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## The Renault ZOE e-Sport Concept: a particularly exhilarating ZOE



**The Renault ZOE e-Sport Concept** at the 2017 Geneva Motor Show showcases Renault's commitment to the ongoing development of electric vehicles. Uniquely, the ZOE e-Sport Concept is built on a ZOE platform and converted into a racing car, drawing on Groupe Renault's three years of winning experience in the FIA (Fédération Internationale de l'Automobile) Formula E Championship, an all-electric single-seater series. Formula E is beloved for its format charting courses in the centre of major cities around the world and providing an accessible way for the general public to see high-performance electric racing.

- The ZOE e-Sport Concept features sporty styling and the same body colour as the latest Renault e.dams single-seaters.
- The bodywork of the ZOE e-Sport Concept, which tips the scales at 1,400 kilograms, including the battery (450kg), is made entirely from carbon fiber
- The ZOE e-Sport Concept accelerates from standstill to 100kph in 3.2 seconds.

*"The brief for the Renault ZOE e-Sport Concept couldn't have been simpler: 'Have fun!'. So we came up with something midway between a production model and a racing car... It's perfect for lovers of extreme driving sensations!"*

**Stéphane Janin – Director, Concept Cars Design**

Electric vehicles are **perfectly in tune with a vision for zero emissions**<sup>1</sup>. Renault, the first carmaker in Europe to believe in electric motoring, launched a full range of EVs in 2012 and continues to stand out as the market leader today. The brand continues to **explore every facet of electric motoring** thanks to a programme spearheaded by the ZOE.

- The **Renault ZOE** is an all-electric car that delivers a smooth, agile ride. Uniquely enjoyable to drive, it is built to the highest environmental standards.
- The **New Renault ZOE** premiered at the 2016 Paris Motor Show marks an important step in the development of mass-market electric vehicles. Its driving range is 400 kilometres NEDC, equivalent to real-world range of around 300 kilometres. The New Z.E. 40 battery takes the worry out of charging the car while opening up a wider spectrum of journey options. The New ZOE also comes with a new, improved suite of connected services to make electric motoring easier, including Z.E. Trip and Z.E. Pass.

*“At Renault, we believe that electric cars are capable of addressing the needs of all types of customers, with the emphasis on driving enjoyment... The Renault ZOE e-Sport Concept is a stunning expression of this!”*

**Éric Feunteun, Director, Electric Vehicle Programme**

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<sup>1</sup> zero CO<sub>2</sub> emissions and zero emissions of regulated pollutants during road use, in compliance with type-approval procedures, excluding wear parts

## I- SPORTY STYLING

Visually, the ZOE e-Sport Concept stands out through its expressive design: a **ZOE with extreme sporting prowess**.

The ZOE e-Sport Concept **Formula E affiliation is immediately apparent** thanks to a colour scheme inspired by the reigning champion Renault e.dams team's 2016/2017 livery.

- The ZOE e-Sport Concept dominant colour is Satin Blue.
- It features flashes of yellow on the door mirror housings, as well as for the front and rear bumper beading.
- There is a carbon fiber finish for the bumpers, lip spoiler and headlight/air intake surrounds.

**Traditional Renault styling cues**, plus elegant flourishes from higher-end high-performance models:

- The headlights carry over the C-shape design that has become a hallmark of the latest Renault models.
- The prominent vertically-mounted Renault front and rear diamond logos stand out through their size and backlighting, similar to Renault TreZor, the concept car unveiled at last October's Paris Motor Show.
- The ZOE e-Sport Concept doors are opened by a simple tap on the 'open' zone which incorporates tactile sensors.
- The ZOE e-Sport Concept is fitted with diamond-cut aluminium alloy Sport wheels. Contrasting angles form a core element of their design, highlighted by a two-tone finish in black and Shadow Chrome. These rims come with a central locking nut. The ZOE e-Sport Concept has extra-tinted windows.

The ZOE e-Sport Concept structure: both **fast and sticks to the road**.

- The ZOE e-Sport Concept weighs just **1,400 kg, including the battery**, thanks to the design of its chassis and the materials selected .
- Like the Renault e.dams Formula E single-seater, the ZOE e-Sport Concept's bodywork is made from **carbon fiber**.
- The ZOE e-Sport Concept is extremely efficient **aerodynamically**, thanks to a spoiler positioned below the front bumper, a flat bottom, a Formula E-inspired diffuser and a large, carbon fiber tailgate spoiler with a linear braking light.
- The chassis features a **tubular steel roll cage with protective Kevlar panels**. It complies with FIA safety standards and means the ZOE e-Sport Concept can be used at race tracks.

The ZOE e-Sport Concept inside: a **driving position that is ideal for track driving**.

- The ZOE e-Sport Concept has two RECARO **bucket seats** equipped with competition harnesses.
- The **rectangular steering wheel** gives drivers a broader field of vision, like that enjoyed by Renault's Formula E drivers.
- As in Formula E, the driver can **adjust the powertrain settings and control energy consumption**. The dash panel features three zones that permit management of the gearbox, driving mode (four options available) and brake distribution.
- Buttons on the control panel are dedicated to the control of the five lighting functions.
- The colours and materials chosen for the cabin express the car's sport pedigree. Black is the dominant colour, with a few splashes of blue and – notably for the controls – aluminium. The seats, steering wheel and door panels are trimmed with overstitched Alcantara.

## II- ENERGY EFFICIENCY FROM RENAULT SPORT RACING'S UNIQUE EXPERTISE

The ZOE e-Sport Concept's **motor** is inspired by technologies developed by engineers at Renault Sport Racing and Renault e.dams.

- The ZOE e-Sport Concept has **two motors which deliver a total of 340kW, almost 460bhp**. By comparison, rules laid down by motorsport's governing body the FIA, limit Formula E single-seaters to 270bhp.
- The two motors are identical, with one at the front of the car, the other at the rear. And, just like Formula e, they feature high-capacity permanent magnet technology to maximise energy efficiency.
- To exploit all this power, the ZOE e-Sport Concept **battery has a capacity of 40kWh**.

The ZOE e-Sport Concept also benefits from Renault's Formula E experience in terms of **optimised power delivery to the wheels**.

- The ZOE e-Sport Concept incorporates **Renault-developed power electronics** that govern battery energy accurately and dynamically as a function of the driver's needs of the moment. Energy management is completely configurable and adjustable after each drive or during race weekends.
- The **electronic settings offer four driving modes** that adapt the car to the driver's wishes of the moment, depending on whether they want performance or a longer range. They can also be tailored to suit different types of circuit and driving styles, adjusting the power delivery between the two motors to place greater emphasis on front- or rear-wheel drive.

Finally, experience acquired through motorsport allows the ZOE e-Sport Concept to **deliver its full potential whenever it is being driven**.

- As in Formula E, an **air-and-water cooling system** with a front-mounted radiator is used to make sure that the battery and control systems operate at the ideal temperature.

### Renault Sport Racing: #1 in the FIA Formula E Championship

In addition to its status as an expert in both electric road cars and electric motor racing, Groupe Renault is one of the driving forces behind the growth of the FIA Formula E Championship. It has been involved in the series as a technical and sporting partner ever since the competition's inaugural season in 2014/2015.

Renault e.dams is the team with the highest number of titles in the recently formed FIA Formula E Championship, setting the standard in the discipline with two Team crowns, one Driver's title, plus twelve race wins.

- The Renault team is led by four-time Formula 1 world champion Alain Prost and DAMS founder Jean-Paul Driot.
- Its drivers for Season 3 are the defending champion Sébastien Buemi and Nicolas Prost, and the team is targeting further glory in 2016/2017.
- Renault e.dams benefits from the technical support of Renault Sport Racing, Renault's motorsport department which has enjoyed successful campaigns in every form of motorsport.
- The Renault Z.E.16 single-seater features a SPARK-Renault SRT\_01E chassis and is powered by a Z.E.16 powerplant developed by Renault Sport Racing at its facility in Viry-Châtillon, near Paris. This powertrain is one of the grid's most powerful and technically advanced units.

### III-ROAD HOLDING THAT BENEFITS FROM THE EXPERTISE OF RENAULT SPORT CARS

The design and set-up of the ZOE e-Sport Concept's **chassis** benefit greatly from the expert input of Renault Sport Cars' specialists and their work on Groupe Renault's most extreme performance cars.

- Built by TORK Engineering, the **tubular steel chassis** derives from that of Renault Sport cars that compete in hill climbs and ice races.
- The ZOE e-Sport Concept features **lowered ride height, wider tracks and four-wheel drive** to guarantee maximum cornering stability.
- Fitted front and rear, the **double-wishbone suspension** was developed for racing and maintains efficient axle geometry in all situations.
- The ZOE e-Sport Concept's **large, 20-inch wheels** are able to transfer all the car's significant power to the road. Fitted with R20-245/35 tyres, they are an unusual sight on a racing circuit.
- The ZOE e-Sport Concept's **big brake discs** ensure competition-style stopping power.
- The ÖHLINS **four-way adjustable dampers** are another by-product of motorsport and can be adjusted to suit different circuit types or driving styles, like those selected for the Renault Megane R.S. 275 Trophy-R.

Thanks to its fully-adjustable, high-performance suspension and running gear package, the ZOE e-Sport Concept is a potent machine on the race track, too.

- The driver can alter the chassis using **the full range of settings traditionally available for racing cars**.
- The ZOE e-Sport Concept racing pedigree also extends to **slick tyres** for maximum grip on dry roads.

### IV- UNPRECEDENTED PERFORMANCE

As a result of its chassis structure, significant power and the way this power is transmitted to the wheels, the ZOE e - Sport Concept performs at an extremely high level.

- The ZOE e-Sport Concept accelerates as fast as any electric car on the market, reaching **100kph from rest in 3.2 seconds**.
- The ZOE e-Sport Concept maximum speed is capped at **210kph** and takes fewer than 10 seconds to achieve it.
- Its **power-to-weight ratio** (460bhp for 1,460kg, including the driver) is unbeatable.
- The ZOE e-Sport Concept's very high **torque output (640Nm, 320Nm per motor)** is available almost instantly. Electric motors deliver all their performance the moment they are activated. It takes only a few tenths of a second for them to reach 4,300rpm.

Designed for extreme performance, the ZOE e-Sport Concept is equally impressive in terms of the sensations it delivers.

- The ZOE e-Sport Concept reacts in a fraction of a second, thanks to its immediate pick-up and acceleration.
- **Maximum concentration:** the ZOE e-Sport Concept does not have the jolts or loud noises that characterise a sports car with an internal combustion engine, and which give drivers their usual reference points. The ZOE e-Sport Concept's acceleration and response are linear. Like those generated by a Formula E car, sound levels are limited to the noise made by the transmission changes and tyre scrub.

## FEATURES EVOCATIVE OF THE ZOE AVAILABLE TODAY FOR EVERYDAY DRIVERS

### ZOE energy efficiency

**Research aimed at optimising energy efficiency research is at the heart of Renault's development work on the ZOE road car.**

The New ZOE is fitted with a high-energy-density ZE40 battery, the significant capacity of which translates directly into an ability to cover longer distances between charges.

- The battery's large storage capacity converts directly into extended range for the car. When fitted with the Z.E. 40 battery, the ZOE boasts one of the best NEDC driving range to battery storage capacity ratios

ZOE's energy efficiency comes essentially from the base vehicle's intrinsic strengths, especially its motor.

- Since 2015, the ZOE has been fitted with an all-Renault motor that combines outstanding efficiency with optimal electronic battery management, which restricts the level of electricity consumption on the move without reducing power.

### The enjoyment of driving a ZOE

**Driving a Renault electric vehicle is punchy, smooth and reassuring.** The all-electric ZOE delivers all these sensations thanks to the brand's EV technology and to management of the delivery of the car's power to the wheels, geared toward driving enjoyment. The ZOE **takes a fresh approach** to electric mobility by ensuring a dynamic, CO<sub>2</sub> emissions<sup>2</sup>, - noise- and vibrations-free experience, with no gear shifts required.

The ZOE delivers its full potential instantly **in the form of crisp, jar-free pull-away and mid-range acceleration performance.**

- There is **high torque from very low revs.** The R90 motor delivers peak torque of 225Nm in a fraction of a second, allowing the ZOE to accelerate from rest to 50kph – the most frequently used range when motoring in built-up areas – in just four seconds.
- The electric motor's **power curve is linear.**
- Being able to pull away swiftly from traffic lights, along with slick manoeuvring in slow-moving traffic and safe overtaking are all facilitated by the ZOE's immediate response which is both practical and enjoyable.

New Renault ZOE ensures **an even simpler driving experience thanks to its extended range.**

- The New ZOE makes range anxiety a concern of the past. In addition to routine daily journeys, this extended range means the ZOE can also be used for longer trips

### Renault's leading position

Renault **tops the electric vehicle sales charts in Europe** in a consistently expanding market\*\*. Renault is still **the only carmaker in the world today to offer a commercially-available comprehensive range** of electric vehicles that cover a wide variety of uses.

- More than 100,000 Groupe Renault electric vehicles are already on the road.
- More than one electric vehicle in four sold in Europe in 2016 was a Renault.
- The ZOE was Europe's top-selling electric car for the second year in a row.
- There's an electric car for everyone, from the ZOE city car to the Kangoo Z.E. light commercial vehicle, the Twizy urban quadricycle and the status-enhancing SM3 Z.E. saloon car.

In a visionary move, Groupe Renault was the **first European carmaker** to launch all-electric vehicles back in late 2012 and its strategy is to continue **developing mass-market electric cars.**

The ZOE was the first mass-market electric vehicle to claim an NEDC driving range of more than 200 kilometres. And Renault is now one step ahead of the competition yet again: the car's NEDC driving range today stands at 400 kilometres, equivalent to a real-world range of around 300 kilometres.

- When fitted with the Z.E. 40 battery, the ZOE boasts **the longest driving range of any mass-market fully electric car** yet it is still the **market's most affordable electric car.**
- The car is hugely popular: **ZOE orders have risen by nearly 40 percent** in Europe since the new version was released in October 2016.

\* During road use

\*\* Data as of end-December 2016.

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<sup>2</sup> zero CO<sub>2</sub> emissions and zero emissions of regulated pollutants during road use, in compliance with type-approval procedures, excluding wear parts