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RENAULT FLUENCE Z.E. AND KANGOO EXPRESS Z.E.: FINALIZED DESIGNS REVEALED AND PRE-RESERVATIONS OPEN

Renault has unveiled the finalized designs of Fluence Z.E. and Kangoo Express Z.E., while customers wishing to be among the first to run on electrical power can pre-reserve their vehicle at www.renault-ze.com.

The simple act of registration allows prospective buyers to choose their electric vehicle and benefit from priority availability as soon as it comes onto the market.

Aware of the impact that motor vehicles can have on the environment over their complete life cycle, Renault has been working actively for many years to achieve ongoing improvements regarding the ecological footprint of a vehicle at every phase of its life (production, on-road use, recycling). As demonstrated by its Renault eco² programme in favour of the environment, Renault believes it is essential to ensure that the most effective technologies are available to as many motorists as possible at an affordable price.

Electric vehicles represent a clean-break solution aimed at making CO₂ emissions-free mobility in use, except wear parts, available to all.

In its bid to become the number one low CO₂ European carmaker, Renault is working on two main fronts:

- ➔ the introduction of new technologies for internal combustion engines and transmissions,
- ➔ and an unprecedented commitment to all-electric vehicles.

Renault estimates that electric vehicles will account for 10 per cent of the world market by 2020. The Alliance is investing €4 billion in its zero emissions programme and a 2,000-strong team (1,000 at Renault and 1,000 at Nissan) is already working on electric vehicles.

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RENAULT FLUENCE Z.E.

Following Fluence Z.E. Concept's unveiling at the 2009 Frankfurt Motor Show, Renault has taken the wraps off the finalized design of Fluence Z.E. which is due to go on sale in Israel, Denmark and the rest of Europe from 2011. As the C segment's first production saloon electric vehicle, Renault Fluence Z.E. targets motorists and fleet operators who are looking for a status-enhancing vehicle that is both economical to run and respectful of the environment.

RENAULT KANGOO EXPRESS Z.E.

Following last December's presentation of prototypes of the forthcoming Kangoo Express Z.E. at the COP 15 (United Nations Climate Change Conference) in Copenhagen, Renault is pleased to reveal the model's finalized design. This vehicle will be released in the first half of 2011 and will have an operational range of 160km. The electric version of Kangoo Express features the same practical functions as the internal combustion-engined vehicle, i.e. the same carrying capacity (ranging from 3 to 3.5m³), the same payload (650kg) and the same high standard of comfort. On top of that, it delivers a silent ride and responsive performance, the immediate availability of torque as soon as it starts, no gear changes, low running costs and, of course, the satisfaction of owning a zero-emissions* vehicle.

* road-use related CO₂ emissions, except wear parts

PRE-RESERVATIONS OPEN

The principle of pre-reservations and why register?

Renault is inviting those customers who want to be among the first motorists to own an electric vehicle to pre-reserve via a dedicated website: www.renault-ze.com. Registration is free and enables prospective buyers to choose their vehicle and benefit from priority availability as soon as it comes to market. These pioneering customers will then be contacted by Renault as the date of the vehicle's release approaches to obtain confirmation of their reservation.

This dedicated website (www.renault-ze.com) will also give registered visitors access to exclusive, electric mobility-related content, services and applications.

Infrastructure and existing pilot projects

Within the framework of its zero emissions strategy, the Renault-Nissan Alliance is working actively with governments, administrative bodies, local authorities, energy providers and other partners. To date, it has signed **more than 50 agreements across the world** aimed at preparing markets and establishing the necessary infrastructure for the mass marketing of electric vehicles from 2011.

The following table lists the partnership agreements that have been signed so far (European deals in bold):

Announcement date	Partners
2008	Israel, Denmark , Kanagawa (Japan), Portugal , Tennessee (USA), EDF (France) , Yokohama (Japan), Oregon (USA), Monaco , Sonoma County (USA), EOS (Switzerland) .
2009	Greentomatocars (GB) , Elektromotive (GB) , EWZ (Switzerland) , One North East (GB) , San Diego Gas & Electric (USA), Electricity Supply Board (Ireland) , Ministry of Industry and Information Technology (China), LeasePlan (NL) , Phoenix (Arizona, USA), Oak Ridge National Laboratory (Tennessee, USA), Hong Kong, Seattle (USA), Raleigh (North Carolina, USA), Singapore, Washington D.C. (USA), A2A (Lombardy, Italy) , The Netherlands , State of Victoria (Australia), RWE (Germany) , Vancouver (Canada), Barcelona (Spain) , Mexico City (Mexico), Guangdong Province (China), Saitama Prefecture (Japan), Miyazaki Prefecture (Japan), Houston (USA), Guangzhou & Dongfeng (China).
2010	Andalusia (Spain) , Reunion Island (France) , Ryokan Association (Japan), Hertz (worldwide) , Christchurch City Council (New Zealand), Orlando (USA), Houston (USA), Massachusetts (USA), Avis (worldwide) , ChaDeMo Association (Japan), Wuhan (China), Castilla y Leon (Spain) , Acciona (Spain) , ENEL (Italy) , ENDESA

(Spain), Madrid (Spain), Ireland, Sao Paulo (Brazil).

These privately- and publicly-steered undertakings indicate that the necessary infrastructures and charging facilities will be operational when electric vehicles come to market.

This will consequently reassure prospective electric vehicle users that simple, practical solutions will be in place to enable them to charge their battery, both at home and by the roadside.

Infrastructure:

Support plans for the development of infrastructure have been announced in most European countries.

- In **France**, the so-called Borloo Plan will see the installation of 75,000 roadside battery charging stations. It also introduces the notion of a "right of access to an electrical connection" for motorists who reside in a joint-ownership building or property (announcement of October 1, 2009).
- In **Spain**, José Luis Zapatero recently outlined a 15-point Electric Vehicle Action Plan, a public investment programme amounting to €590 million over two years and the introduction of some 250,000 electric vehicles between now and 2014 (20,000 in 2011, 50,000 in 2012). The government will subsidize the purchase of electric vehicles by up to 20 per cent of the total purchase price, capped at €6,000. It will also provide assistance with the development and production electric vehicles in Spain and the introduction of battery charging infrastructures.
- The **Irish** government has announced a €5,000 subsidy for buyers of electric vehicles. Electricity provider ESB plans to build 3,500 standard battery charge stations and 30 quick charge stations nationwide between now and the end of 2011.
- The **UK** Government announced a subsidy of 25% off the purchase price of an electric vehicle (up to a maximum of £5,000) from 2011.
- In certain countries, private initiatives are at a very advanced stage, too. Better Place is in the process of developing a network of battery charge and battery exchange stations across **Israel** and **Denmark** to prepare for the introduction of the market's first saloon electric vehicle, Renault Fluence Z.E., in 2011.

Pilot projects:

The Renault-Nissan Alliance is working closely with a number of pilot projects aimed at evaluating full-scale mobility systems.

Examples include:

- the SAVE Project (Seine Aval Véhicules Electrique), in association with EDF, Schneider Electric and other partners (Seine Aval Véhicules Electrique) in France's Yvelines department,
- a scheme with German energy provider RWE (North Rhine-Westphalia),
- another scheme with Italian energy provider A2A (Lombardy),
- and the VERT Project on the French-administrated Reunion Island (Indian Ocean) which sets out to look at the special case of island communities.

An innovative business model

Renault's objective is to make electric vehicle technology available to as many road users as possible. To this end, Renault will introduce a range of innovative ownership formulae.

For the first time, the vehicle and the battery will belong to different owners. Customers will either buy or hire their vehicle and take out a subscription that covers the hire of the battery and the availability of new mobility services designed to facilitate the life of consumers.

Renault's aim is to market electric vehicles at prices comparable with those of a diesel-powered car of an equivalent size and equipment level. The Total Cost of Ownership (TCO) of electric vehicles will be similar to that of internal combustion-engined vehicles from launch.

Volume forecasts

Renault and Better Place have committed to providing the Israeli and Danish markets with 100,000 Fluences between now and 2016. In 2011, Fluence will be imported and distributed in Israel by Better Place. In Denmark, the latter will suggest that customers buy their car from a Renault dealership.

Renault's electric vehicle production strategy

Renault will manufacture its first four zero-emission^{*} vehicles in four different factories, with production beginning in 2011.

Renault will make the vehicle previewed by Zoe Z.E. Concept in Flins, near Paris, while the electric versions of Kangoo Express will be manufactured in Maubeuge, in northern France.

The car derived from the Twizy Z.E. Concept concept car will be produced at the Valladolid factory in Spain. Last but not least, electric versions of Fluence will be made in Bursa, Turkey.

This will permit Renault to supply Western Europe with zero-emission^{*} vehicles on a large scale thanks to the location of production plants as near as possible to the market. This will also allow Renault to benefit from the expertise of these factories with regard to productivity and quality.

The Renault-Nissan Alliance's battery production strategy

Battery production will become one of the Renault-Nissan Alliance's core activities. Renault and Nissan will produce lithium-ion batteries on three continents – America, Asia and Europe – in order to supply the assembly plants for the forthcoming EVs from a local source.

Batteries will initially be purchased from the Nissan-NEC joint venture AESC and imported from Japan.

^{*} road-use related CO₂ emissions, except wear parts

Factories will then gradually be established as close as possible to the vehicle production facilities.

Battery production facilities are currently under development in:

- Flins (France),
- Sunderland (UK),
- Cacia (Portugal),
- Smyrna (Tennessee, USA),
- Zama (Japan).

This multi-localization will lead to secure supplies and lower logistical costs, while also permitting higher production volumes. Thanks to this arrangement, the Alliance will eventually be capable of producing 475,000 batteries yearly.

RENAULT FLUENCE Z.E.

Following the unveiling of Fluence Z.E. Concept at the 2009 Frankfurt Motor Show, Renault has taken the wraps off the finalized design of Fluence Z.E. which is due to go on sale in Europe and Israel from 2011. As the C segment's first production saloon electric vehicle, Renault Fluence Z.E. targets motorists and fleet operators who are looking for a status-enhancing vehicle that is both economical to run and respectful of the environment.

Renault Fluence Z.E. will be manufactured at the OYAK-Renault factory in Bursa, Turkey, on the same production line as the internal combustion engine-powered versions of Fluence. Production is due to begin in the first half of 2011.

Immediately identifiable

As the compact segment's first three-box electric vehicle, it was imperative that Renault Fluence Z.E. should be recognizable at first glance. To distinguish it from the internal combustion engined-version, it comes with a package of specific features and details that unmistakably associate it with Renault's electric vehicle range.

The electric version of Fluence stands at a length of 4.75 metres, which is 13 centimetres longer than its internal combustion-engined cousin in order to accommodate the battery behind the rear seats. At the same time, the lines of its flanks have been revised in order to maintain the same overall balance as the original version.

At the front, the Renault logo, foglamp surrounds, headlamp brows and lower part of the headlamp mask are all picked out in a blue-hued colour. The upper air intake is traversed by a gloss black strip incorporating a blue chrome trim that links two similarly-finished circles situated either side of the grille. Finally, the lower air-intake incorporates a body-colour strip that runs between the two foglamps.

Renault Fluence Z.E.'s lines are taut and fluid, while the rear quarter panels have been harmoniously extended in order to absorb the additional length resulting from the longer rear overhang. This design encases the rear screen in a way that recalls the rear-end styling of prestigious sports coupés, while a gloss black trim at the bottom of the screen emphasizes the rear's harmonious proportions. The design of the rear lights, which extend forward either side of the car, also contributes to the overall balance of Renault Fluence Z.E.'s lines. The clusters themselves feature a pattern made up of backlit blue-hued lozenges.

Gloss black exterior mirror housings, body-colour painted side protective mouldings and the **battery charge flaps on both wings** add the finishing touch to Renault Fluence Z.E.'s uniquely expressive looks, as do the boot lid's blue-hued panel and the Fluence Z.E. badge. Last but not least, the rear bumper incorporates a black diffuser which is engineered to reduce aerodynamic drag, while the wheels have been specially designed to minimize turbulence.

Several body colours are available, including Energy Blue, a new colour that is specific to Renault's

electric vehicle range.

A spacious, status-enhancing vehicle

Renault Fluence Z.E. is conclusive proof that electric vehicles do not have to be small, narrow and uncomfortable city cars with a limited touring ability.

The new model is the same width as the internal combustion engine-version of Fluence, and the cabin space it delivers is worthy of that of a saloon car from the next segment up, including best-in-class front and rear elbow room.

Renault Fluence Z.E.'s interior is based on the same layout as the internal combustion-engine version. Only the rev-counter has been replaced by a bespoke instrument which displays data concerning remaining range and battery charge. The decorative trim of the uncluttered dashboard is picked out in a colour that is exclusive to the model, while the centre console includes the displays "forward", "reverse", "neutral" and "parking" which are the different positions for the transmission control lever.

Renault Fluence Z.E. also packs a raft of useful technologies, including a built-in smart navigation system, Bluetooth telephony and automatic dual-zone climate control, plus automatic headlamp and windscreen-wiper activation.

Renault Fluence Z.E. targets families looking for a spacious, comfortable vehicle, and total boot space amounts to 300dm³ (VDA/ISO).

The electric version of Renault Fluence is likely to figure on the shopping list of many fleet operators thanks to its low running costs.

Technology

Renault Fluence Z.E. is an entirely electric vehicle.

- **Motor**

Fluence Z.E. is powered by a synchronous electric motor with rotor coil. Peak power is 70kW at 11,000rpm, while maximum torque is 226Nm. The weight of the motor – excluding peripherals – is 160kg. Acceleration performance is crisp and linear, with maximum torque available very early on.

- **Battery**

The capacity of Renault Fluence Z.E.'s lithium-ion battery is 22kWh. The battery itself tips the scales at 250kg and is located behind the rear seats in order to free up a boot volume of 300dm³ (VDA/ISO).

An energy recovery system enables the battery to be charged when the car decelerates.

- **Battery charging methods**

It will be possible to charge the battery of Renault Fluence Z.E. in one of three ways:

- **Via a household mains supply** (10A or 16A, 220V) which will fully charge the battery in between six and

eight hours. This method is particularly suited to vehicles which are charged during the workday or at night, since it permits owners to benefit from the off-peak rates available in certain countries.

- At fast charge stations using a **32A 400V supply which enables the battery to be charged in approximately 30 minutes** (available in 2012 or 2013, depending on model).

- **The QuickDrop battery switch system** will enable Renault Fluence Z.E.'s battery to be swapped in approximately three minutes at bespoke battery exchange stations.

- **Chassis**

In order to adapt the ride to Renault Fluence Z.E.'s specific characteristics (dimensions, weight distribution), the suspension has revised settings compared with the layout seen on internal combustion-engined versions of Fluence. The front suspension setting is softer, since electric motors are lighter than all the internal combustion engines available for Fluence. Meanwhile, the rear suspension has been revised to cope with the heavier weight due to the presence of the battery.

- **Tyres**

Renault Fluence Z.E. runs on low rolling resistance tyres. The Goodyear-developed EfficientGrip enables lower energy consumption thanks to extensive work on tyre casings and sidewalls. The tread is identical to that of a conventional tyre in order to ensure high-performance road holding and braking.

- **Dialled-in safety**

The ABS and ESC electronic driving aids have been recalibrated. On the passive safety front, Renault Fluence Z.E.'s body structure has been strengthened in order to deliver the same high standard of safety performance as the shorter and consequently lighter internal combustion-engined version.

- **Production**

Renault Fluence Z.E. will be manufactured at the OYAK-Renault factory in Bursa, Turkey, on the same production line as the internal combustion-engined versions of Fluence. Production will begin in the first half of 2011. This solution will enable Renault to minimize capital outlay and get production under way rapidly, while at the same time guaranteeing a very high standard of quality.

The production of Renault Fluence Z.E. at Bursa will also permit Renault to benefit from plant's outstanding performance in terms of quality, cost and delivery times, as well as from its local network of suppliers. This in turn means that the Group will be able to market this zero-emission* saloon car at prices that are as attractive as those of the internal combustion-engined versions of the model.

* road-use related CO₂ emissions, except wear parts

TECHNICAL DATA – RENAULT FLUENCE Z.E.

DIMENSIONS	
Length (mm)	4,748
Width (mm)	1,813
Height (mm)	1,458
Wheelbase (mm)	2,701
Front/rear track (mm)	1,537/1,555
Front/rear overhang (mm)	907/1,140
Unladen weight (kg)	1,543
Standard tyres	205/55 R16
MOTOR	
Type	Synchronous electric motor with rotor coil
Transmission type	Direct drive, with reducer and forward/reverse inverter
Maximum power EEC (kW)	70
Maximum torque EEC (Nm)	226
BATTERY	
Type	Lithium-ion
STEERING	
Power steering	Electric, variable rate
PERFORMANCE	
Range (km, NEDC combined cycle)	160
Top speed (km/h)	135 (capped electronically)

RENAULT KANGOO EXPRESS Z.E.

Following December's presentation of the forthcoming Kangoo Express Z.E. at the COP 15 (United Nations Climate Change Conference) in Copenhagen, Renault is pleased to reveal the model's finalized design.

This vehicle will be released in the first half of 2011 and with an operational range of 160km. The electric version of Kangoo Express features the same practical functions as the internal combustion-engined version, i.e. the same carrying capacity (from 3 to 3.5m³), the same payload (650kg) and the same high standard of comfort. On top of that, it delivers a silent ride and responsive performance, immediate availability of torque as soon as it starts, no gear changes, low running costs and, of course, the satisfaction of owning a zero-emissions* vehicle.

Renault Kangoo Express Z.E. is a light commercial vehicle aimed at business users. It is due to be released in 2011 and will chiefly be used in and around built-up areas.

Renault Kangoo Express Z.E. targets extremely exacting business users looking to minimize running costs and has accordingly been engineered to guarantee a very high standard of reliability and durability. Its outstanding TCO rating (Total Cost of Ownership) makes it a first class solution for small businesses and fleet operators alike. It will also benefit from Renault's extensive experience of van production. To this end, Renault has chosen to manufacture the electric version of Kangoo Express at its M.C.A. facilities (Maubeuge Carrosserie Automobile) in northern France. Production is due to begin in the first half of 2011.

The new vehicle will be manufactured on the same line as internal combustion-engined versions, and will consequently benefit from the same know-how, supplier network and logistical framework as the current Kangoo. The Maubeuge plant has specialized in van production for 20 years and is capable of adapting both to the broad range of specifications associated with this type of vehicle (short and long versions, with or without windows, etc.) and to demand. The choice of Maubeuge will enable production to get under way rapidly, while at the same time guaranteeing a very high standard of quality.

Kangoo Express Z.E.'s exterior styling

The length of Renault Kangoo Express Z.E. stands at 4.21 metres, while carrying capacity ranges from 3 to 3.5m³. The battery is located in a central position beneath the floor, enabling the electric version of Kangoo to boast the same carrying capacity as the internal combustion-engined version. The asymmetric hinged rear doors and sliding side door provide easy access to the cargo area.

New Kangoo Express Z.E.'s overall design is similar to that of the internal combustion-engined version, with a short nose, robust front end and teardrop-shaped crystal headlamps. A chromed Z.E. badge in the

* road-use related CO₂ emissions, except wear parts

form of a leaf with turquoise lettering at the rear indicates that it is an electric vehicle. The flap situated at the front of the vehicle, near the right-hand headlamp, is badged "Z.E.", another sign that this vehicle is powered by electricity. Energy-efficiency is further enhanced by the fitment of low rolling resistance tyres.

New Kangoo Express Z.E. will be available in a choice of 11 different special effect or non-metallic body colours, and the colour that has been chosen for the launch is Silver Blue.

Customers will also be to specify the colours of their business, since Kangoo Express Z.E. is above all intended for fleet use.

Kangoo Express Z.E.'s interior

Range management is a key factor when it comes to electric vehicles, and Renault has taken significant steps to make this aspect as straightforward and efficient as possible. A specific dashboard display has been developed to ensure that the driver is kept informed about remaining battery charge and operational range:

- a gauge alongside the speedometer indicates how much battery charge remains,
- an 'econo'-meter provides the driver with an indication of energy consumption based on a system that employs three colours: light blue depicts normal use, dark blue reveals optimal energy use, while red informs drivers when they are using excessive energy in a way that will have an adverse effect on the vehicle's operational range,
- the speedometer needle moves across a turquoise arc,
- the trip computer's functions are adapted to the needs of electric vehicles. It displays remaining range and remaining battery energy (kWh), as well as real-time and average energy consumption.

An all-electric motor

Renault Kangoo Express Z.E. is an all-electric vehicle. Renault Kangoo Express Z.E. is powered by a 44kW electric motor which boasts energy efficiency of 90 per cent, a figure that is far superior to the 25 per cent associated with internal combustion engines which suffer from energy losses. For example, when an electric vehicle consumes 10kWh of energy, 9kWh is actually transmitted to the wheels, compared with just 2.5kWh in the case of an internal combustion engine.

This motor revs to 10,500rpm and instantly delivers peak torque, which is a constant 226Nm. Acceleration from low speed is particularly responsive. The electric motor is very quiet, too. The 22kWh battery is located beneath the boot floor and does not affect Kangoo Express Z.E.'s load capacity.

When the driver presses the accelerator pedal, the lithium-ion battery transmits energy to the electric motor. The latter converts this energy into mechanical movement which is in turn transmitted to the driven wheels. The battery charges whenever the vehicle decelerates. When the driver lifts his or her foot from

the pedal, the vehicle's kinetic energy is recovered by the motor which converts it into electric current. The current generated is stored in the battery.

The vehicle's other ride-related performance features (control of body roll, steering, etc.) are identical to those of the internal combustion-engined Renault Kangoo Express.

Battery charging

Renault Kangoo Express Z.E. is charged via a socket located behind a flap alongside the right-hand headlamp. A conventional charge via a household mains supply (16A 220V) will charge the vehicle in between six and eight hours. This method is perfectly suited to vehicles that are parked up overnight or during the day at the workplace.

Renault Kangoo Express Z.E. will go on sale in the first half of 2011 with an operational range of 160km.

TECHNICAL DATA – RENAULT KANGOO EXPRESS Z.E.

DIMENSIONS	
Length (mm)	4,213
Width / with exterior mirrors (mm)	1,829 / 2,133
Unladen height (mm)	1,818
Wheelbase (mm)	2,697
Front track (mm)	1,522
Rear track (mm)	1,536
Ground clearance, unladen/laden (mm)	186 /143
Weight (kg)	1,410
Carrying capacity	Between 3 and 3.5 m ³
Payload	650kg
Number of seats	2
TECHNICAL DATA	
Motor	Synchronous electric motor with rotor coil
Power (kW)	44
Maximum revs (rpm)	10,500
Torque	226 Nm
Transmission	Direct drive with reducer
Battery	Lithium-ion
PERFORMANCE	
Range (NEDC cycle)	160km
Top speed (kph) (capped electronically)	130

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Electric vehicle website: www.renault-ze.com

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