

DRIVING THE

EVOLUTION

Achieving the world's
first truly mainstream
electric vehicle.



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FOREWORD

THE FUTURE OF MOBILITY IS ELECTRIC, BUT IS THE WORLD READY FOR IT?

Our Accelerating the EVolution study, launched in August 2020, identified three key 'tipping points' for mainstream EV adoption: a \$36,000 price point, a 31 minute charge time and a 469km range.

How does the industry achieve these tipping points, what barriers remain, and how can Castrol's e-Fluids help?

These are the questions that this study, Driving the EVolution, sets out to answer, drawing on the expertise of a panel of industry experts, including our own, to uncover the once-in-a-generation opportunity for the EV industry.

While there are already EVs on the market that meet at least one of the tipping points for price, charge time or range, there is not yet a single car that

meets all three. This means that consumer demand has not yet driven EVs into the mainstream: in 2019, just one in 50 cars sold was an electric vehicle.¹ According to the bp Energy Outlook Rapid Transition Scenario estimate, there could be 1 billion electrified cars and trucks in the global vehicle parc by 2040, and EVs could account for 80% of passenger cars in use by 2050.

With governments around the world announcing the phase-out of new ICE vehicle sales over the next decade, the race is on to create an EV that truly meets consumer expectations.

We believe that Castrol has a role to play in this journey. We have a long history of developing pioneering technology and have been working in the world of lubricants for hybrids and EVs for over a decade. Two out of three of the world's major car manufacturers use Castrol ON e-Fluids as part of their factory fill.²

Castrol's range of advanced e-Fluids, Castrol ON, can help bring us closer to reaching these tipping points. We are working to "Switch on an electric future" and keep tomorrow's world moving by enabling electric vehicles to go further³, charge faster⁴ and last longer⁵.

The future is electric. Only by collaborating and co-engineering across the industry will we succeed in Driving the EVolution.



Mandhir Singh,
Senior Vice President,
Castrol

THE TIPPING POINTS TO MAINSTREAM EV ADOPTION



¹ <https://www.iea.org/reports/global-ev-outlook-2020>

² Based on LMCA data for top 20 selling OEMs (total new car sales) in 2019. Used as part of OEM factory fill.

³ vs mass market EV factory fill fluid. ⁴ vs indirect cooled battery system.

⁵ vs standard EV-transmission fluid *Castrol e-Fluids benefits are demonstrated in bespoke testing and development.



A ONCE-IN-A-GENERATION OPPORTUNITY: CASTROL'S ROLE IN DRIVING THE EVOLUTION



Rebecca Yates, VP Advanced Mobility & Industrial Products, bp, talks about the pivotal role that Castrol's e-Fluid technology is playing in driving the evolution.



THE FUTURE IS ELECTRIC

At Castrol, we believe that it is vital to be at the forefront of the future of mobility. Looking at predictions for the vehicle mix over the coming decades, the size of the opportunity becomes clear.

According to [bp Energy Outlook](https://www.bp.com/en/global/corporate/energy-economics/energy-outlook/) Rapid Transition Scenario estimate, there could be 1 billion electrified cars & trucks in the global vehicle parc by 2040, and EVs could account for 80% of passenger cars in use by 2050.

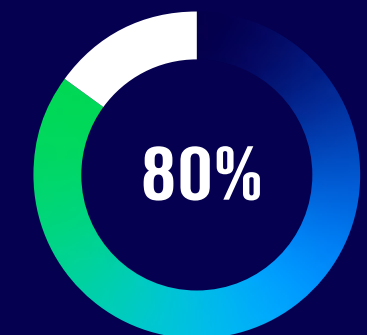
One thing is not in doubt: the industry is set to undergo monumental change over the next few years.

With our leading technical expertise and pioneering approach, Castrol is at the cutting-edge. We are developing new specifications and fluids at our R&D facilities, and collaborating closely with OEMs and suppliers, pushing boundaries to co-engineer the next generation of e-fluids. Alongside this work to improve fluid technology, we offer training to automotive workshops in how to maintain

and service EVs and hybrids, while providing EV service and maintenance through our Castrol service centres across the world. We're also taking this knowledge and expertise and applying it to supplying advanced e-fluids for e-motorbikes and commercial EVs.

But there will still be many diesel and petrol-powered vehicles on the road for years to come. By 2040, according to [bp Energy Outlook's](https://www.bp.com/en/global/corporate/energy-economics/energy-outlook/) Rapid Transition Scenario, the number of cars on the roads is likely to have grown massively, and around 1.6 billion of the forecasted 2.3 billion cars and trucks are likely to still require engine oils. Alongside enabling electrification, engine oils will continue to be an important part of our business. We will keep working on oils for ICE vehicles that improve efficiency, and we will keep developing lower-carbon lubricants to help reduce environmental impact.

EVs could account for...



of passenger cars in use by 2050.¹



¹ bp Energy Outlook: <https://www.bp.com/en/global/corporate/energy-economics/energy-outlook/>

THE TIPPING POINTS TO MAINSTREAM ADOPTION

Accelerating the EVolution found that the average consumer would consider buying an EV by:



Despite a 29% decline in the light-vehicle market during the first quarter of 2020, global electric vehicle market penetration increased from 2.5% to 2.8%.¹

Castrol's previous study, *Accelerating the EVolution* found that the average consumer would consider buying an EV by 2024, and some governments across the world have announced a ban on the sale of new petrol and diesel vehicles by 2030.

Although these milestones are rapidly approaching, roadblocks remain: the EVs that are currently on the market do not quite match consumer expectations. While there are EVs available now that meet some of the tipping points, there isn't currently an EV that meets all of them. This is where there is a once-in-a-generation opportunity for the industry to develop an EV that meets the needs of the average consumer. And we believe that Castrol has a key role to play.

HOW CASTROL IS HELPING TO DRIVE THE EVOLUTION

Although many associate Castrol with the world of petrol and diesel-powered vehicles, we have been working in the realm of hybrids and EVs for over a decade, and exploring new opportunities in the future of e-mobility.

Castrol has a history of pioneering technology that spans more than a century. Our core mission is deliberately inclusive: we aim to 'serve every driver, every motorcyclist and every industry on earth', through liquid engineering. That means creating high performance lubricants which improve efficiency in every vehicle application or industrial use-case. These lubricants are as essential to EVs as they are to ICE vehicles. Advanced Castrol ON e-Fluids can bring us closer to reaching the tipping points identified in the *Accelerating the EVolution* study by increasing the durability and longevity of vehicle components and extending battery range or increasing battery charge rates.

For example, e-Transmission Fluids protect component parts, making them last longer, and can enable lower-cost parts to be used in transmission. Greater energy efficiency can also extend the range

that a vehicle can travel on a single charge. Dielectric e-Thermal fluids enable ultra-fast charging by allowing a higher rate of charge without damaging the battery cells.

Already, two out of three of the world's major car manufacturers use Castrol ON e-Fluids as part of their factory fill for EVs², and this is just the beginning.



CO-ENGINEERING WILL BE KEY TO DRIVING THE EVOLUTION

To make the future of mobility a reality will require significant collaboration and co-engineering across a long and complex global supply chain.

Accelerating the EVolution found that although consumers say they would consider buying an EV by 2024, most believe that it will be 2030 when the majority of new cars purchased are electric.

The mobility ecosystem must continue to work together on addressing the long-term technical challenges to widespread electrification so that EVs become a genuine choice; a mainstream consumer choice.

While the challenges ahead cannot be solved by e-Fluids alone, they have an important part to play. Castrol ON products are catering to the needs of our customers today and tomorrow, making electric vehicles go further³, charge faster⁴ and last longer^{5*}.

REBECCA YATES IN THE DRIVING SEAT: QUICK FIRE QUESTIONS

What do you think is the biggest stumbling block to mainstream EV adoption?

I think the biggest stumbling block is consumer confidence in the convenience of charging infrastructure. However, with huge investments and improvements currently ongoing with charging infrastructure this is changing fast.

What year do you think we'll achieve mainstream EV adoption?

I think we will reach mainstream EV adoption in 2030.

¹ McKinsey Electric Vehicle Index: Electric Vehicle Trends
bp Energy Outlook: <https://www.bp.com/en/global/corporate/energy-economics/energy-outlook/>

² Based on LMCA data for top 20 selling OEMs (total new car sales) in 2019. Used as part of OEM factory fill.

*Castrol e-Fluids benefits are demonstrated in bespoke testing and development.

³ vs mass market EV factory fill fluid.

⁴ vs indirect cooled battery system.

⁵ vs standard EV-transmission fluid.



DRIVING CHANGE: HOW INSIGHTS FROM THE RACE TRACK ARE HELPING TO IMPROVE THE RANGE AND PERFORMANCE OF ELECTRIC VEHICLES ON THE ROAD



We speak to James Barclay, team director of the Jaguar Racing Formula E Team, about how lessons from elite

racing are being applied to help achieve mainstream EV adoption, and how Jaguar's long-term partnership with Castrol is driving progress.



TECHNOLOGY DEVELOPED FOR THE RACE TRACK AND THE ROAD

EV adoption relies on innovation, James tells us:

"It's working to get this technology as small and light as you can. With EVs, there's a lot of focus on the battery, but the efficiency of your powertrain is also really important. Racing allows us to really stress test the technology, pushing the limits and then passing the benefits on to consumers. We have engineers from the core Jaguar Land Rover engineering team embedded in the race team, so they can take learnings back with them."

Castrol's partnership with the Jaguar Racing Formula E Team, which builds on a long and successful motorsport collaboration between the two brands, is also all about taking lessons from the racetrack and applying them to the road. Putting e-Fluids to the test on the racetrack helps Castrol to deliver what drivers want: to go further on a single charge by enabling better efficiency throughout the powertrain.

James explains the collaborative process:

"The Castrol engineers work with us to overcome challenges and to find performance gains. We're looking at optimising weight, performance, efficiency, and thermal management. As well as the big gains, we're always looking for incremental improvements – marginal gains are key in a sport measured in thousandths of a second."

James explains: "That can be the difference between winning and losing a race. From e-Fluids that improve efficiency and reduce rolling resistance, to e-Thermal fluids and e-Transmission fluids that keep the powertrain operating at an optimum level, we use racing as a test-bed for Castrol's products."

The pace of progress in Formula E is phenomenal. During the first generation of Formula E (2014-2018), the cars had to be swapped mid-race. The second-generation cars have double the energy storage capacity, meaning that with a similar size battery, a single car can complete a whole race. They're faster, too: with 250kW of power, they can accelerate from 0-100km an hour in 2.8-seconds and reach a top speed of 280km per hour.

TAKING CUTTING EDGE TECHNOLOGY FOR A TEST DRIVE

Products developed for motorsport power electronics can enhance the performance of even the most advanced EVs on the road.

Advanced e-transmission fluids, for example, enable better performance of the vehicle due to the ability to cool and reduce friction losses. This is more critical as vehicles become increasingly sophisticated and ultra-fast charging grows: e-transmission fluid can extend the life of the powertrain systems and enable the electronic components to work efficiently under extreme conditions.

Meanwhile, greases play a vital role in protecting motor components so that they last longer and perform as efficiently as possible, which ultimately reduces the energy needed to drive the car forward, taking strain off the battery and helping maximise the range capability.

From seat fabric to space dust, a whole range of other cutting-edge technology gets a test drive on the racetrack too such as TYPEFIBRE. The Jaguar I-TYPE 5 has a new prototype race seat made from sustainably sourced TYPEFIBRE. It will be tested at speed in different temperatures, loads and environments around the world as part of the team's

Race to Innovate mission – sharing the benefits of race technology with road cars and in turn Jaguar customers: "New, more sustainable fibres are being trialed for interior fabrics. If they pass the test and are durable enough then they may end up in road cars of the future too. And there is a lot of work underway to improve motors and inverters. Silicon carbide - 'cosmic dust' - allows faster switching speeds in the inverter and we're also working on more efficient regenerative braking technology. This is all being used in Formula E but has the potential to filter through to mainstream electric vehicles."



Castrol e-Fluids benefits are demonstrated in bespoke testing and development. Go further¹, charge faster² and last longer³.

¹ vs mass market EV factory fill fluid.

² vs indirect cooled battery system.

³ vs standard EV-transmission fluid.

HOW FORMULA E IS HELPING EVS BECOME MAINSTREAM

For James, EV innovation and adoption comes down to a combination of advances in both EV technology and infrastructure:

The continued development of EV powertrain tech will be key, but also critical is the overall infrastructure that supports both the adoption and convenience of EVs.

And then once you reach a tipping point, you start to get economies of scale meaning that the price of EVs comes down and the choice of vehicles increases."

"A big part of EVs becoming mainstream is consumer education," James believes: "As awareness increases, people realise that the offering provided by EVs is already very compelling. EVs would suit a lot of consumers right now; people are generally taking short journeys, and in many cases don't need the longer range that they think they do." Castrol's Accelerating the EVolution study found that this was the case: 60% of drivers are mainly using their car for commuting or local trips like shopping and the school run.

Changing perceptions around EVs is woven into the DNA of Formula E. James adds:

“

Formula E helps show the journey that we're on in a really exciting, engaging way through a great sport.

The World Championship educates consumers on the benefits of EVs and we race in urban areas, making this the most accessible motorsport and demonstrating the benefits of zero-emissions in city centres."

Formula E is the first sport with certified net zero carbon footprint from inception and Jaguar's participation is part of Jaguar Land Rover's 'Reimagine' strategy, with Jaguar transitioning to an electric-first business. Castrol's partnership with Jaguar Racing is part of Castrol's wider ambition to play a key role in the mobility revolution and the pathway to decarbonising transport.

"The importance of sustainability is close to everyone's heart right now," James says. He believes that the future of mainstream EVs is bright:

“

If we look at the EV landscape over the next few years, consumer choice is incredibly different from where we were five years ago. It is very exciting. And with Formula E we're really driving the change, in a way that is hugely impactful."



JAMES BARCLAY IN THE DRIVING SEAT: QUICK FIRE QUESTIONS

What do you think is the biggest stumbling block to mainstream EV adoption?

Education, charging infrastructure and regulation. Infrastructure is probably the biggest one but there is significant momentum: the "forecourts of the future" are already becoming a reality, with ultra-fast chargers being rolled out across the UK.

What year do you think we'll achieve mainstream EV adoption?

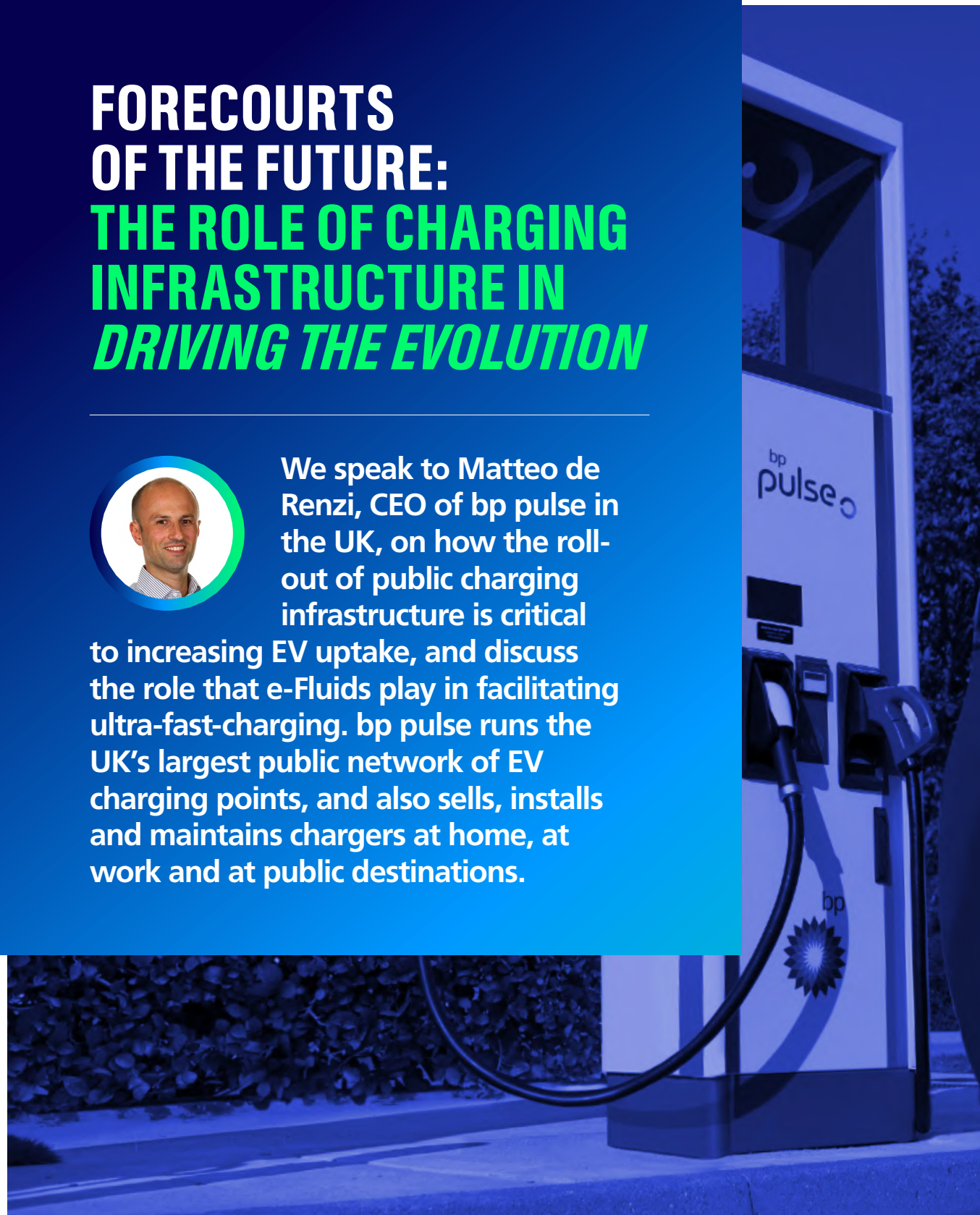
I think it will vary by market, and regulation will be a key driver. The fact that the UK has now adopted a 2030 date for the ban of the sale of new ICE vehicles, for example, will bring it forward here. I think we'll see more change in the next five to 10 years than we've seen in the last 40 years in the car industry.

FORECOURTS OF THE FUTURE: THE ROLE OF CHARGING INFRASTRUCTURE IN DRIVING THE EVOLUTION



We speak to Matteo de Renzi, CEO of bp pulse in the UK, on how the roll-out of public charging infrastructure is critical

to increasing EV uptake, and discuss the role that e-Fluids play in facilitating ultra-fast-charging. bp pulse runs the UK's largest public network of EV charging points, and also sells, installs and maintains chargers at home, at work and at public destinations.



ON THE FAST TRACK TO FAST CHARGING

Consumer concerns about a lack of fast-charging on the road is a significant obstacle to increased EV uptake.

Castrol's study, Accelerating the EVolution found that for 68% of consumers, the current speed of rapid charge points was a factor that prevented them from making the switch to an EV.

Matteo explains that bp pulse's current focus is on rolling out ultra-fast (150kW) charging at bp retail sites across the country. Matteo believes that this will be critical to accelerating the widespread adoption of EVs:

“

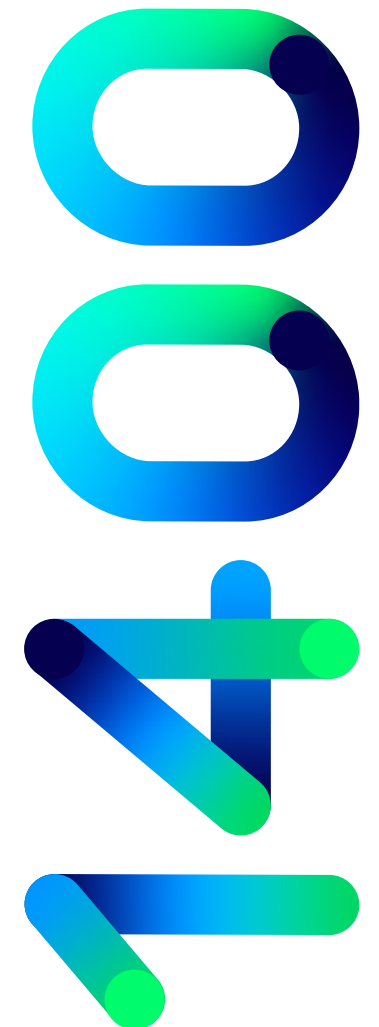
We're providing EV charging that's easy to find, easy to access and easy to use. And it's got to be fast – it's clear that the public wants fast charging.”

Matteo explains: “As well as 650 50kW rapid chargers, our UK network currently includes more than 60 ultra-fast chargers, with plans to reach 1,400 by 2030. If there are plenty of fast chargers

available, you can just jump in an EV and drive, without having to plan your stops in advance.”

It is already possible to get a decent charge in a shorter time than the 31 minute charge time tipping point, depending on the type of vehicle and the charger: “A decade ago, it could have taken some EVs around 10 hours to charge your EV so that you could travel for 100 miles,” Matteo says: “With the ultra-fast 150 kW chargers it is possible to get 100 miles from a 10 minute charge, based on an efficiency of 4 miles per kWh. We're on a very steep development trajectory.”

Next-generation e-Fluids such as Castrol's dielectric battery e-Thermal fluid, support fast-charging by keeping the batteries cool and the car running. The advanced e-Thermal fluid has important properties to enable enhanced thermal management. The low viscosity and strong electrical insulation control battery temperatures without risk of electrical breakdown. Ultimately, this helps to maintain higher levels of battery performance for longer. This means that as the number of ultra-fast chargers increases, EV drivers can be confident that they can protect their vehicles as well as keeping the battery in good condition.



Our UK network currently includes more than 60 ultra-fast chargers, with plans to reach 1,400 by 2030.

Castrol e-Fluids benefits are demonstrated in bespoke testing and development. Go further¹, charge faster² and last longer³.

¹ vs mass market EV factory fill fluid.

² vs indirect cooled battery system.

³ vs standard EV-transmission fluid.



PROVIDING AN INFRASTRUCTURE MIX TO SUIT ALL CHARGING HABITS

Matteo also says that the presence of ultra-fast chargers isn't just about providing charging capacity; crucially, it's also about making EV charging more visible:

“

For EVs to become mainstream, charging infrastructure is an important enabler. But it's also about inspiring confidence and providing reassurance.

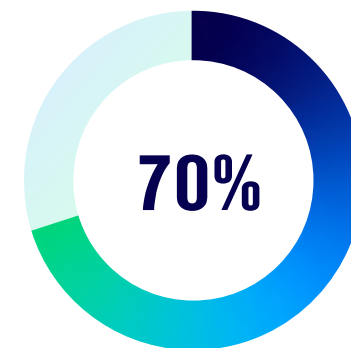
“We know that not being able to find a charge-point while on the road is something that really worries consumers. The more people that see these fast chargers and understand how many miles they could travel on a relatively quick charge, the less they'll be concerned about the practicalities of having an EV.”

As EV uptake increases, a mix of infrastructure to support different driving and charging habits will be key.

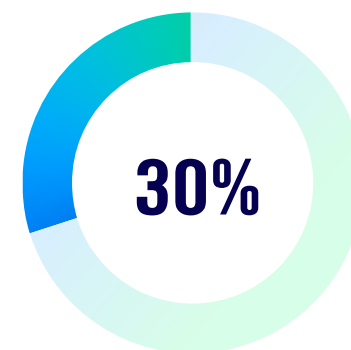
Charging at home won't be possible for everyone – especially in urban areas where many people don't have off-road parking. Not everyone will be doing on-the-go public ultra-fast-charging either. People will adopt different charging habits.

Matteo says: “We currently see about 70% home-charging and 30% out-of-home. But there is a swift uptake of fast-charging. We expect out-of-home charging to settle at around 50%.”

We currently see about...



home-charging. And...



out-of-home charging.

ON THE CUSP OF THE EVOLUTION

“There's no doubt that people will be driving petrol and diesel cars for many years to come,”

Matteo acknowledges, “But perceptions are changing quickly, and the presence of ultra-fast chargers on forecourts is helping with this perception shift.” And Matteo believes that the COVID-19 pandemic has accelerated the move to EVs: “It's made people more aware of their local environment, and many of us have realised that we don't need to travel so far, and perhaps we don't need to commute to work every day.

For those who were on the cusp of buying an EV, now could be the time to make the switch.”

When it comes to achieving the tipping points of a 31 minute charge time, a 469km range and a \$36,000 price point, Matteo emphasises the fact that all of these tipping points are currently in reach, just not all in the same car:

“Individually these things are ‘real world’ today, but they don't all currently exist in the same product.

We're already there on the fundamentals, and it now comes down to technical

and production questions. Over the last few years, range has improved, the cost of batteries has fallen and efficiency has increased.

“

The ‘target EV’ is a lot closer than most consumers might think.”

For those who were on the cusp of buying an EV, now could be the time to make the switch.

MATTEO DE RENZI IN THE DRIVING SEAT: QUICK FIRE QUESTIONS

What do you think is the biggest stumbling block to mainstream EV adoption?

At the moment it is around consumer education – raising awareness and addressing misconceptions about EV ownership.

What year do you think we'll achieve mainstream EV adoption?

In the 2030s. In the next five to 10 years we'll see tremendous growth.



THE KEY ROLE THAT E-FLUIDS CAN PLAY IN ACHIEVING CONSUMER EXPECTATIONS



Richard Pearson, Senior Advisor EV & Mobility, bp, describes the range of Castrol ON e-Fluids and explains how they support faster charging, longer range and greater durability.



E-FLUIDS CAN HAVE AN IMPORTANT IMPACT

Electric vehicles need e-Transmission fluids, e-Thermal fluids and e-Greases to keep them running reliably, safely and efficiently.

At Castrol, we are combining insights gained from vehicle manufacturers, component suppliers, and consumers, with advanced technical solutions to continually improve our e-Fluid products, while also pioneering performance testing that goes beyond the standard requirements.

Electric motors in EVs are already operating at efficiencies up to:

97%



THE IMPACT OF TECHNICAL ADVANCES IN E-FLUIDS IS MANIFESTING ITSELF IN THREE IMPORTANT WAYS:

1

Go further¹

A lot of the R&D investment in EVs is currently focused on improving the performance of batteries and other core components. But the gains in vehicle efficiency from e-Fluid technology are key to making EVs more useful to a wider range of customers. Since electric motors in EVs are already operating at efficiencies up to 97% (compared to a peak efficiency of around 35% for most internal combustion engine (ICE) cars), there is limited scope available to increase the energy conversion efficiency of the motor itself and so the advances in range available from Castrol's low-viscosity e-Transmission fluids, via reducing losses in the drivetrain system, are playing an important role in improving vehicle range.

There's a significant challenge of greasing bearings of EV core components, such as electric motors. With ICE vehicles, grease is applied to areas that don't have a very high electrical potential. With EVs, the grease has to perform in a highly-charged electrical environment.

Importantly, greases need to enable low-friction operation of the motor bearings while withstanding high electrical potential, high temperature, and high shear rates experienced in state-of-the-art high-speed electric motors. Castrol ON's advanced e-Greases play a critical role in improving e-motor and transmission efficiency and, together with Castrol ON's low-viscosity e-Transmission fluids, extend the range of EVs.

2

Charge faster²

Battery durability is key to making repeated fast-charging possible. To enable 400km of range to be added rapidly to an electric vehicle requires a very high charging power and advanced battery thermal management performance to keep cell temperatures within a range that does not damage them.

This is where e-Fluids come in. Castrol ON's advanced dielectric thermal

management technology combats the increased thermal stress of ultra-fast charging. Using direct cooling of battery cells, tabs, and connectors increases heat transfer from these components to the e-Thermal fluid and can help reduce the maximum temperatures which the cells reach during ultra-fast charging. Limiting the temperature level reached by cells reduces the impact of high-power charging on the battery lifetime. The fluids have a low viscosity, strong electrical insulation, and a high flash point to protect against breakdown and ignition.

3

Last longer³

In addition to helping extend the range of EVs, e-Transmission fluids help protect gears and extend the life of the drivetrain system. The demands on e-transmissions can be more severe than conventional transmissions, with very high input torque delivered at low speeds. The desire to increase power density by integrating electric

motors and transmissions into a single unit is leading to so-called 'wet e-motors'. Here, the transmission fluid also performs the task of the e-Thermal fluid and electric insulator for the electric motor, which adds significantly to the fluid formulation challenge due to the dual fluid performance requirement of protecting the transmission gears against high contact pressures and maintaining low electrical conductivity of the fluid so that it can insulate and cool the electrical components of the motor directly.

At Castrol we are developing e-Transmission fluids that cool motors and protect the gears while maintaining the required di-electrical properties and component compatibility to allow electronics to function correctly over their lifetime. Wet e-motor e-Transmission fluids are helping motor designers to increase performance levels and improve durability.

The development of EV technology is on a rapid trajectory. Every year new hardware innovations come to market that make significant contributions to increasing vehicle range, reducing charge time and extending the life of the drivetrain system.

Castrol ON e-Fluids are playing an active role in enabling this technology revolution.

RICHARD PEARSON IN THE DRIVING SEAT: QUICK FIRE QUESTIONS

What do you think is the biggest stumbling block to mainstream EV adoption?

The trade-off between range, charge-time, and vehicle price.

What year do you think we'll achieve mainstream EV adoption?

Personally, I think that by around 2027-2030, a quarter of all new vehicle sales in the EU will be battery electric vehicles (BEVs).

CONTACT US

Want to find out more?
Use the details below:

Learn more about the research
and download the report:
[castrol.com/DrivingtheEVolution](https://www.castrol.com/DrivingtheEVolution)

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To learn more about Castrol ON e-Fluids
visit: www.castrol.co.uk/e-Fluids



ABOUT CASTROL

Castrol provides the oils, fluids and lubricants the world needs, for every driver, every rider and every industry. It's more than just oil. It's liquid engineering.

The world of transport is going electric and e-fluids have a vital role to play. EVs play a key part in the mobility revolution and the pathway to decarbonising transport. Castrol's e-Fluid expertise extends across land, sea and even space.

IN SPACE

Castrol e-Fluids help leap NASA's \$820 million InSight Mars Lander working in the unforgiving conditions on the Red Planet.

AT SEA

Castrol e-Fluids support equipment used in the transfer of power from an engine or electric motor to a propeller or thruster.

ON LAND

Castrol ON has developed a range of e-fluids to meet the needs of vehicle manufacturers. From transmission e-fluids, which are inside many EVs already on the road, to e-Greases and e-Thermal fluids, these fluids enable electric vehicles to run smoothly, efficiently and stay cool.

Developments include Castrol's lowest viscosity e-transmission oil, designed for efficiency, durability and reliability. Castrol is partnering with major manufacturers to ensure its lubricants deliver what drivers want: to go further on a single charge, enable longer life of transmission and component parts, and ensure long-lasting battery health.

As EVs continue to evolve, Castrol's best brains are not only defining the fluids, but the way the fluids are defined: pioneering unique testing and monitoring methods, driving efficiency and economy going beyond the standard requirements of the fluids, taking consumer insights and engineering technical solutions; advancing technologies that will lead to breakthroughs for the transport of tomorrow.

To find out more about Castrol please visit www.castrol.com



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