash: at 20 mph a car or van equipped with 'winter' tyres would stop 11 metres sooner on icy roads than if fitted with 'summer' tyres; at 30 mph the braking distance on snowy roads was reduced by eight metres.

It was also claimed that as well as improving road safety, swapping 'summer' tyres for 'winter' tyres designed to perform in the harshest of conditions could actually reduce fleet operating costs.

That was based on the fact that 'winter' tyres could last as long as 'summer' tyres and performed better in winter conditions. Furthermore, depending on vehicle mileage, 'winter' tyres could last for two or even three winters. As a result, wear and tear suffered by 'summer' tyres, which is increased in harsh road conditions, would reduce so postponing their replacement.

However, truth be told, fleet demand did not really take-off except among a few businesses operating in areas such as the Scottish Highlands and the Peak District where large quantities of snow over many weeks and even months could severely hamper operations.

The failure for 'winter' tyre demand to truly gather momentum, except among a handful of fleets operating in parts of the UK where harsh weather is at its fiercest, was blamed on a number of factors: The hassle of asking drivers to have vehicle tyres changed twice a year; the inconvenience and related cost of having one set of tyres per vehicle stored for 12 months of the year; and the fact that many parts of the UK were not gripped for long periods of time by 'Arctic blitzes'.

There is always a trade-off in performance between 'summer' and 'winter' tyres in the different seasons with regard to tyre handling, braking and traction in dry, wet and snow/icy conditions.

Hence, in more recent years, the advent of 'all-season' tyres. They have been developed by tyre manufacturers chiefly for use in specific European regions with moderate climates characterised by wet, light winters, making them ideal for use in the UK.

All-season tyres are designed to give drivers a confident, safe driving experience all year round without the hassle or cost of having to change tyres twice a year.

Fleet operators and drivers, it is claimed, are increasingly understanding the benefits of 'all-season' tyres and they should look for those that are 'winter authorised' and thus display the 'Alpine' symbol, or the three-peak-mountain with snowflake. A three-peak mountain snowflake (3PMSF) symbol branded on a tyre's sidewall indicates that it meets the required performance criteria in snow testing to be considered severe snow service-rated.

However, demand for 'all-season' tyres as original equipment fitted by motor manufacturers on the production line is low because there are compromises. For example, dry-weather handling or tyre rolling resistance impacts on CO2 and therefore MPG performance. Whether that fitment trend changes over time as consumer demand for 'all-season' tyres continues to strengthen remains to be seen.

Bridgestone's Mr Powell said vehicle manufacturers did not fit 'all-season' tyres on production lines due to "compromises in performance which they wished to avoid". However, he added: "As customer demand grows for 'all-season' products within the replacement market, then perhaps the manufacturers will comply in the future."

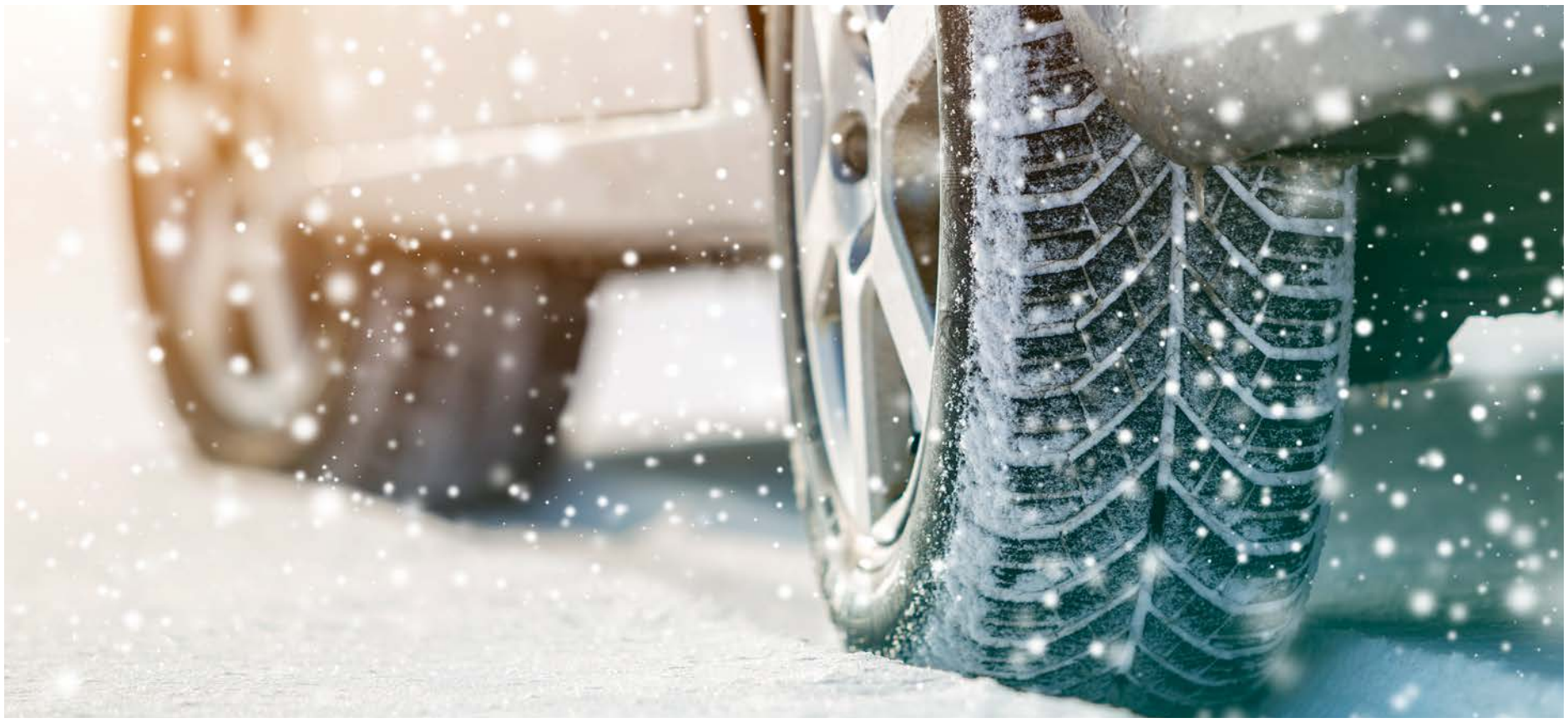
Additionally, the debate over tyre type, where 'winter' tyre policy fitment continues to remain particularly valid is at the high performance end of the market, notably in respect of premium rear-wheel drive German marques, for example BMW, Mercedes-Benz and Porsche. All-season tyres are not available for those models, typically equipped with 19 or 20-inch tyres, so 'winter' tyres, currently, are the correct technical solution for those vehicles and their drivers.

National Tyres and Autocare's Mr Quinn said: **"Our sales and fitment data for winter months in 2018 and 2019 does not support an increase in demand for 'winter' tyres over previous years and it is our view that this is due to the continued lack of extreme weather in the UK.**

"There are obvious geographical areas of the country that have a higher likelihood of need for 'winter' tyres and we are still seeing light commercial vehicle operators in Scotland looking to make the change. However, until such time as we see consistently cold and snowy weather in the UK it is unlikely significant changes will take place in this area."

He continued: **"The introduction of 'all-season' tyres has provided customers with choice and we have seen an uptake from national light commercial vehicle fleets where they may have had to decide on making changes from 'summer' to 'winter' tyres in previous years.**

"However, as this is a recent development, more information is needed on the long term performance of 'all-season' tyres before we expect to see a regular increase in demand."



Mr Powell said: **“We are seeing an increasing fleet demand, especially within the UK market where winter weather conditions are generally mild. We see van fleets also switching to ‘all-season’ products rather than having a ‘winter’ and ‘summer’ tyre policy, when a 24/7, 365-day service delivery guarantee is necessary.**

“In winter driving, ‘all-season’ tyres may be more suitable than ‘summer’ tyres, given their blend of summer and winter performance capabilities, but we recommend considering making the switch to ‘winter’ tyres to get optimal traction and performance in extreme winter conditions.”

Michelin was first to market in 2015 with its ‘all-season’ tyre. Known as the CrossClimate+ for cars, it was followed by the Agilis CrossClimate tyre for light commercial vehicles.

Michelin says its CrossClimate+ tyres are designed to counter changeable weather – such as that constantly afflicting the UK’s roads. CrossClimate+ tyres are claimed to also offer the benefits of a ‘summer’ tyre for dry and wet braking, energy efficiency and total mileage, while also boasting the braking performance and traction of a ‘winter’ tyre on cold, wet or snow-covered roads.

Paul Collier, Michelin key account manager, said: **“Michelin made the ground-breaking decision to develop a ‘summer’ tyre with full ‘winter’ capability - resulting in the Michelin CrossClimate range, which is perfectly suited for the varied weather we see in the UK.**

“By fitting CrossClimate+ tyres, fleet managers can maximise uptime, road safety and duty of care year-round, while also enjoying the durability, longevity and low total cost of ownership inherent to every Michelin tyre.

“This helps to reduce the number of wheel interventions, cuts fitting costs, improves uptime by putting an end to the timely and costly process of switching tyres as the seasons change – a process which can impact heavily on vehicle availability when it affects an entire fleet – and negates expenditure on ‘tyre hotels’ for out-of-season storage.”

The Agilis CrossClimate tyre is a more recent addition to the Michelin range. It is claimed to **“boost safety in all weathers whilst delivering high mileage, and impressive robustness, damage resistance and long-lasting performance, equating to low total cost of ownership”.**

Information provided by Michelin suggests that one fleet following a switch to Agilis CrossClimate has predicted it will deliver an extra 3,000 miles per set, versus its previous summer/winter tyre policy.

Mr Collier said: **“The Agilis CrossClimate solves the problem of wintry conditions bringing a van or light truck fleet to its knees in the UK and Ireland. It also eradicates the expense of buying different sets of winter and summer tyres - which, given the relatively mild climate across great swathes of the country in winter, can be an unwanted outlay for fleet managers.**

“This is a highly capable tyre that can handle the demands of safe driving on wintry surfaces, mud and grass, but still behaves, brakes and boasts the long lasting performance of Michelin’s summer tyre range on dry and wet roads.”

Michelin’s key reasons why fleet operators may want to fit all-season tyres to their company cars and vans are:

- To avoid the hassle of tyre swaps and out-of-season tyre storage
- Enjoy the confidence of a premium ‘summer’ tyre for dry and wet braking, energy efficiency and total mileage, combined with the performance and traction of a ‘winter’ tyre on cold, wet or snow-covered roads
- Vehicles run on tyres perfect for the UK’s unpredictable weather and milder winters
- Fleets and drivers experience “exceptional performance” in all temperatures (braking and fuel efficiency can be compromised with ‘winter’ tyres when temperatures exceed 7°C). In the UK, average daily temperatures are only less than 7°C for three months a year
- The summer compounds in CrossClimate tyres are harder wearing than traditional winter compounds, meaning longer tyre life
- CrossClimate tyres “proved exceptional” during 2018’s ‘Beast from the East’ when drivers heaped praise on the tyres via social media, according to the company.

Goodyear points out that ‘summer’ versus ‘winter’ versus ‘all-season tyres’ is always a “greatly debated topic”, which it approaches on a fleet-by-fleet basis, according to individual need.

However, said David Morris, channel manager, Goodyear Tyres UK: **“In the UK every vehicle arrives from a dealership with ‘summer’ tyres fitted. That’s because it is the tyre most suited to the UK climate. But in some parts of the UK we see a necessity for all-season tyres or a straight swap between a ‘summer’ and a ‘winter’ tyres.**

“In certain parts of the UK where the weather patterns are most definitely defined between summer and winter then we would recommend the winter product. But if a fleet is operating in the UK where the seasons are less defined then we would recommend an all-season tyre.”

The all-season tyre market is “growing at quite a rate within the UK and across Europe”, according to the company, but Mr Morris added: **“A fleet should always seek advice from either a tyre manufacturer or their tyre management provider. They are both useful sources of knowledge about the products that are fitted.”**

Continental agrees that the decision to fit ‘summer’, ‘winter or ‘all-season’ tyres “depends very much on the requirements of a fleet and to some extent the location of its drivers”.

Ms Mortimer said: **“For fleets wanting the very the best performance in terms of safety and mobility in the respective season, fitting ‘summer’ tyres in the summer and ‘winter’ tyres in winter is the best advice.**

“Independent tyre tests prove time and time again that ‘summer’ tyres perform best in summer conditions and ‘winter’ tyres perform best in cold, icy and snowy winter conditions. However, with winters in many parts of the UK being fairly mild, ‘all-season’ tyres, like the Continental AllSeasonContact, could be a solution for fleets as they provide good performance all year round without the cost and hassle of changing tyres twice a year.”

Nevertheless, she added: **“For drivers in areas of the UK, where winters are harsh with frequent freezing and snowfall, Continental would still recommend ‘winter’ tyres in winter for optimum safety and mobility.”**

Conclusion

So to the million dollar question:
Which type of tyre is best for my fleet?
As with everything there are compromises and ultimately, tyre longevity is very much related to driving performance and smoothness.

The key advantage of 'all-season' tyres is their undoubted versatility giving no requirement to swap for 'summer' or 'winter' tyres as the seasons change.

However, the biggest advantage of 'summer' tyres compared to 'all-season' tyres is their performance in dry and wet conditions. Advantages from independent testing are said to include durability, improved braking, better handling and traction as well as higher levels of comfort and less noise and proving to be more fuel efficient.

Not surprisingly, 'summer' and 'winter' tyres are engineered to perform at their best in warm weather and cold weather conditions respectively. Meanwhile the compound of 'all-season' tyres is designed for optimum performance in completely different temperatures and thus includes some of the qualities found in both 'summer' and 'winter' tyres. Therefore, all-season tyres will perform better than 'summer' tyres in 'winter' conditions, and vice versa, but they're not a straight like-for-like replacement for either.

Having said that given the typical weather and driving conditions experienced in the UK, all-season tyres are well suited to the characteristics of British summers and winters and will provide drivers with improved safety and mobility when compared with 'summer' tyres when the roads turn snowy and icy.

'Summer' tyres

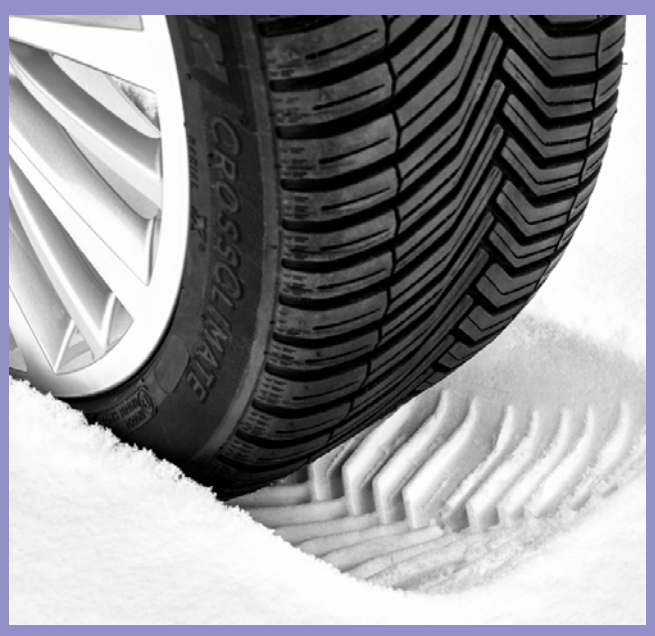
– from April to October they offer optimal safety performance above 7°C. The flexible compounds used are meant to facilitate good handling and grip, on dry and wet roads alike, while longevity and fuel efficiency are other benefits. The tyres are built for speed and agility and offer increased responsiveness, cornering, and braking capabilities. This is typically attributed to specialised tread patterns and rubber compounds that allow for improved precision on roads.
The tread patterns of 'summer' tyres have less grooves and put more rubber in contact with the road. Dimensional characteristics – the tyre's width, aspect ratio, and rim diameter – speed capability, and other design features make summer tyres more suitable and capable for increased performance in wet and dry conditions on high-performance, sports-oriented vehicles.

'Winter' tyres

– provide a consistent, high degree of safety when it's dry, when temperatures are low, and when roads are covered by ice and snow. In winter's cold temperatures, a non-winter tyre tread rubber becomes stiffer and less able to conform to even a dry road irregularities. Modern studless 'winter' tyres are capable of maintaining flexibility in freezing temperatures, thanks to advances in rubber compounding technologies. That increased rubber flexibility allows tyres to maintain traction on snowy, icy, wet and dry driving surfaces. Studless 'winter' tyres generally have deeper tread depths than 'summer' or 'all season' tyres. Deep tread depths allow a tyre to manage snow and slush dispersion. It also allows a tyre to provide better snow-on-snow traction by packing it within the tread blocks. Another feature are thousands of tiny slits in the tread pattern, called sipes. These act as thousands of biting edges on ice that help with acceleration, deceleration, and stopping.

'All-season' tyres

– are perhaps best described as offering a balance of capabilities. Effectively a combination of 'summer' and 'winter' tyres they provide acceptable performance in wet and dry conditions as well as traction in snow. They are suitable for all weather conditions due to their individual characteristics of moderate tread depths and rubber compounds engineered to provide longer tread life than 'summer' tyres, which have shallower tread depths. 'All-season' tyres perform reasonably in warm weather, but they may offer less grip than 'summer' tyres, sacrificing some steering, braking, and cornering capabilities. That trade-off is necessary for 'all-season' tyres to provide acceptable performance in light winter conditions and provide longer tread life. They are capable of providing traction in winter due to tread groves aimed at removing water and slush, but are not at their optimum in extreme winter driving conditions.



Venson Automotive Solutions' view

'All-season' tyres should be fitted to vehicles that are identified by fleet operators as 'business critical', according to Mr O'Neill.

He said: **"The UK does not consistently have the extremes of weather that justify the cost and inconvenience of changing tyres on a season-by-season basis.**

"For vehicles that are identified as business critical or that are required for emergency response on a 24-hour basis we recommend 'all-season' tyres.

"In many cases it may not be the whole of a fleet that is required to be fitted with 'all-season' tyres only those - perhaps also those in certain locations."

Ultimately Mr O'Neill said: **"'All-season' tyres are not a magic carpet, but if drivers live on a steep road or have a steep drive they can also be a useful asset."**

Case study

South East Coast Ambulance Service NHS Foundation Trust has upgraded its fleet of more than 350 ambulances to a Michelin Agilis CrossClimate tyre policy, in a move to ensure it operates on tyres delivering the best possible performance throughout the year.

The Trust, one of seven with which Venson Automotive Solutions has a business partnership, operates from 33 primary ambulance stations providing cover for 4.75 million people living across an area of 3,600 square miles spanning East Sussex, West Sussex, Kent, Surrey and North East Hampshire. The Ambulance Service operates a fleet of Fiat Ducato and Mercedes-Benz Sprinter ambulances.

Fitment of Michelin Agilis CrossClimate tyres replaced a policy of fitting Michelin Agilis Alpin winter tyres year-round.

James Nutbrown, west workshops area manager, said: "Every aspect of an ambulance's specification is critical for us; but particularly the tyres. Our crews are required to make swift progress under blue-light conditions and ensuring their safe mobility in all weathers is paramount.

"Winter tyres have previously served us well, but you pay the price in the summer months with increased tyre wear. Michelin recommended Agilis CrossClimate as a way of benefiting from all the performance advantages of a summer tyre on dry and wet roads, but with guaranteed winter performance built-in when the temperatures drop and in the event of ice or snow."

The Service has reported improved wear rates, with the first sets of Agilis CrossClimate tyres wearing evenly across the surface of the tyre - and tread depth readings pointing to extended replacement intervals.

The Agilis CrossClimate tyre fitment policy were inspired by Michelin's CrossClimate+ car tyre range, which was already fitted across the Service's rapid-response paramedic vehicles.

Venson Automotive Solutions has fleet relations with seven ambulance trusts across the UK. Every UK public sector ambulance fleet fits Michelin tyres on a first-choice policy.

Procurement

Why buying tyres online isn't always what it seems

Why are new tyres cheaper when searching online than when buying through a garage, fast-fit centre or via a leasing company?

It is a question that is frequently asked and, actually, the answer is pretty straightforward and is caveated, sometimes in small print on websites, by the words 'buy fitted or buy delivered'. In other words there are two prices and ultimately tyres have to be fitted!

What's more, some suppliers include a new standard tyre valve as part of the tyre fitting service as well as wheel balancing, critical to avoiding premature wear and uncomfortable vibrations.

For many fleets, particularly, light commercial vehicle fleets, keeping downtime to a minimum is business-critical. Industry research has estimated the cost to a business in terms of lost work for each day a van is off the road at as much as £800.

Consequently, for many fleet operations tyre fitment by a mobile service comes into its own. But buying tyres online means that a mobile fitting option is not always available and thus operating costs soar as vehicle downtime bites.

If a product or service is cheap then it is cheap for a reason. Therefore, look below the headline price and evaluate the true cost of online tyre buying versus tyres supplied by a proven partner.

Online tyre buying versus the benefits of sourcing via Venson Automotive Solutions

Buying online

- Increased downtime – mobile fitment is only available in certain post codes and usually for two or more tyres or above a certain value.
- Increased costs – opting for mobile fitment, if available in a chosen area, can incur an additional charge of perhaps £20 per transaction.
- Price fluctuation – tyres bought on the internet can vary from one date to the next as pricing reflects market conditions and product availability.
- Shorter credit terms – buying tyres online means they are paid for at least three days before fitment.
- Reduced flexibility – mobile fitment may not be available inside the London Congestion Charge zone.
- Inconvenience – tyres bought online may have to be fitted at the time and place of a supplier's choosing rather than a fleet's.

Venson Automotive Solutions' supplied

- Reduced downtime – mobile tyre fitment can be scheduled throughout the UK at no extra cost. Presently more than 35% of tyres supplied by Venson are for mobile fitment.
- Reduced costs – there is no additional cost for mobile tyre fitment.
- Price stability – standardised pricing is promised with no fluctuation on tyre distributors' pricing.
- Improved credit terms – standard 30 day credit terms apply, no paying before fitment.
- Flexibility – tyres can be fitted within the London Congestion Charge zone and at no extra cost.
- Convenience – tyres are fitted at a time and place to meet fleet requirements to keep vehicle downtime to a minimum.
- Expertise and advice on hand – Venson has access to more than 100 knowledgeable people in a 24/7, 365-day operational contact centre.
- No geographic boundaries – tyre fitment is available UK-wide 24/7 every day of the year.

Venson Automotive Solutions encourages its fleet customers to call its operations centre when replacement tyres are required.

The company tasks its chosen fast-fit partners with:

- Providing a free-of-charge mobile tyre fitment service
- If replacement at a fast-fit outlet is required the 'phone us first' rule ensures that the required tyres are in stock thereby enabling first-time fitment, particularly where a policy dictates a brand preference.

Mr O'Neill said: **"The arrangements that we have in place critically ensure that vehicle downtime is kept to an absolute minimum, which keeps fleet operating costs under control. Additionally, our policy ensures that the requested brand of tyre is fitted at the first time of asking as replacement tyres have been ordered in advance if they are not in stock."**

For further information please contact Venson Automotive Solutions on 0330 094 7803, email info@venson.com or go to venson.com

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