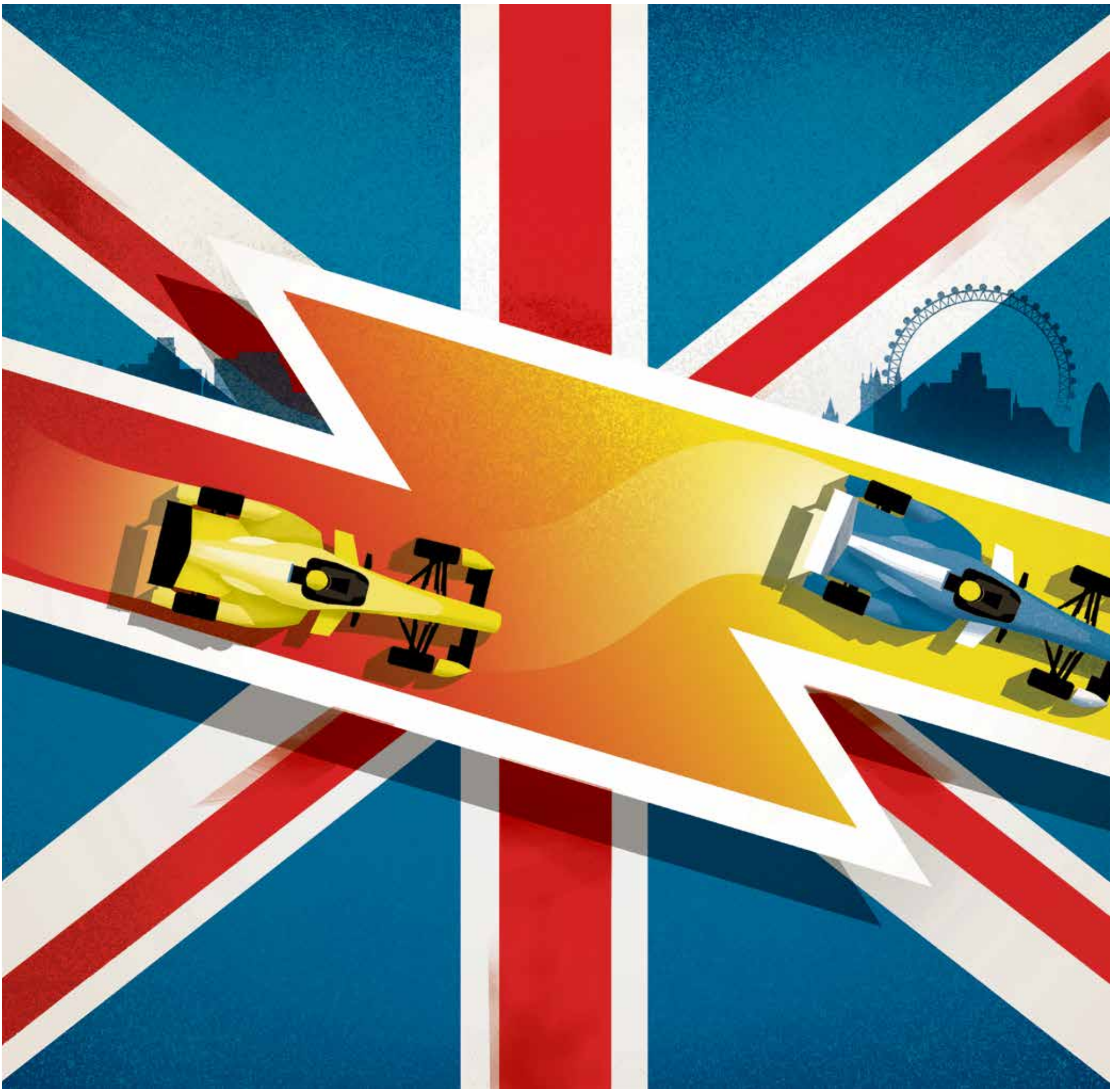
FORMULA E




28th June, 2015
FIA Formula E Visa London ePrix
10 teams
20 drivers
52.2 miles race length
A close battle until the last corner
Nelson Piquet Jr. claiming the first-ever
2014/2015 FIA Formula E Championship title
1-point advantage defining the winner
(144 points – Nelson Piquet Jr.,
143 points – Sébastien Buemi,
133 points – Lucas di Grassi)
1 spectacular finish of the inaugural season
An entire championship making history
These are the details that make up
one great moment of thousands
As Official Logistics Partner we know:
Great is in the detail
dhl.com/InMotion
FIA Formula·e CHAMPIONSHIP
DHL
Official Founding & Logistics Partner

FORMULA E

DISTRIBUTED IN
THE TIMES

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FIA

Mid-race at the Visa London ePrix in Battersea Park last June, the final race of the 2015 season

Revving up against the F1 gas guzzlers

Formula E electric-powered ePrix racing returns to London's Battersea Park from July 1 to 3 with a season finale two-race spectacular

OVERVIEW
DAN MATTHEWS

Formula E is the accumulation of more than 100 years of motor racing. What started with vast circuits and slow, lethally under-equipped cars is now a futuristic science of construction and engineering honed to create the most exciting sporting experience possible.

Having established itself in a nail-biting first season, Formula E returned in 2015 with new rules, new teams, more funding and a swollen brigade of devotees. What fans discovered is that this isn't simply an environmentally friendly type of Formula 1, but an entirely new code of racing.

The cars run with a whoosh rather than a roar and do not emit harmful fumes. Some sound has been added to mimic petrol engines; a century of listening to them roaring around tracks means people still expect noise. But these are only two of many things distinguishing Formula E from its fossil-fuelled counterparts.

Constructors use the same chassis, but are permitted to develop large parts their cars' infrastructure, including the e-motor, gearbox and cooling system. Like Formula 1, teams have two drivers, but different rules govern pit stops, tyre use and available power.

Qualifying takes place on the same day as the ePrix and the five fastest drivers are invited back on to the track to vie for pole position on the grid in a "super pole shootout". Fans can even win their drivers extra power by backing them on social media in the weeks leading up to races.

All this makes Formula E unique. It retains the glamour associated with racing and adds spice, for example by staging meets on temporary race tracks in city-centre locations, such as London, Mexico City, Berlin, Hong Kong and Long Beach in Miami. This gives organisers the chance to set tracks in large metropolitan areas, among awe-inspiring scenery with familiar backdrops.

In its first two years, race organisers have been blessed with closely fought, competitive seasons, something which has given this fledgling race category an almighty boost. Two years of dominance by a single team or a driver way out in front might have poured cold water on its development.

> We experienced 95 per cent growth in sponsorship and hospitality sales in our second year

In season two, fans have been treated to a photo finish, between two established stars of the sport, Lucas di Grassi and Sébastien Buemi, who are separated by a single point at the top of the leader board.

This close competition is one reason why Formula E has attracted increasing amounts of sponsorship from big and glamorous advertisers such as Julius Baer, Visa Europe and Avis UK.

Sam Piccione III, chief revenue officer of Formula E, says: "We started season one with an amazing group of world-class sponsors who came on board because they could see the potential and understood the ethos of Formula E. Moving into our third season we have added concrete evidence of the sport's impact such as audience figures and, of course, the races themselves, which enhance the story greatly.

"We experienced 95 per cent growth in sponsorship and hospitality sales in our second year compared with the first and, such has been the success of these deals, we have entered into 40 times more commercial conversations year on year heading into season three.

"We are constantly evolving the opportunities by targeting individual race sponsorships and developing a headline cup sponsor for major brands with whom we want to strike long-term partnerships. Being a mobile event, we can also customise hospitality spaces to suit people's needs, making our product very enticing to commercial partners."

Summing up Visa's decision to take lead sponsorship at the inaugural Paris ePrix, Mark Antipof at Visa Europe says: "The partnership between Visa Europe and Formula E represents the coming together of two truly innovative brands. We share fundamental values with Formula E, namely mobility, agility, speed and technology."

According to president of Panasonic Industrial Devices Jeff Howell, Panasonic elected to co-sponsor the Dragon Racing team with Mouser Electronics this season because of Formula E's reputation for advanced electronics and cutting-edge innovation.

Organisations sponsoring races are exposed to a global TV audience. At the start of season one, the value of this exposure was estimated by organisers at about $50 million a race, an amount that has increased as interest continues to develop.

The final race of the season was broadcast on ITV and drew 1.2 million viewers in the UK alone, as well as 60,000 people trackside over the three days the circuit was open to ticket holders.

But Formula E is not standing still. It is justifying its reputation for constant innovation with new additions such as the ROBORACE, in which the competitors are all autonomous vehicles. Chief designer Daniel Simon, who previously worked on futuristic Hollywood films such as *Tron: Legacy* and *Oblivion*, says: "My goal was to create a vehicle that takes full advantage of the unusual opportunities of having no driver without ever compromising on beauty. Racing engineers and aerodynamicists have worked with me from the beginning to strike that balance."

Another innovation is eRace, which allows fans to compete virtually in a race against their favourite drivers. They are invited to set their best lap times on the Battersea circuit in a gaming booth and the winners get access to the grid on race day.

Striving for the podium with a purpose

Formula E boss with the Virgin DS Racing team **Alex Tai** tells of his hopes and expectations for the groundbreaking sport

INTERVIEW
GABRIELLA GRIFFITH

01
Alex Tai with Jean-Éric Vergne at the Berlin ePrix

02
Sam Bird of DS Virgin Racing celebrates his victory at the Buenos Aries ePrix in February

When the DS Virgin Racing team lines up for this year's Formula E finale in London's Battersea Park, all eyes will be on the only British team on the grid.

But despite winning on the track last year and coming to the end of the 2016 championship in a healthy third position, this season hasn't been an easy ride for Sir Richard Branson's team.

"We've had real trials and tribulations with the current car," says Alex Tai, DS Virgin team principal. "We thought we had designed a fantastically efficient system, but it seemed a little overweight and it's fair to say we struggled in the first race in Beijing."

DS Virgin drivers Sam Bird and Jean-Éric Vergne finished seventh and twelfth respectively in China and, as the cars are homologated at the start of the season, the team had to stick with what it had.

But that hasn't stopped DS Virgin from going on to score the highest number of qualification poles of any team and bagging a win for Bird in Buenos Aires. "We've had to work really hard, and I'm so proud of the team and our performance partner DS Automobiles; they have done a fantastic job of bringing the car up to a point where it's competitive," says Tai.

The July finale will be the second time Battersea has welcomed Formula E's electric racing cars into its leafy park and last year the south-west London spectacle had a 60,000-strong audience.

Tai is confident that this year will be even more impressive, having learnt some lessons last time. "I was a little disappointed with the show last year," he says. "I thought we could have done more for people with viewing screens. We've addressed that and, where last time we had four screens, this year there will be 15. The racing itself will be just as exciting and hopefully the viewers will be able to understand it a bit better and become even more impressed."

Any new sport is bound to have some teething problems, but the Virgin Group seems happy to deal with these because Formula E resonates with the brand in a way that other racing sports have failed to do.

"I ran our Formula 1 team when we competed in 2010/11," explains Tai. "It's a great sport and it has been running for a long time, but the CSR [corporate social responsibility] basics weren't really the ones we were looking for. We tried to force it a little bit as a brand, tried to bring in new fuels, which wasn't accepted by everyone, and we made the first computer-generated car, but it came last. I don't think we were as successful as we wanted to be."

The sport's refusal to adhere to Max Mosley's cost cap was also a contributing factor for Virgin's exit from the sport. The team only completed one season in Formula 1 before bowing out, but it wasn't long before they were back in the pits again, albeit for a very different kind of race.

"We were a bit shy of Formula E at first, but once we looked at the details, we realised it was everything the Virgin brand stood for," says Tai. "There was a cost cap associated with it, so it wasn't just an obscene fight against the guys with the biggest wallets. Everyone has the same resource, so it's down to who has the cleverest engineers, rather than richest backers."

The DS Virgin Racing team also believes they are not only in the business of entertaining crowds in Formula E, but pushing forward and popularising an essential new technology, one that might help us to protect our planet.

Tai says: "In the future, we believe all vehicles in cities should be electric. Sir Richard once said he hopes we look back at cars with petrol and diesel engines travelling through our cities in the same way as we look back at people smoking in restaurants and think how did we ever let people do that?"

Does the Virgin Group entrepreneur drive an electric vehicle himself? "He's got a few, but he lives on an island so he doesn't have a huge requirement for that," laughs Tai. "He's got a purely electric golf buggy, which we dressed up in DS Virgin Racing colours for his birthday."

> Everyone has the same resource, so it's down to who has the cleverest engineers, rather than richest backers

Tai has had an interesting career with the Virgin Group, joining as an airline pilot, having trained in the RAF. He met his boss on his first flight, when Sir Richard asked the pilots on board for advice about where to launch his hot air balloon.

"He was struggling to get it airborne from Oxford, so I suggested he try launching from Africa," says Tai. This suggestion earned him an invite to work on special projects with Sir Richard and, having helped with the balloon and GlobalFlyer nonstop, solo, round-the-world flight success, Tai became chief operating officer of Virgin Galactic. "I'm still due to fly the spaceship," he says.

> Formula E is not racing milk floats – it's glamorous, very powerful and the cars are driven by probably some of the best drivers in the world

But back on Earth, Tai is excited about the future of Formula E, with many more car manufacturers joining in the near future, all keen to get a handle on the latest electric car technology.

"Formula 1 only has a limited number of car manufacturers in the sport, whereas Formula E has Renault, Audi, Peugeot and Citroen. Jaguar Land Rover is lined up to join next year and BMW has said it will come in from season five," he says.

Formula E is governed by the FIA – Fédération Internationale de l'Automobile – and together with the teams has come up with a road map for the next few years to push the technology as fast as possible. At the moment, the drivers have two cars for each race, because their batteries simply don't last long enough to finish. But the FIA and the teams are aiming to have only one car by season five.

"We are working to develop new motors and come up with different cell designs to improve the energy density of the batteries," says Tai. "Virgin Racing Engineering is working with all sorts of incredible people from HP Enterprises to an Oxford University spin-out called YASA.

"If we're able to change perceptions about electric vehicles, then we can increase the uptake as well as push the technology and development of electric vehicles. Formula E is not racing milk floats – it's glamorous, very powerful and the cars are driven by probably some of the best drivers in the world."

VIRGIN'S PIONEERING VENTURES

VIRGIN ATLANTIC CHALLENGER SPEEDBOAT	VIRGIN BALLOONS	VIRGIN GLOBAL CHALLENGER	VIRGIN ATLANTIC GLOBALFLYER	VIRGIN MONEYYACHT	VIRGIN RACING	VIRGIN GALACTIC	E-RACING CARS
Fastest transatlantic crossing	Passenger rides launched	Final round-the-world balloon attempt	First non-stop round-the-world flight without refueling	Eastward transatlantic sail attempt	Formula 1 World Champions with Brawn GP	Powered flight ahead of first commercial space flight	DS Virgin Racing Formula E Team

COMMERCIAL FEATURE

DIRECTIONS ON THE ROAD TO ELECTRIC CARS...

What's around the corner for electric cars, their production and adoption by motorists? ***Norbert Ruecker****, head of commodities research at Julius Baer, offers some advice*

Julius Bär
YOUR WEALTH MANAGER

Formula E is provoking a lot of questions among fans. First they ask: "When will electric cars take over from petrol and diesel?"

When you see these cars whizz around the track, it's natural to get excited. The performance of the vehicles is indeed remarkable. And when you look at the car industry, and see the rise of Tesla and the focus on electric power at the major brands, it's clear something big is happening.

As head of commodity research at Julius Baer, I am often asked about the future of electric vehicles. How fast will demand rise? And what will this do to the oil industry?

People also want to know which companies in the field they should invest in. Here are my thoughts on these questions.

The initial point to make is it's not possible to make precise forecasts in the long term; neither for GDP growth, the oil price or the success of any technology. The longer the time frame, the less certain the forecast.

Economist Philip Tetlock has done some excellent work showing why this is the case. Economies are chaotic, like the weather. A single small change can influence the entire system. So we need to shift our focus away from precise forecasts to unveiling the mesh of forces that shape the economy. Then we can envisage scenarios likely to arise in the future.

The best way to evaluate scenarios in the global economy is to look at megatrends. These are fundamental changes taking place on a large scale. These fundamental changes tend to culminate over time triggering the structural transformation of industries and businesses, unleashing "disruptive" forces, to use one of today's buzzwords.

The energy market is undergoing profound change these days. Energy use is increasing as the world population grows and especially as Asia is growing at a rapid pace. But there is no scarcity. New energy sources have emerged as result of the past decades' high prices and investments in innovation and technology.

Solar and wind become an evermore cost-competitive alternative to the old-fashioned power plants. The shale revolution has turned the oil and gas business upside down, first in North America and then globally. The supply abundance dismisses earlier peak oil fears and suggests low prices for longer. Meanwhile, hybrid cars have become a common sight.

Digitalisation is changing consumer behaviour. Uber, Zipcar and other apps are changing the way we access mobility and think about car ownership. Climate change and air pollution are top political priorities, and today's energy use a key culprit.

Governments push for action and produce a constant flow of environmental regulation, demanding change from the energy business. Last but not least, social values are changing. Consumers increasingly seek sustainability and value the concept of a sharing economy, which differentiates using from owning.

With these megatrends in mind, it is possible to analyse the prospects of an individual technology such as the electric car. Take the environment. Policymakers in cities are responding to pollution by imposing environmental regulations. For example, London has an ultra-low emission zone, which even the top management of the global car manufacturers had to take notice of.

More generally, regulations demanding better fuel efficiency are enough to offset the increased buying and driving of cars. In Europe and United States, oil demand probably peaked between 2004 and 2005. Moreover, the world's urban centres increasingly have constraints on infrastructure. They lack space and public money simply to expand the road and rail networks to mitigate traffic congestion.

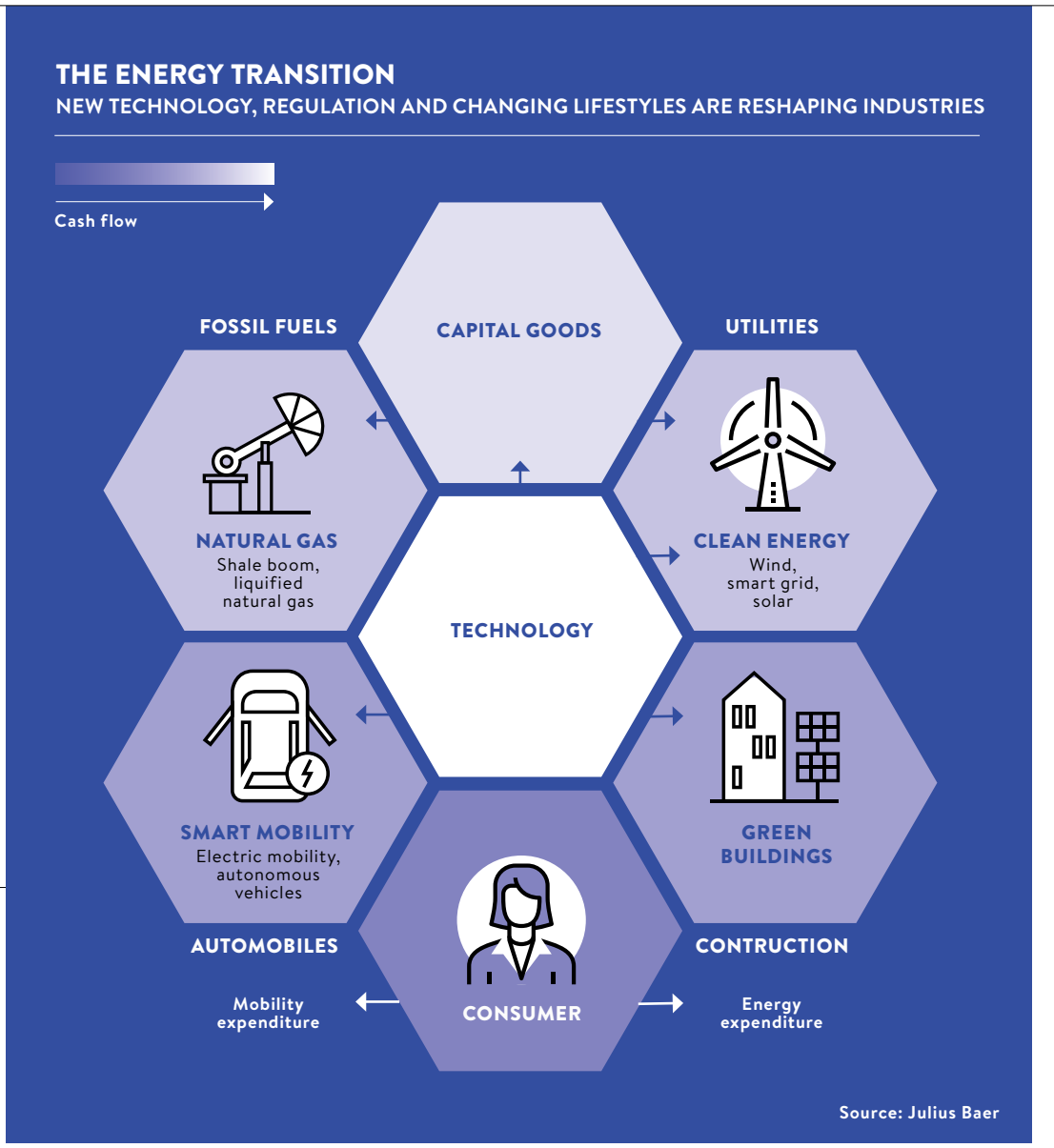
Take technology. Electric cars are still a niche today but, despite the fall in oil prices, the sector continues to grow robustly. With growth come economies of scale and lower costs, accelerated by the continued development of the technology. The high-cost disadvantage of electric cars slowly erodes.

Big cities are likely to take centre stage in an electric mobility revolution in the making. In big cities, the aim to combat air pollution, the need to use infrastructure efficiently, the support from advances in automated driving, and the large crowd of open-minded consumers willing to use apps and share cars instead of owning possibly creates a breeding ground for a new type of on-demand, electric mobility.

The latest announcements by the some of the car-sharing companies in fact point in this direction. Interestingly, North America, Europe and China seem equally ready in the starting blocks.

Where could we be wrong? For example, if car-sharing fails to become socially acceptable, this will reduce adoption of on-demand electric mobility. Or, if governments lose interest in environmental issues, we will also see slower adoption of electric vehicles.

> Big cities are likely to take centre stage in an electric mobility revolution in the making



LEFT
The Energy Transition

BELOW
Julius Baer Punta del Este ePrix, 2015

Investors obviously want to know how to get exposure to the story of electric mobility. First, we have to identify the key areas adding value. In electric cars the battery technology, the drive system and charging infrastructure are the stand-out areas.

Second, we can look for companies operating in these areas with a competitive advantage based on a superior product, healthy financials, and prudent and responsible corporate culture. These are the companies you should focus on.

The third step is to manage risks. The best way is to diversify. Spread your holdings. Don't put all your eggs in one basket.

This scenario-led approach allows an investor to think about a subject like electric cars in a meaningful way. A more simplistic approach won't work. For example, lithium demand for batteries is set to triple by 2020. A good investment? Well, you'd need to study the companies in the market and political issues in South America, and gauge the entry barriers into lithium mining to make a decision.

It turns out to be very complex. But it is the only way to come up with valuable answers to some very important questions.

For more information please visit www.juliusbaer.com

Taking the electric racer apart...

The chassis and battery are standard, but for season two Formula E has opened up development of the car's other components to the teams' engineers

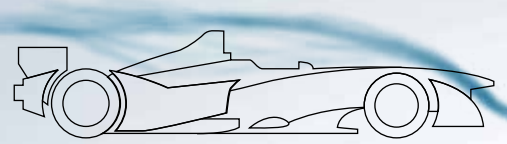
FORMULA E CAR
CHARLES ORTON-JONES

Motor

Last season there was a standard motor for all teams, based on the McLaren P1 sports car. This year motor design has been opened up for development. Most teams have opted to maintain a single motor, but DS Virgin and NextEV are the exceptions. Both are running twin motors in which two motors run on a single gear. It's experimental, but NextEV has confirmed they will stick with a home-brew two-motor recipe next season.

Aerodynamics

Teams get the same standard Spark-Renault carbon fibre bodywork, with two areas to play with. The front wing can be angled from 15 to 35 degrees and the rear wing can be shifted from 10 to 20 degrees. The greater the wing angle, the more grip; the lower the wing angle, the higher the top speed. The variations matter. Teams will think through downforce strategies depending on weather conditions, driver style and the track, often experimenting to try and gain the edge. It's probably the variable least appreciated by new fans.



Battery cell

Everyone gets the same battery cell. And that's the way it's going to be until at least season five. Williams Advanced Engineering produces the 200kg lithium ion unit, which outputs a maximum of 28kW/h of charge. During the race, 170kW powers the car, with an extra 10kW to 30kW unleashed by activating FanBoost to a total of 100kj or 50 horsepower in old money. The future? Mahindra, DS Virgin and Renault confirm they are looking at alternative battery suppliers.

Gearbox

Complicated? You bet. In the first season, all cars ran with the same five-gear Hewland box. This year it's a jamboree, with teams running one, two, three, four and five gears. Motor renegades DS Virgin and NextEV are on the single fixed gear, Andretti are using all five and the others are on other combinations. Why? Weight plays a part. Stripping out gears lowers weight. Each gearshift costs milliseconds of downtime. Renault e.dams have a starter gear and racing gear. Which is best? Too early to decide. Gear philosophy is quite simply the hottest area of innovation right now.

Tyres

All teams use the standard Michelin Formula E tyres. These are treaded rather than the slicks usually seen on the racing circuit. Estelle Perrier, the development engineer, explains: "To be able to decrease the number of tyres you have to have a polyvalent approach – a tyre able to operate in slick and wet conditions. To be able to operate in wet conditions, even with a small quantity of water, you need to have a groove." They work well from 5C to 53C. At 18 inches wide, tyres offer low rolling resistance and less deformation, which absorb energy. And they look like ordinary road tyres – good from a marketing point of view.

Chassis

The standard Dallara-designed chassis is monocoque carbon fibre. The crash testing for safety rivals that of Formula 1 for rigour. The front suspension is the same on all the cars, but the teams are free to develop their own rear suspension parts, so long as they are the same on each side. Will the chassis be opened up for development? In March, the FIA said it was looking to put the design out to tender, but may stick with a single design for all teams to keep costs down.

Steering wheel

Racing aficionados love unpicking the secrets of the steering wheel. A Formula E driver has oversized buttons to alter brake regeneration and torque, and a map switch to alter performance during the race, according to strategy. There is a radio button to talk to engineers, a speed lane limiter for pit stops, a dash scroller, a button to select neutral and a control marker to help engineers measure performance between points. On the back of steering wheel is a "re-gen" paddle to recover energy without using the brakes. Gear paddle-shifters are left and right. And top right at the back is the FanBoost paddle. Just hope you are popular enough to need it.

3D illustration by **Graham Murdoch**. All photographs by FIA

Drivers on track for glory

Formula E has attracted a high calibre of world-class international racing drivers, who are a mix from Formula 1, the FIA World Endurance Championship, Le Mans, Indy Car, Rallycross, Germany's DTM, Super GTs and more. Here are five rising stars...

RISING STARS
NICKI SHIELDS

LUCAS DI GRASSI

One of the first major drivers to join Formula E, Brazilian Lucas di Grassi, of German team Abt Schaeffler Audi Sport, is a former GP2 Series runner-up and ex-Formula 1 driver with Virgin Racing in the 2010 season.

Formula E started well for Di Grassi when he made history by claiming the inaugural race victory in Beijing in September 2014. Since then he has remained consistent and delivers solid performances under pressure.

In season one he displayed superb form, but ultimately finished in third place, just 11 points behind Nelson Piquet Junior. Season two has been a commanding year for Di Grassi, as he has dominated the front of the grid, repeatedly finishing high in the points. He holds the record for being on the podium in seven out of eight races this season and of those, three were wins.

Di Grassi currently leads the championship, but has hot competition. He has always been a huge ambassador for the sport and believer in an alternative electric powertrain. He also races hybrid sports cars in the World Endurance Championship for Audi Sport.

SÉBASTIAN BUEMI

Swiss star Sébastien Buemi, with Renault e.dams, is also hoping to claim the championship title. Buemi started season two with high hopes and the odds were in his favour after pre-season testing, having missed out on the inaugural Formula E championship title by one point.

This season the rules were opened up allowing teams to develop the powertrain from the battery backwards, allowing changes to the motor, inverter and rear suspension. Renault e.dams were quickest on the track by some margin, so Buemi began in a strong position and the consensus was he could run away with the championship. But after mistakes in qualifying and a problem with the car's braking system, he fell behind Lucas di Grassi.

Buemi is fast – he has clocked the Visa fastest lap no less than four times – but despite his notable pedigree, he shows signs of cracking under pressure. However, he has an impressive racing record, as a former Formula 1 driver for Scuderia Toro Rosso for three years, and is currently a test driver at Red Bull Racing and driver for Toyota in the World Endurance Championship, which he won for the LMP1 class in 2014.

SAM BIRD

Sam Bird is one of three British racing drivers and makes up one half of the only British team, DS Virgin Racing. Former Formula 1 Toro Rosso driver Jean-Éric Vergne completes the outfit. Bird is also one of 11 Formula E drivers who competes in the World Endurance Championship, for the Ferrari team.

Currently third in the Formula E championship, Bird's driving style is well suited to the e-cars. DS Virgin opted for the single-gear, twin-motor solution, resulting in a much heavier rear end of the car making it difficult to handle around the tight corners of the Formula E circuits.

Fortunately, Bird is a smooth driver and good at carrying momentum through the corners. This has not only helped him get round the track faster, evidenced by his three pole positions, but also more efficiently, which is critical in a championship with energy management at its heart.

Bird secured DS Virgin's first win of the season when he held the lead throughout the Buenos Aires ePrix in February, crossing the line ahead of Sebastian Buemi and Lucas di Grassi.

NICO PROST

Son of four-times Formula 1 world champion Alain Prost, Nico Prost is making a name for himself with the Renault e.dams team. But he has perhaps the added pressure of being under the management of his father, along with the founder of the DAMS team Jean-Paul Driot.

Nico has finished in the points in six out of eight races this season. It's an impressive achievement for the Frenchman, but perhaps expected when you are sitting in the cockpit of what should be the fastest car on the grid. He holds fifth position in the Formula E championship.

A longstanding racer in the World Endurance Championship for Lotus Rebellion Racing, he also competes in the Andros Trophy French national ice-racing championship and is a reserve driver for Lotus F1.

Nico was the first driver to achieve a pole position in Formula E in the inaugural 2014 Beijing ePrix. He led the race until the last lap when he was involved in a collision for which he was subsequently given a ten-place grid penalty for the following race in Malaysia where he was again fastest in qualifying.

01 Lucas Di Grassi

02 Sébastien Buemi

03 Sam Bird

04 Nico Prost

05 Nelson Piquet Jr

NELSON PIQUET JUNIOR

Another famous son, Brazilian Nelson Piquet Junior is the defending Formula E champion. He has rebuilt his career after leaving Formula 1 amid scandal following a crash in the 2008 Singapore Grand Prix.

Hired first by China Racing, his 2014-15 Formula E campaign began well with podium finishes in Punta del Este and Buenos Aires, and his first Formula E victory at Long Beach, followed by a second in Moscow.

Currently languishing in 16th position in the championship, Piquet has always been the master of energy management, although his NextEV TCR team has struggled to provide a competitive car after choosing the single-gear, twin-motor option for its season two powertrain.

Although Piquet has blamed his poor performance this season on the car, it is worth noting that his British team mate Oliver Turvey has outpaced him on more than one occasion. Piquet has only finished in the points once, but has signed to NextEV TCR for at least another season.

He was runner-up in the 2007 GP2 Series, fourth in the 2014 Global Rallycross Championship and seventh in the 2012 NASCAR Truck Series.

COMMERCIAL FEATURE

GAME ON FOR VISA EUROPE AND FORMULA E

Visa Europe and Formula E – racing partners who challenge the status quo

01

02

VISA

As both entertainment and motor racing, Formula E breaks the mould. Visa Europe has supported the FIA Formula E Championship since its inception because, like Visa in the payments world, Formula E disrupts the world of motor sports, combining some of the biggest names in motor racing with a sustainable clean energy alternative.

"It's the perfect fit," says Mark Antipof, chief officer, sales and marketing, at Visa Europe. "Formula E disrupts and innovates in the traditional motor sport world. They are challengers and combine the best of sport with the latest technology. This is the perfect fit for Visa."

Since their first collaboration, Visa and Formula E have established a close partnership. At this year's London race, they are excited to introduce the Visa Fan Garage. "These are the best seats in the house. We've fitted them out to look like one of the team garages. Sitting in them gives you a real 360-degree experience," says Gary Twelvetree, Visa Europe's executive director for brand and central marketing.

Fan Garage visitors also get free headsets through which they can hear unique content and listen to live broadcasts as they're watching the race.

Formula E is one of the most digitally engaged sports; highlights of track action are sent, in real time, to social media followers around the world. Tracks are equipped with recording equipment which would be the envy of other venues, with 360-degree cameras and live text commentary, offering unique insights into the drivers' world. Fans are able to play an active role in influencing the outcome of the event, using the revolutionary online voting system, FanBoost, through which fans can choose to give their favourite driver extra power.

"Together we're creating a blend between the online and offline worlds," says Mr Twelvetree. "This kind of transparency is impossible generally in other sports, but it's something that younger audiences expect more and more. They've grown up in a social world. It's all part of engaging with a digitally savvy audience."

This follows a pattern for Visa, which has a history of instigating and initiating new payment technologies, routinely adopted in disproportionately large numbers by the same consumers.

Visa Europe's campaign has a slant toward younger consumers, encouraging use of new payment methods. Their latest Android Pay campaign targets generation Z and millennial audiences to pay with Visa using an Android device, with users given the chance to win a place in the Fan Garage.

> Fans are able to play an active role in influencing the outcome of the event, using the revolutionary online voting system, FanBoost, through which fans can choose to give their favourite driver extra power

A new experiment is another first for Visa – the use of Instagram for a campaign, charting the journey of Visa's Ambassador and 2015 Formula E Champion Nelson Piquet Jr, who made his way across London using only Visa and Android Pay in a tactic designed to showcase the breadth of acceptance. Instagram fans were encouraged to vote to choose how Nelson spent his time in London, given options in real time, with the added incentive to win a VIP package to the London races. Take-up among Instagram users was very encouraging.

Visa Europe is taking the challenge of engaging with younger consumers extremely seriously; in a bid to engage

03

COMMERCIAL FEATURE

01
2015 Formula E Champion and Visa Ambassador Nelson Piquet Jr

02, 03
2015 Visa London ePrix, Battersea Park

04
Visa with Android Pay was launched in May

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with this key younger demographic they are partnering further with Formula E on its e-gaming platform, the Race Off Pro Series. They are offering heavyweight prizes like a package of Rio de Janeiro 2016 Olympic Games tickets and flights, and a cash prize of £15,000. There's also the Visa Music Stage, showcasing six up-and-coming bands, providing content around their journey and an accompanying iTunes playlist.

> Formula E disrupts and innovates – this is the perfect fit for Visa

Visa has a long history of encouraging the spirit of innovation and leading the introduction of new technologies. Most notable in recent years is contactless payments, a rarity only a few years ago, but now spreading rapidly across the UK and Europe.

Contactless laid the foundation for the innovations that have followed. From major launches, including Transport for London, followed by mobile payments, the use of contactless payments continues to skyrocket. Whether it be wearable technology, watches, bracelets or even jewellery, it all stems from the technology that Visa and their partners have been rolling out for the last decade.

In the UK alone, one in five payments on a Visa card is already contactless and UK spending on contactless cards reached a record £1.5 billion in a month for the first time earlier this year, according to the UK Cards Association. Across Europe, people have "touched to pay" using a Visa card, mobile device or wearable – more than three billion times in the last 12 months. And by 2020, all Visa point-of-sale terminals in Europe will accept contactless payments, heralding even more growth in the future.

Today Visa is delivering on its promise to make life ever easier for consumers. Only last month, Visa Europe enabled its second partner to launch mobile contactless payments via its new Tokenisation service. While it's unlikely you'll have noted any changes to the way you use your card, if you ever want to make a payment using your Visa card in your smartphone, you'll be using Visa's new Tokenisation service.

Visa's token technology replaces sensitive payment information, such as the 16-digit account number, with a unique digital identifier that can be used to process payments without exposing actual account details. The UK is the first market to start using Tokenisation and expand contactless to mobile with plans to roll out the service across Europe. Take-up has been impressive so far – the future is bright for those who are looking to pay with a mobile device.

Visa Europe has led the way with payment tokenisation, says Jon White, Visa Europe's head of product enablement strategy. "There's been a huge rise in the ownership and use of connected devices. Ofcom figures in the UK show that 90 per cent of 16 to 24 year olds own a smart device. E-commerce accounts for €1 in every €4.7 on European Visa cards. And this is growing. There's a 24/7 expectation that we can use apps, browsers and various connected devices to pay."

Mr Antipof adds: "Visa looks for disruptors. Whether it's technologies or partnerships, we have a long-standing tradition of seeking out those who challenge the status quo. Visa has managed the UK's transition from paying with a signature to chip and PIN, now to contactless and ever-increasing opportunities of payments."

For Formula E fans, eagerly awaiting the start of the races in London or online, the excitement is just beginning. As the world of payments continues to evolve, streamlining the consumer experience and introducing new technologies and services, Visa Europe will be as ready as the drivers in Battersea Park, to ensure consumers have the methods and means to pay – exactly as they'd like.

1in5
payments in person on a Visa card is already contactless in the UK

3bn
touch-to-pay payments made across Europe in the last 12 months

90%
of 16 to 24 year olds own a smart device

€1
in every €4.7 spent on European Visa cards is e-commerce

£1.5bn
spent on UK contactless cards in one month for the first time earlier this year

For more information please visit vision.visaeurope.com

ELECTRIC VEHICLES

NICKI SHIELDS

Electric cars moving from slipstream to mainstream

Driven by environmental and health concerns over harmful exhaust emissions, electric vehicles are beginning to sell in larger numbers, benefitting in part from Formula E technological development

> The EV success story is partly due to manufacturers adopting a plug-in hybrid approach that solves the issue of battery life and range anxiety

The first mass-produced hybrid electric vehicle, the Toyota Prius, hit the roads in 1997, but only in the last few years have sales of EVs and hybrid cars picked up. It is now unimaginable that leading car manufacturers would not have an EV or hybrid model in their offering.

Some 67, 000 plug-in cars are registered in the UK, according to Next Green Car. This is a remarkable growth from the 3,500 electric vehicles registered in 2013. But it's been a long time coming, considering the first EV was built in 1837 by chemist Robert Davidson of Aberdeen.

So despite the technology being around for almost 200 years, why only now are we starting to see the uptake of EVs and hybrids? Climate change has dramatically moved up the political agenda. The recent global climate change summit COP21 witnessed the largest gathering of world leaders in history, including the Prince of Wales, prime minister David Cameron and US President Barack Obama.

The aim was to achieve a legally binding and universal agreement on climate concerns to keep global warming below 2C. It was a world first. Altogether 196 countries joined the Paris agreement, the first step in moving towards a zero-carbon future.

The agreement alone is not going to resolve the problem, but is a significant milestone. Transport accounts for 22 per cent of energy-related greenhouse gas emissions worldwide and emissions are increasing at a faster rate than any other sector, according to the International Energy Agency.

Detriment to our health is also evident. The World Health Organization estimates that 2.8 million premature deaths came as a result of urban air pollution from motor vehicles in 2012. Governments are realising the long-term social, health and financial implications of not acting now.

Driven by European Union directives, legislation and regulation has been drawn up to impose tough emissions targets on governments and car manufacturers causing them to focus on reducing vehicle emissions and develop EVs.

In 2014, average new car CO_2 emissions (124.6g/km) beat the EU target of 130g/km by 4.2 per cent. By 2020, 95 per cent of all new cars sold must emit an average of 95g/km CO_2, which means car manufacturers still have a long way to go before their cars will meet required standards. EVs offer an obvious long-term solution as emissions targets will inevitably be tightened further still in the future.

From 2021, hefty fines will be imposed on those makers that do not comply or exceed the average emission for new cars produced. The fines are not to be taken lightly. For every gram exceeding the limit, a fine of €95 will be due on every car manufactured, which could amount to many millions.

The public perception of EVs has also significantly changed in the last few years. With brands such as Tesla and BMW bringing out electric and hybrid sports cars, the slow, sluggish, unattractive perception is diminishing and rightly so.

At Frankfurt Motor Show, where many of the new concept cars are showcased, a large focus was on EVs; for example, the beautiful and much anticipated Porsche Mission E, a fully electric sports car, which is going into production this year. It's predicted to have a range of 311 miles, rapid charging reaching 80 per cent of the maximum charge in under 15 minutes and to go from 0 to 62mph in 3.5 seconds. The Tesla Model S can top that with 0 to 62mph in 2.8 seconds in it's much talked about "ludicrous mode".

The Rimac Concept One is the world's fastest production electric vehicle, built by Rimac Automobili, a Croatian car manufacturer founded by Mate Rimac. This fully electric supercar is astonishingly fast courtesy of the our electric motors that independently power each wheel. It generates a whopping 1,088bhp, goes from 0 to 62mph in 2.8 seconds and reaches top speeds of 189mph. A number of other electric sports cars are in development, including the Aston Martin RapidE, Audi Q6 e-tron and Tesla Model 3.

Choice has also grown with at least ten manufacturers selling EV cars. Nissan, Renault and Tesla were some of the early adopters, but BMW, Mini, Mitsubishi, Volkswagen, Smart, Citroën and Peugeot, and many other best-selling brands in the UK, all have an electric offering and the market continues to grow.

In terms of popularity and what sells the most, the Nissan Leaf, priced at around £20,230, has 11,000 registrations and the Mitsubishi Outlander PHEV plug-in hybrid, at £28,249, has sold 16,000, according to Department for Transport vehicle licensing statistics.

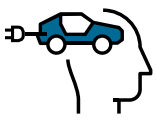
Apart from the obvious environmental benefits of buying an EV, there are plenty of financial incentives too. The cost per mile is estimated at 2p, compared with the average internal combustion engine of 12p. EVs are exempt from Road Tax. Servicing is capped at £94. A government grant of £4,500 is applied to the purchase price of cars and up to £9,000 for vans. Local authorities have free parking for EVs and they are exempt from the £11.50 a day Westminster congestion charge in London, for example.

Despite the initial up-front costs, with all these savings an EV can quickly look very appealing and cost effective.

The EV success story is partly due to manufacturers adopting a plug-in hybrid approach that solves the issue of battery life and range anxiety. But the EV infrastructure continues to improve with more than 10,000 public charging points across 3,800 different locations in the UK. Of these 2,200 are rapid charging points, which means your car can replenish over 80 per cent of its juice in under half an hour. Also, most service stations now supply rapid charging points.

The challenge now is to further improve EV battery technology and the nationwide charging infrastructure to accelerate the adoption of electric cars as the vehicles of the future.

ABOVE Rimac Automobili's fully electric supercar, the Rimac Concept One, is the world's fastest production electric vehicle

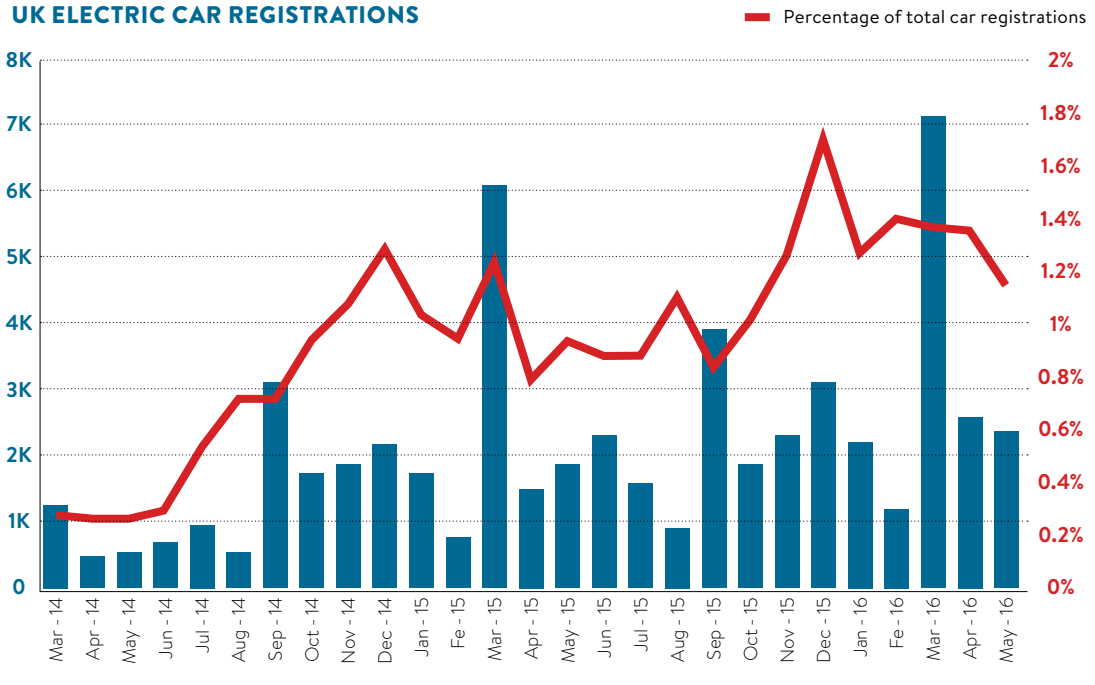


53%

of new car buyers in the UK are considering a hybrid or electric car as their next vehicle

Source: Institute of the Motor Industry 2015

UK ELECTRIC CAR REGISTRATIONS



Source: Society of Motor Manufacturers & Traders 2016

COMMERCIAL FEATURE

WINNING TASTE OF VICTORY

At the start of this season, Maison Mumm announced a new partnership deal with FIA Formula E Championship as the official champagne of the series

Lucas di Grassi, winner of the 2016 Paris ePrix on April 23

The partnership is fitting as Mumm has long championed innovators prepared to push boundaries in life and sport. **Charles-Armand de Belenet**, global marketing director of Martell Mumm Perrier-Jouët, explains the tie-up:

Why has Mumm sponsored Formula E as the official champagne of victory?
"Our heritage is a symbol of victory. It's what we are known for and why you'll see Mumm in the hands of winners at sporting events globally. We saw in Formula E the same passion for innovation and excellence that we see in ourselves. In terms of ethos, it is a perfect partnership."

What excites you about the sport?
"Its hunger to innovate. Take something like the FanBoost concept, whereby supporters can give their teams an energy boost. It's a completely new way to look at a sport. Can you imagine a football team getting an extra player because of their supporters? Other sports are shy about experimenting. Formula E has set out to be groundbreaking. We at Mumm are proud of our reputation for innovation. We produced many firsts in the champagne world, such as the first in the industry to use 12,000-litre barrels in vinification, and we are always installing the most up-to-date facilities. Our latest creation is a digitally connected bottle, which connects with multimedia when opened in a nightclub to amplify the moment. We share that appetite to innovate, and are delighted to support it and be part of it."

What are your early perceptions of Formula E?
"The pioneering spirit. Alejandro Agag and his team have created something new and groundbreaking. The attitude of the teams is inspirational. They have come together to compete at the highest level. The winners triumph through hard work, research and the ability to turn ideas into performance. The atmosphere is wonderful. There is a feeling of incredible excitement and togetherness among the teams and race hosts. Venues such as Long Beach and Paris are so enthusiastic. It's early days for Formula E. This is the second season, so there is a freshness and uncertainty around the whole experience. The fans don't know what to expect. The press are curious. Even the engineers and drivers are still learning about the sport. It makes it totally unpredictable."

And as a sporting spectacle?
"The racing is ferocious. Let me tell you, when you see how close the cars get at 225 kilometres per hour you appreciate the skill of the drivers. These drivers are the elite. We must give credit to the engineers too. The motor and gear box design has been handed over to the teams, so manufacturers can develop new ideas. We know that in the future other areas of car design will be opened up too, extending the chance for teams to gain a competitive advantage."

Viewing figures are strong, is that why Mumm is involved?
"I could give you the numbers on fans, TV viewers and so on. But that's not why we are there. Our history is devoted to celebrating victory and daring achievement. Back in 1904 we supported the legendary explorer Jean-Baptiste Charot during the first French Antarctic expedition. When Ellen MacArthur completed her record-breaking solo round the world yacht race, she celebrated with Mumm champagne. Today we sponsor high-profile events such as the Melbourne Cup and Kentucky Derby horse races. Formula E is where the pioneers of today are to be found. That's why we are there."

> The moment when the winning driver receives a jeroboam of Mumm champagne and sprays the podium and fans is a beautiful image

But it's good branding?
"Yes, of course. The moment when the winning driver receives a jeroboam of Mumm champagne and sprays the podium and fans is a beautiful image. The red sash of our house is immediately noticeable and the scene forges an association with our ethos of 'Dare, Win, Celebrate' in the mind of everyone involved. It's also an act of theatre Mumm invented."

What is so special about the podium?
"It's a great moment when the drivers, team engineers and fans come together and celebrate as one. There is a real sense of camaraderie. The spraying of champagne is a unique moment. It is a demonstration of the emotions, of the joy, of triumph, in a way which everyone can see and share. For many racegoers it is the highlight of the whole experience. That is why we love being a part of it. At Long Beach last year we launched the new revolutionary Mumm bottle on the podium. It's the perfect stage for such an event."

What's your hope for the season?
"I want to see more close racing. And for sports fans who don't know Formula E yet, to take a look. It's an incredible spectacle and the place where the technologies of the future are being developed. You'll be addicted to Formula E."

For more information please visit www.mumm.com/en

140th
anniversary of the famous red sash featured on the Mumm Grand Cordon bottle

10
major cities will be host to 11 races during the Formula E championship

200
guests will be welcomed into the Mumm brand marquee at the Paris ePrix

PIONEERING INNOVATION

Mumm Grand Cordon, awarded to the winner of the Paris Formula ePrix, is the most innovative design in the history of the pioneering champagne house. Breaking with convention, the bottle has no front label – instead, the G.H. Mumm signature and eagle emblem are printed in gold directly on the glass.

Another striking feature of the design is its shape, which necessitated a whole series of innovations to the traditional champagne production process. The bottle's unusually long, slender neck accompanies the development of the aromas of Mumm's legendary Cordon Rouge cuvée, which is remarkable for its intense expression of Pinot Noir, complemented by the subtlety of chardonnay and the fruitiness of pinot meunier.

Perhaps the most eye-catching feature of the Mumm Grand Cordon bottle is its reinterpretation of the famous Cordon Rouge red sash, which is celebrating its 140th anniversary this year. Indeed, this emblem of excellence dates back to 1876, when Mumm founder Georges Hermann Mumm had the idea of decorating selected champagnes with the red ribbon of the Légion d'Honneur, France's highest civilian award. On Mumm Grand Cordon, the red sash is transformed into a genuine red ribbon, which in a feat of technology is actually indented in the glass.