

THE NEW RENAULT CLIO E-TECH, NEW RENAULT CAPTUR AND NEW RENAULT MEGANE E-TECH PLUG-IN



**GROUPE RENAULT RAMPS UP ITS
ELECTRIFICATION STRATEGY WITH ITS
REVOLUTIONARY E-TECH HYBRID
TECHNOLOGY**

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Introduction

Following their world première in January at the 2020 Brussels Motor Show, the **140 hp Clio E-TECH and 160 hp New Captur E-TECH Plug-in**¹ are now joined by the **160 hp Mégane E-TECH Plug-in**.

These three full hybrid (Clio) and plug-in hybrid (Captur and Mégane) models are new additions to what is already the largest electrified vehicle range on the market, joining all-electric models like the New ZOE, New Twingo Z.E. and Kangoo Z.E. **This new E-TECH hybrid line-up can adapt to any customer's needs** (long distance, urban multi-purpose, etc.) depending on the preferred technology, while limiting CO₂ emissions and stemming fuel use, even for long trips. Having an accessible hybrid range for the core market means more people are going to experience the joys of driving an electric vehicle.

EV expertise

Groupe Renault is a **pioneer and expert in electric mobility** – the cornerstone of the Group's current and future commitment to sustainable mobility for all. For **more than 10 years**, the Group has garnered expertise in electric vehicles that translates into more dynamic and efficient hybrid motors.

Thanks to work carried out on developing true multi-modal hybrid motors, as opposed to merely fitting out traditional combustion motors with electric capabilities, E-TECH motors guarantee:

- Electric-only starting every time.
- An enjoyable drive in all circumstances thanks to an increased electric range and capabilities, even when accelerating.
- Excellent fuel efficiency thanks to its innovative multimodal gearbox, efficient regenerative braking and high capacity battery recharging; all thanks to the combined expertise acquired on Formula 1 and electric vehicles.

With these assets, the Clio E-TECH can be driven for up to 80% of the time on city roads in all-electric mode, with a consumption saving of up to 40% compared with a petrol engine in the urban cycle. The New Captur E-TECH Plug-in and New Mégane E-TECH Plug-in can run at 100% electric for 50 kilometres with a top speed of 135 kph in mixed use (WLTP) and 65 kilometres in urban use (WLTP City).

Innovative technology

The drive train used in all Renault hybrid motors is available in **two variants: E-TECH (full hybrid**, also known as HEV or hybrid) and **E-TECH Plug-in (full plug-in hybrid**, also known as PHEV or rechargeable hybrid). Integrating the new technology into these models is easy, thanks both to the new CMF-B and CMF-C/D modular architectures that were designed from the outset to house electric capabilities and the fact that E-TECH systems are more compact than ever before and can be mounted in the engine compartment of a versatile city car, such as the Clio.

Renault engineers have devised a revolutionary solution for a hybrid range that is relevant, original, and exclusive – with more than **150 patents** – based on a **hybrid “series-parallel” architecture** to ensure the widest range of combinations and the best CO₂ gains when on the road.

The hybrid car range also taps into the extensive knowledge base of the **Renault F1 Team**. Production model hybrids share and benefit from **technology originally developed for F1 racing**.

¹ A plug-in (or rechargeable) hybrid vehicle has a battery that optimises driving in electric mode as it can be plugged into a socket for recharging. It has a greater electric range than a hybrid vehicle, where the battery recharges only while the car is being driven.

Sustainable mobility for all

The new hybrid motors also draw on **experience and synergies from the Alliance** that go hand in hand with those developed by Nissan and Mitsubishi. Ultimately, within the Alliance, there is a better range of technological solutions that are adapted to each market's specific needs and in line with the global and local strategies of each brand.

Groupe Renault strives **to provide sustainable mobility for all, both today and in the future**. The arrival of the latest batch of motors is a next step towards reaching that goal. By 2022, Groupe Renault plans to ramp-up its electric range with 8 fully electric models and **12 electric-capable models** (hybrid and rechargeable hybrids).

When race cars inspire production cars



Motorsport and Renault's involvement in Formula 1 are at the heart of the company's work on E-TECH hybrid motors. Bridges between the racing world and production vehicles fall into two main categories: energy use and recovery and the use of an innovative multi-mode dog gearbox, for the first time in a production vehicle.

Energy optimization at the heart of knowledge sharing

Ever since 2013, the Renault F1 Team and Renault engineering have shared their respective knowledge in the field of energy management. To prepare the arrival of hybrid motors in Formula 1, engineers, experts in hybrid - now in charge of Renault E-TECH models - worked on developing a Formula 1 hybrid motor at the Renault Viry-Châtillon site. There, they fine-tuned their energy management strategy now used in designing Renault's hybrid models.

It is mainly thanks to such knowledge sharing that E-TECH engines combine driving pleasure with high efficiency **in terms of energy regeneration and use.**

Be it a Formula 1 engine or an E-TECH production motor, the laws of energy management are designed to use the optimal energy output (thermal output versus amount of fuel used) to recharge the battery whenever the energy created is above the required power.

As in F1, kinetic energy can be recovered during deceleration and braking then transformed into electrical energy to recharge the battery. On production vehicles, especially when on motorways, energy management rules start charging the battery by forcing the engine to operate its optimum RPM yield. Excess energy can then be used to back up the combustion engine during hard acceleration, or to ensure a 100% electric ride when the scheduled route goes through urban zones.

On production models with the E-TECH Plug-in engine, the SPORT mode in multi-SENSE settings allows all the thermal and electrical power to be used simultaneously, thereby giving more driving pleasure and efficiency when accelerating. When considerable pressure is put on the accelerator, the two electric motors both provide

additional power to the combustion engine. **Such a practice comes directly from Formula 1**, where drivers can put the car into a specific mode to get maximum available power, especially during qualifying laps.

Great responsiveness thanks to the innovative gearbox

The Renault E-TECH engine **powertrain architecture** is based on similar foundations to that of the Renault F1 Team's cars: a combustion engine combined with two electric motors and a central battery. This architecture is paired with a **multi-mode dog gearbox**.

The clutch-less gearbox allows a 100% electric start, and **significantly reduces gaps in acceleration during gear changes**, which enhances driving comfort and performance while accelerating. **In F1**, the smooth gear changes mean less jerkiness and less loss of grip.

Renault E-TECH, a dual engine combining responsiveness, driving pleasure, and efficiency

The Renault E-TECH system (hybrid and plug-in hybrid) was developed and patented by Renault Engineering. It is inherited from the EOLAB concept car, unveiled at the 2014 Paris Motor Show and benefits from the brand's long-standing electric expertise. It uses parts designed within the Alliance, like its **new-generation 1.6-litre petrol engine** that has been reworked specifically for the occasion. It is accompanied by **two electric motors – one of which is HSG (High-voltage Starter Generator) – and an innovative multi-mode clutch-less gearbox**. The revolutionary association of the electric motors and the gearbox is optimal for smooth gear changes (an architecture that is synonymous with better fuel efficiency, it comes straight from the Renault F1 Team's vast experience).



The capacity of the lithium-ion battery varies according to the type of hybrid engine:

- **The New Clio E-TECH** has a 1.2 kWh battery (230 V) that allows significant reductions in fuel consumption and CO₂ emissions, for up to 80% of urban driving time in 100% electric mode
- **The New Captur E-TECH Plug-in and New Mégane E-TECH Plug-in** have a 9.8 kWh battery (400 V) that allows for up to 65 km in 100% electric mode in urban cycle (WLTP).

Responsiveness and energy optimisation

The combination of two electric motors, an innovative multi-mode gearbox and a combustion engine offers a wide variety of drive modes:

- **100% electric starting:** as the gearbox is clutch-free, the combustion engine is not used when starting the car; therefore, E-TECH hybrid vehicles are always set in motion by the primary electric motor. A rather stylish solution as it immediately provides maximum torque for a particularly responsive start.
- **Automatic adaptation to driving situations:** Groupe Renault E-Tech technology is based on a series-parallel architecture allowing it to combine the advantages of the different types of hybridisation possible (series, parallel and series-parallel). The engines can operate independently or in concert by directing their power to the wheels. The powertrain manages its engines and their supply according to acceleration and power requirements, as well as battery regeneration opportunities. This management

is carried out according to 15 operating combinations of the various engines and the gears engaged on the gearbox

In use, the **change from one mode to another is barely noticeable** and does not require any input from the driver. The E-TECH system automatically chooses the most appropriate mode for the situation in order to optimise emissions and fuel use, while guaranteeing responsive, enjoyable driving.

Energy regeneration and regenerative braking

E-TECH technology optimises energy use during both slowing and braking.

- **Battery regeneration while slowing:** When the driver lifts their foot off the accelerator pedal and the gear stick is in 'Drive', the primary electric motor functions as a generator. It recovers kinetic energy produced by the deceleration and turns it into electrical energy that is sent back to the battery.
- **Mode "B":** to recover more energy, the gear stick can be put in 'Brake' (B) mode; this maximises regeneration to the level allowed by the battery's storage capacity, up to an idling speed of about 7 kph.
- **Regenerative braking:** When the driver presses the brake pedals, the braking process is triggered electrically, with additional hydraulic braking power coming from the brake pads if necessary. Here, too, the electric motor provides additional braking, recovering excess energy and returning it to the battery – while the battery's storage capacity allows.

All these features mean the Renault E-TECH and E-TECH Plug-in models are highly responsive for improved driving pleasure, they optimise energy consumption, and provide optimal battery recharge features that engage while the car is slowing and braking, which make for the best overall driving performance.

The first hybrid range with something for everyone, whatever their needs

As an addition to Renault's range of 100% electric engines, the hybrid engines in the Clio E-TECH, New Captur E-TECH Plug-in and New Mégane E-TECH Plug-in serve a variety of uses. Their availability on versatile mid-range vehicles means the electric-car experience is now more accessible than ever before. Many other hybrid vehicles will follow.



The best of the Clio range is now hybrid

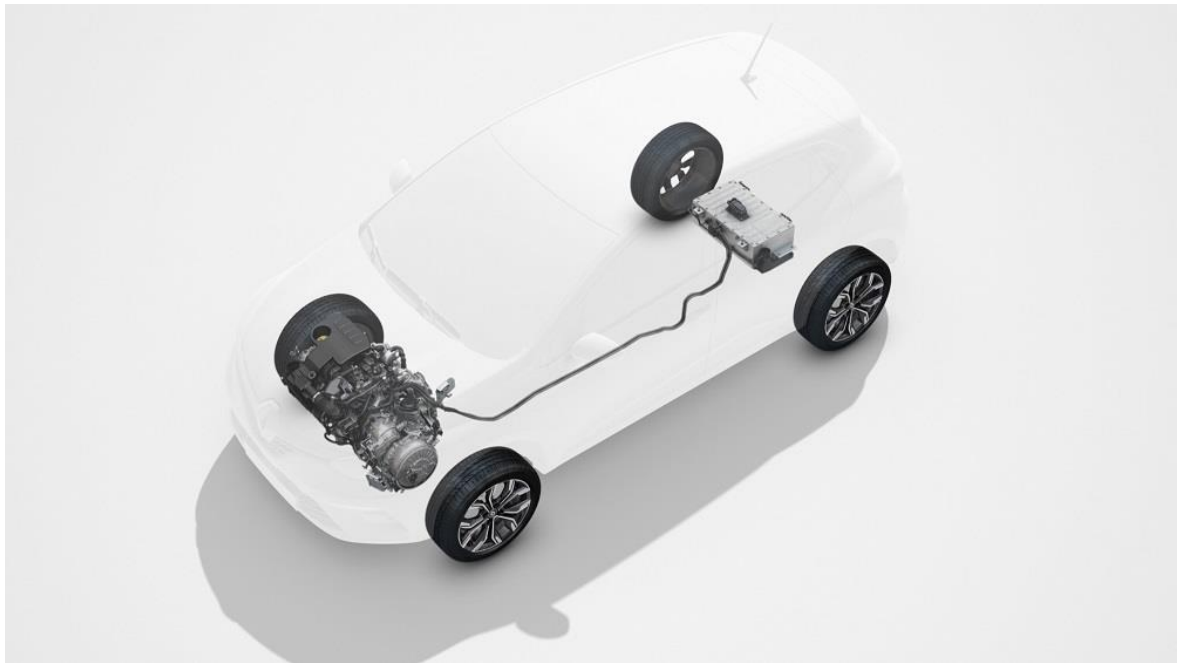
Groupe Renault's vision of future mobility, which is autonomous, electric and connected, is embodied in the Clio, which was updated in 2019. For example, it has one of the most modern and comprehensive driving assistance systems on the market, including the Highway and Traffic Jam Companion – a level 2 autonomy feature. Fitted with 9.3" screen and the newly released Renault EASY CONNECT connected offering, it also benefits from extensive multimedia extras.

Also, for the first time, the Clio range now comes with a full hybrid E-TECH engine. As a complement to combustion engines, it is the perfect embodiment of synergies that lie at the heart of the strategy of Groupe Renault – pioneer and European leader in electric mobility – and its Alliance partners. Thanks to its extended electric range and split-second responsiveness when starting and accelerating, it offers a unique experience and a driving pleasure far beyond anything offered by other hybrid city cars on the market.

Combine efficiency with driving pleasure

The hybrid engine on the 140 hp Clio E-TECH offers maximum efficiency and unparalleled dynamic responsiveness on the road, accelerating from 80 to 120 kph in just 6.9 seconds.

Regenerative braking, combined with the high charging capacity of the 1.2 kWh (230 V) batteries and the efficiency of the E-TECH system, helps to optimise energy. In fact, **80% of the time spent on city roads is in all-electric mode, for a consumption saving of up to 40% compared** with an internal combustion engine in urban cycle, with no change in driving habits. In all-electric mode, the New Clio can travel at up to 70-75 kph.



Together, the hybrid devices represent an additional weight of no more than 10 kilos compared to a dCi 115 engine. In combined cycle, the Clio E-TECH consumes less than 4.5 litres/100 km and emits less than 100 grams of CO₂/km (WLTP values, subject to final approval).. The batteries do not reduce the boot space (300 litres), the rear bench seat still folds down and there is still room for the spare wheel well. Thus it retains the versatility that it has shown over the last 30 years.

Unique features for the Clio E-TECH

The exterior has a recognisable rear bumper and E-TECH badges located on the B-pillar and the boot lid. A 'Hybrid Blue' pack is also available to customise both the exterior and the interior.



Inside the car, the 'Smart Cockpit' features a 7" TFT instrument cluster and the new Renault EASY LINK infotainment screen in either 7" (horizontal) or 9.3" (vertical) format, the largest display area in the category. The new digital dashboard features a range of images and animations specific to hybrid; for example, they indicate battery levels while charging or show when the electric motor is in use.



The unique gear stick comes with an 'E-Tech' badge. Lastly, the Stop & Start button located under the media screen has been replaced by a model-specific EV button that puts the car directly into electric mode – provided the battery has sufficient charge.

The New Captur, electric on demand

A best-seller in its segment, both in France and Europe, the Captur is a front-runner for the Renault range. Sold across all continents and in key markets such as China – where it is now industrialised for the local market – the New Captur builds on its previous success with a wholly new design and a new technological edge. With its E-TECH Plug-in hybrid engine, it also embodies the three pillars of Groupe Renault's vision for future mobility: autonomous, connected and electric.



This engine will eventually be available from the intermediate finish level of the New Captur ranges. By employing its expertise in electric mobility on a popular, iconic model, Renault is making plug-in hybrid technology widely available to offer a unique driving experience accessible to all.

Maximum versatility

The 160 hp E-TECH Plug-in engine and its high-capacity battery (9.8 kWh and 400V), weighing just 105 kg, mean that the New Captur can run **at 100% electric for 50 kilometres** with a top speed of **135 kph in mixed use (WLTP) and 65 kilometres in urban use (WLTP City)**. The New Captur is of unprecedented versatility: without compromises, it can run without using any fuel throughout the week for regular trips, then travel further afield on weekends or long holidays without having to worry about battery life. In order to maximise the range in electric mode, it is necessary to connect the vehicle to a socket to recharge the battery (3 to 5 hours, depending on the socket, including domestic sockets). In all other respects the New Captur E-TECH Plug-in works like a full hybrid E-TECH, with all the advantages of this system, such as all-electric starting and fuel economy.

The New Captur E-TECH Plug-in is fitted with a new MULTI-SENSE mode: 'PURE' mode. It is available on the screen settings or with a dedicated button. This mode forces the transition to electric driving mode (provided the battery has enough charge).

In **MULTI-SENSE 'SPORT' mode**, if the battery has enough energy, by fully depressing the accelerator pedal, **the three engines can work together thanks to the series-parallel architecture**. The vehicle can then tap into the powertrain's full potential; especially useful when overtaking, for example.



Another feature called 'E-Save', also available in MULTI-SENSE, limits the use of the electric motor and draws power from the combustion engine, to ensure a reserve of battery power (at least 40%) for if the driver needs to switch to electric mode to drive in a city centre, for example.

In mixed cycle, the New Captur E-TECH Plug-In consumes 1.5 L/100 km and emit 32 grams of CO₂/km (WLTP figures).

Unique features for the New Captur E-TECH Plug-In

The New Captur E-TECH Plug-in draws on stylistic details that are specific to the hybrid range.

'E-Tech Plug-in Hybrid' badges are affixed to the boot lid and B-pillar. The petrol tank is on the left-hand side of the vehicle. The charging socket is located on the right and has a light that gives colour-coded information as to the state of the charging process: blue (charging), green (charged), orange (waiting), red (no charge).



Inside, the seating remains unchanged. The rear bench seat can still slide 16cm and the seatbacks still fold down to leave a flat floor. A space under the hinged false floor allows the storage of the charging cables without encroaching on the boot volume.



Unique E-TECH markers are also present on the 'Smart Cockpit', including an E-TECH badge on the gear stick. The Stop & Start button has been replaced by an EV button to switch directly to 'PURE' mode (all-electric) while driving. The electric gear stick 'e-shifter' (no mechanical cables) comes with a 'Brake' function to get the most out of regenerative braking.

The New Captur E-TECH Plug-In now features the largest screens in its category: a 10.2" digital dashboard and a 9.3" Renault EASY LINK multimedia display. The two screens make it easy to manage the active driving mode. The instrument cluster can be used to display battery life, recharge time, energy flows, energy recovery and current charge level of the traction battery.



All of this information is also available via the multimedia screen.

In addition, the MY Renault app has functions specific to the E-TECH Plug-in engine. For example, you can use it to display the status of the battery or schedule recharging remotely

The limited launch editions of the Clio E-TECH EDITION and New Captur E-TECH EDITION

Available to order from spring 2020, the Clio E-TECH EDITION and the New Captur E-TECH EDITION are offered in several bodywork colours: Glacier White, Quartz White, Highland Grey, Titanium Grey and Diamond Black for the Clio; two-tone Highland Grey/Diamond Black, Cassiopeia Grey/Diamond Black, Diamond Black/Highland Grey and Pearl White/Diamond Black for the New Captur.



The New Captur E-TECH EDITION

These models are based on the Intens finish level and are distinguished by dynamic markings enhanced by a hint of copper. Located on the front bumper air intakes, the wheel rims and wing trims, they reinforce the expressive character of the vehicles. On the driver's side, a short descriptive text located below the rear-view mirror adds a technical touch to these limited editions. The lower door protectors on the Clio E-TECH

EDITION boast the same feature, as do the rear quarter panels on the New Captur E-TECH EDITION.



Clio E-TECH EDITION

Inside, the EDITION versions of the Clio E-TECH and New Captur E-TECH Plug-in impress with the technical feel of the interior, which plays on the contrasts between the light grey door and dashboard inserts and the black fittings and headliner. The whole is enhanced by blue hybrid lines on the air vents. The black and grey upholstery is finished with blue over stitching. The equipment is complemented by backlit E-TECH door sills and specific floor mats.

The New Mégane is now a rechargeable hybrid with E-TECH Plug-in technology

Since the first Renault Mégane was introduced in 1995, seven million cars over four different generations have been sold worldwide. More than just a model, Mégane has become an entire line. Now it is a saloon with many facets, as the New Mégane will demonstrate again this summer when it appears with rechargeable hybrid E-TECH Plug-in technology. This offers maximum versatility and the chance to discover a new electric driving experience while restricting CO₂ emissions and fuel consumption, even on long journeys.



Core-market plug-in hybrid technology

Renault, the expert in electric mobility, brings its expertise to the New Mégane with the 160 hp E-TECH Plug-in hybrid engine, a unique energy-recovery technology that offers a unique driving experience.

This core-market offering aims to address customer expectations. With various trim levels starting at the intermediate level, the E-TECH Plug-in engine will be available at launch on the New Mégane Estate and later on the saloon version.

Versatility and fuel economy

The E-TECH Plug-in engine with its 9.8 kWh (400 V) battery, weighing a mere 105 kg, means that the New Mégane can run in full-electric mode for 50 km at up to 135 kph in mixed cycle (WLTP) and for 65 km in urban cycle (WLTP City).

In mixed cycle, the New Mégane E-TECH Plug-In emits less than 30 grams of CO₂/km (WLTP figure pending final approval).

The New Mégane E-TECH Plug-in is versatile. It can run without using fuel on regular trips, then take you on longer weekend or holiday journeys. Regardless of the state of charge of the battery, the New Mégane E-TECH Plug-in engine benefits from the key advantages of the E-TECH hybrid system – all starts in electric mode and lower consumption.

Custom settings

The New Mégane E-TECH Plug-in is equipped with a 9.3" Renault EASY LINK multimedia display and a 10.2" digital dashboard. It also features specific Multi-Sense settings with three driving modes:

- Pure: available in the on-screen settings or by pushing a special button on the dashboard, it switches to full-electric mode provided there is enough power
- MySense: optimises the hybrid mode for lower running costs. Its "E-Save" feature reserves battery power (at least 40%) so that the driver can switch to full-electric mode when required (to drive in a city centre, for example)
- Sport: allows the driver to take advantage of maximum performance by combining the power of the three engines.

Finally, although part of the boot is used for cable storage, the New Mégane E-TECH Plug-in retains all its modularity features, such as the fold-flat rear bench seat.

Unique features for the New Mégane E-TECH Plug-in

The New Mégane E-TECH Plug-in boasts styling details that are specific to this hybrid version. The charging flap is located on the right, opposite the fuel flap on the left-hand side.



E-Tech Plug-in Hybrid badges are fitted to the boot lid and the B-pillar, and the wheel nuts are circled in blue.



Inside the vehicle, the gear lever has an E-TECH mark.



The digital dashboard has a trim and MULTI-SENSE settings that are specific to this version.



Lastly, the Stop & Start button below the multimedia screen has been replaced by a specific EV button to switch to electric driving (provided the battery has enough charge).