



PRESS KIT

2012 PARIS MOTOR SHOW

FOCUS RENAULT ZOE



DRIVE THE CHANGE



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ZOE: PURITY, EMOTION AND SIMPLICITY



ZOE celebrated its world premiere at the 2012 Geneva Motor Show and is on public show in the metal for the first time in Paris. As spearhead of Renault's Z.E. range, ZOE is a compact hatchback with pure, flowing lines and was designed from the ground up exclusively as an electric vehicle. Like Twingo, Twizy and New Clio, ZOE wears the new Renault brand identity, with slim headlights and a wide black grille highlighting a prominent Renault logo in its centre. This logo is hinged to reveal an essential feature: the socket for the battery charger.

Electric Vehicle hallmarks: white, blue and plenty of light

ZOE's electric identity can be seen in the blue effect applied to the Renault logo, headlights, tail lights and tinted windows across the range. Pastel shades make up the palette of body colours and, unusually for a production car, the rear lights are transparent, etched with concentric blue rings; these rings only turn red under braking. Last but not least, ZOE signals its membership of the electric club with two bright 'dimple' lines illuminated by the LED daytime running lights.

ZOE and ZOE Preview near-identical twin sisters

Jean Sémériva, designer of the ZOE Preview show car, is also the man behind the design of the production version. **"The design of ZOE Preview, which was unveiled at the Paris Motor Show in 2010, was an instant hit with customers and with our in-house teams. It was 90 percent true to the production car and gave a foretaste of the excellent welcome that ZOE would receive at the Geneva show."**

Purity and emotion, the two keywords of ZOE's styling

ZOE's lines, which appear stretch the whole length of its body, express a sense of purity.



"In its design, ZOE was treated as a whole, like a drop of water. ZOE is a car that can't be pigeonholed; it has been designed for motion, as a stress-free means to move from A to B..."

**Jean Sémériva,
ZOE's designer**

Work on ZOE's aerodynamics was particularly thorough and was taken to a more advanced level than with standard programme processes. ZOE spent no fewer than 135 hours in the wind tunnel to validate the solutions aimed at reducing its CdA (drag coefficient):

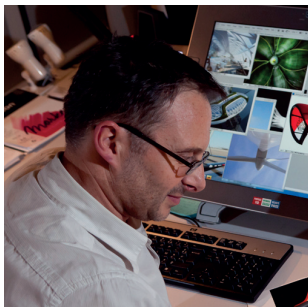
- The diffuser reduces turbulence at the rear.
- The front air intake channels air underneath the body.
- The turbine-like design of the 16-inch Aerotronic wheels was developed to enhance aerodynamic performance.
- Streamlining is further improved by the tighter wheel arch clearances which also enhance ZOE's dynamic look.

ZOE's agility, dynamism and friendly expression all play on the emotions. With its neat, sculpted forms, long wheelbase and high waistline, ZOE was honed for motion.

The interior – pure Zen



It's here that the break with traditional car culture becomes clear.



“Electric cars will change people’s routines. With the electric car comes a new type of pride – that derived from consuming less. People are no longer stressed out and thirsting for performance; instead, they’re seeking calm.”

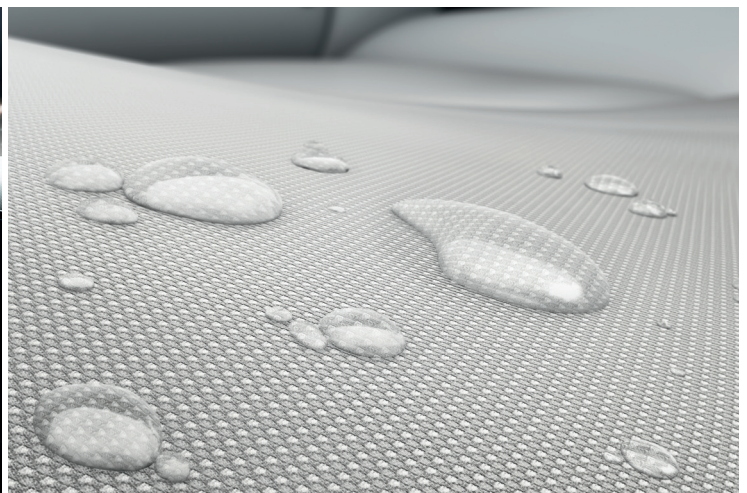
**Dominique Marzolf,
Interior Designer, ZOE**

The central R-Link console appears to ‘float’ above the dashboard. This multimedia system has a large seven-inch touchscreen display and gives a friendly, high-tech feel to the interior.

“We wanted to create an exquisite object, technical yet intuitive to use – just like a smartphone.”

In order to create a relaxing ambience, pale colours dominate. The lines are clear and simple and, in a reference to renewable energy, the central band across the dashboard is shaped like the blade of a wind turbine. This white trim element introduces a new soft-touch material inspired by home furnishings. With a strip of blue-hued chrome running along its top edge, it contrasts with the beige grain of the upper dashboard.

The front seats and their integral head restraints are upholstered in a pale fabric (on the ZEN version) which is given a Teflon anti-stain treatment to make it easy to clean.



ZOE AND ZOE INTENS, two flagship models that embody purity and emotion

With its pearlescent white paintwork, blue-tinted glazing and soft-hued interior (white, beige, blue and chrome), the **ZEN** version suggests purity. It qualifies for the 'Take Care by Renault' signature and, as such, is dedicated to the comfort and wellbeing of its occupants.



ZOE INTENS, on the other hand, delivers a more dynamic feel with an interior ambience that places the emphasis more on black and high-tech features. This version is equipped as standard with parking aids including a reversing camera.



02 | INNOVATION FOR ALL

RENAULT ZOE: THE SPEARHEAD OF RENAULT'S Z.E. TECHNOLOGY AND INNOVATION DRIVES



After ZOE, nothing will ever be the same!

The introduction of ZOE, the first affordable vehicle to be designed from the ground up as an electric car, sees Renault put Zero Emission mobility within reach of the vast majority of motorists. It is an ideal car for everyday use and tax-paid prices start from €13,700 (in France, with state subsidy of €7,000 deducted). ZOE showcases Renault's electric vehicle excellence and incorporates advanced electric vehicle technology, with more than 60 patents registered in the course of its development. The innovations it packs were designed to be easy to use, extend range and ensure connectivity.

A suite of technological innovations to make EVs your car of tomorrow! Sixty patents and six world firsts!

An electric vehicle that boasts six world firsts:

1. The first mass-market electric vehicle with a tax-paid price tag starting from €13,700 (in France, with state 'eco' subsidy of €7,000 deducted).
2. The first mass-market electric vehicle with a homologated NEDC-cycle range of 210km.
3. The first vehicle to be equipped with 'Range OptimizEr', a system designed to optimise operational range under all driving conditions. In built-up areas, for example, ZOE will be able to cover approximately 100km in cold weather and approximately 150 km in mild temperatures.
4. Thanks to its Caméléon battery charger, ZOE is the first electric vehicle that can be fully charged in between 30 minutes and nine hours depending on the power available at the charging station (between 3kW and 43kW), using a single type of connection for the car.
5. The first electric vehicle to enable the massive roll-out of fast charging stations which are easier to use and up to four times more economical for local authorities.
6. The first vehicle to be equipped as standard (*) with Renault R-Link, an integrated, connected, multimedia tablet.

All versions of ZOE equipped with R-Link

On ZOE, Renault R-Link deploys functions dedicated to electric vehicle use. The TomTom LIVE navigation system displays a circle depicting the reachable distance with remaining battery range. It is also capable of suggesting the most energy-efficient itinerary and of showing the location of charging stations(**) on the map. Drivers can visualise in real time the histogram of their energy consumption, as well as energy flows between the battery and the vehicle's electricity-consuming functions.

At the end of the journey, drivers can review their eco driving performance thanks to the Driving eco² function. An analysis of their driving style as well as personalised advice to drive even more economically are proposed.



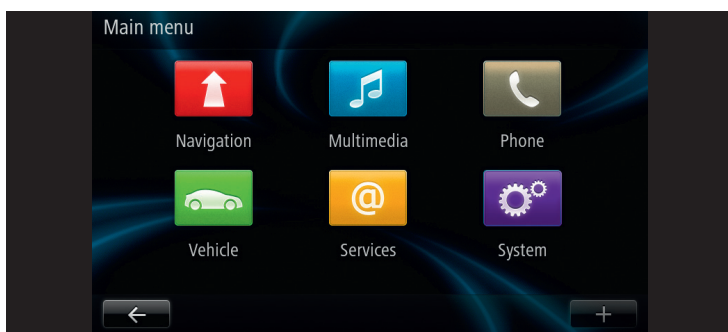
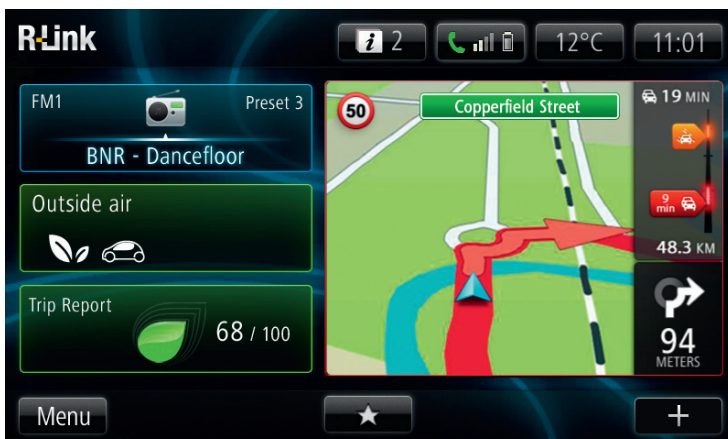
(*) Versions available at the time of the model's launch
(**) Mapping by TomTom®

Centre console puts key functions and information within easy reach

Renault R-Link forms an integral part of the centre console's modern design and is extremely practical thanks to its large seven-inch (18 cm) touchscreen display. All its functions (navigation, radio, Bluetooth® telephony, audio streaming, music and connectivity to portable devices, connected services, 'eco' driving tips, etc.) are located in a single place, which makes it particularly easy and fun to use.

Renault R-Link has been carefully designed to ensure that information is available as and when it is required, which means the driver doesn't have to take his or her eyes off the road to use an array of portable devices, thanks to:

- A large touchscreen display:
 - The seven-inch (18 cm), easy-to-use display was carefully designed by Renault to be practical and useful. Its clear graphics, straightforward menus and clear information make its different functions intuitive, fast, easy and safe.
 - The home page can be personalised. An exclusive feature of Renault R-Link is the fact that road maps are displayed along with information concerning traffic conditions, the music or radio station being played, 'eco' driving tips and COYOTE Series alerts, plus a clock and weather information. Contents can be personalised to permit swift access to favourite functions, destinations, telephone numbers, radio stations and the most frequently used applications.
- A menu with six icons which provide easy access to the six main functions: Navigation, Multimedia, Phone, Vehicle, Services and Applications, and System.



- Fingertip control or voice commands to access main functions, without the driver having to take his or her eyes off the road:
 - the touchscreen display permits fingertip control which doubles up with the steering column-mounted remote controls for the audio and telephone functions,
 - intuitive voice commands make it possible to dictate the address of a destination for navigation purposes, for example, or to call up different functions using spoken instructions such as 'telephone', 'apps', 'send an e-mail', etc. The speech recognition function is activated by pressing a button on the steering wheel to make use of the technology both safer and more practical.

In addition, the Text To Speech function (TTS) function permits messages or RSS feeds to be read out loud in certain applications.

With ZOE, drivers can also stay informed or even interact with their vehicle thanks to two packs:

- the 'My Z.E. Connect' pack (standard on ZOE),
- The 'My Z.E. inter@ctive' pack (optional or standard on high-end versions).

Stay in touch on the move: the 'My Z.E. Connect' pack (standard for ZOE)

Wherever they are, drivers can use their smartphone or computer to access the following information:

- Battery charge level, estimated range based on the most recent driving data, time of the last battery charge, charge status (in progress/completed/problem/low), time remaining for a complete charge, monthly charge log^(*).
- The location of local battery charging stations.
- Advice on how to improve the way the driver uses his or her electric vehicle in order to optimise range (e.g., use of the cabin pre-conditioning facility, smooth driving style, etc.).

The 'My Z.E. inter@ctive' pack (optional, or standard for high-end versions) allows drivers to interact remotely with their vehicle

Thanks to this pack, drivers can use their smartphone or computer to:

- Start or programme pre-conditioning of the cabin.
- Start remote charging of the battery.
- Programme a weekly battery charging schedule by selecting set times.
- Optimise battery charging times as a function of electricity rates and CO₂ emissions^(*).

Depending on country, this pack permits the three nearest available charging stations to be located.

Renault R-Link: the link between the car and the connected world outside

Renault R-Link is 'connected' to the car:

Renault R-Link is linked to the car's electronic control units, thereby permitting the integration of new functions linked to the vehicle. For example, 'Driving eco²' provides drivers with an analysis of the way they have driven over a given itinerary and advises on how they can optimise energy consumption and range. In the case of ZOE, it provides a comprehensive package of services specifically aimed at optimising the car's range.

Renault R-Link is connected to the outside world and to the internet via an integrated EDGE 2.75G connection. Renault R-Link is the first multimedia system to deliver:

- TomTom HD Traffic® traffic information to facilitate everyday journeys by warning of traffic build-ups and hazards and by suggesting the most efficient itinerary.
- Coyote Series alerts*: a community-based service which warns drivers of hazards on the road in real time thanks to a community of more than 1.6 million users across Europe.
- Renault R-Link Store: a pioneering store for automotive apps which proposes the first regularly updated catalogue of automotive apps.

Renault R-Link : TomTom HD Traffic and Coyote Series



- The very best of TomTom navigation including IQ Routes technology: calculates the ideal itinerary based on a statistical analysis of journey times during the six previous months, taking the day of the week and time of day into account.

LIVE services including:

- HD Traffic: the market's best traffic information service, including an analysis of traffic flow by cross-referencing different sources of information for sections of road of just a few dozen metres in length. For any given itinerary, HD Traffic will optimise the motorist's journey in order to avoid time loss or save fuel. It also provides precise information about the estimated arrival time as soon as the motorist sets off.
- TomTom Places: an online search facility in real time to locate a variety of features and services.
- 5-day weather forecasts.
- Hazard warnings: depending on local legislation.



- The Coyote Series^(*) driver aid application indicates hazardous zones thanks to real-time input from other users. Such zones may or may not include fixed speed checks. Coyote Series also warns of traffic incidents (accidents, items on the road, etc.) to improve everyday road safety by enabling the driver to anticipate the presence of slower-moving vehicles.

Renault R-Link Store: poised to become a benchmark catalogue for automotive applications

The strength of Renault R-Link lies in the fact that it proposes a store of applications designed for automotive use, without the functional or ergonomic-related shortcomings inherent in smartphones. R-Link Store is the first automotive application store for in-car use. The launches of New Clio and ZOE will coincide with the availability of an Introductory Pack of four pre-installed applications to enable owners to familiarise themselves with the connectivity made possible by R-Link. The free, pre-installed apps will be: e-mail, Weather, Renault Assistance and Renault R-Link Tweet, plus the LIVE services associated with the TomTom and Coyote Series functions (depending on market). The system is fully independent and there is no need to use a phone to access the available services and applications. Instead, it is possible to consult or download a variety of services directly from the car or from a personal computer (via 'My Renault' where available). There are currently some 20 applications available via R-Link Store, and this choice is poised to expand very quickly as the system is extended to other vehicles of the range.

The apps catalogue will cover a broad spectrum of uses, extending from journey optimisation (TomTom LIVE services, fuel prices, location of parking places) and vehicle information (the monitoring of servicing, etc.), to budget guides ('by-the-kilometre' insurance, Renault tips, etc.), practical help (phone numbers, yellow pages, etc.), communications (e-mails, social networking, R-Tweet app) and entertainment/leisure (travel information, etc.), as well as emergency calls.

Available apps include PagesJaunes, Guides Michelin, Guide Marco Polo, Metro, Euronews, ELLE Astro France, Tourism Radio, Balumpa, Apila, I-Dispo.



RENAULT R-Link : fields covered by R-Link Store apps

■ **Communication:** e-mails, social networking, web navigation, etc.

■ **Journey optimisation:** TomTom® LIVE services (HD Traffic®, speed check warnings [where authorised], TomTom Places, weather forecasts, Coyote Series alerts [where available], fuel prices, location of parking places, etc.).

■ **Practical information:** personal phone numbers, yellow pages, hotels, restaurants, etc.

■ **Emergencies:** emergency help calls in the case of an incident, Renault Assistance.

■ **Mobility:** multi-mode journey planning, public transport.

■ **Budget guides:** 'by-the-kilometre' insurance, Renault tips, etc.

■ **Vehicle information:** monitoring of vehicle servicing, owner manual, etc.

■ **Entertainment and leisure:** games, information, travel information, engine sound profile, personalisation, etc.

■ **Professional use:** fleet management, journey management, remote diagnostics, working away from base, expenses forms, etc.

R-Link enables motorists to benefit from the information they need as and when it is required. Drivers no longer have to depend on a variety of portable systems or telephones and can stay focused on the road ahead. Strict rules make sure that the apps developed for Renault R-Link are suitable for motorists, either by ensuring that they are easy to use or by restricting access to certain functions while the vehicle is on the move. For example, functions which are deemed to be excessively interactive or long to use may only be called up when the vehicle is at a standstill.



Renault R-Link: an 'open innovation' approach and 'Paris Incubateur'

Renault R-Link will go on to deliver even more services thanks to its original 'open innovation' policy which Renault has favoured in order to enjoy closer bonds with young entrepreneurs. This approach is founded on associations with major partners, development companies and start-ups which are proving particularly fertile when it comes to innovative ideas in the field of connected services and applications for automotive use. This determination to seek out and work with young entrepreneurs has been helped by Renault's association with 'Paris Incubateurs' (which belongs to Paris Region Innovation Lab and has eight 'incubators' in Paris). The 'Mobility and Connected Services' start-up incubator was inaugurated in May 2012.

- **Partnerships with benchmark businesses:** in order to provide a range of innovative applications for motoring use, Renault has established contacts with more than 100 partners and/or development companies.



Founding of a 'Connected Mobility' start-up incubator

At the beginning of the year, Renault and Paris Incubateurs put out a tender with a view to making contact with innovative new businesses working in the field of connected services, information technologies or mobility-related communications. The process resulted in the selection of five companies which were invited to work on their project within the framework of the 'Connected Mobility' incubator set up by the two partners.

This is the first time a major company has teamed up with one of the French capital's incubators to assist and speed up the growth of innovative new businesses. Thanks to this original, 'open innovation' approach, Renault enjoys special ties with the young entrepreneurs involved. For the start-ups themselves, not only does this partnership give them a chance to work within the dynamic framework provided by 'Paris Incubateurs' (availability of premises and a plug&play telecom infrastructure in Paris, personalised, collective business coaching, access to finance through the Paris Innovation Amortgage fund, etc.), but it also allows them to benefit from a special relationship with a big company like Renault.



- Five innovative start-ups were selected after the selection process:

- **Apila (smart community parking):** this start-up, which was founded by Cyril Hersch, has developed a mobile community app (for iPhone and Android) which seeks to solve the problem of car parking in towns and cities, allowing motorists to be guided to the nearest available parking space in the shortest time possible to take the place of somebody else who is about to leave. The availability of the Apila app for Renault R-Link will help the community and user numbers to grow.
- **TelePark (delocalised car park payment):** like Apila, TelePark proposes a solution to facilitate parking but this app is also of interest to local authorities since it permits payment for parking to be made using a mobile terminal. Founded by Stephan Anescot, this company also enables local authorities to manage its car parks and the issuing of parking tickets automatically.
- **I-DISPO (virtual concierge):** this start-up stems from an idea by Ismaël Nzouetom and helps individuals to organise their appointments efficiently with the help of professionals, allowing them to optimise their diaries. I-DISPO sees Renault as a valuable partner within the framework of the Renault R-Link system.
- **SoCloz (shopping information):** founded by Jérémie Herscovici, SoCloz enables users to check the availability of items spotted on-line in actual shops. This start-up has just raised one million euros from Alven Capital and FA Dièse and already proposes a list of one million products available in 7,000 different sales outlets.
- **MobiquiThings (universal multi-network, multi-operator SIM card):** run by Cyril Hullin, this company is a Machine to Machine connectivity service provider which enables multi-operator and multi-network telecommunications coverage. It seeks to propose its versatile multi-operator SIM card solution to Renault.

A mentoring approach to assist the growth of these start-up businesses:

- The selected start-ups benefit from the advice of mentors provided by Renault who help to steer the projects thanks to their expertise of the automotive world. Renault also serves as a guarantor for these start-ups with regard to potential investors.
- This sort of mentoring allows strong ties to be established with the start-ups in order to forge durable relationships. The different projects benefit from Renault's experience of project management, while Renault benefits from the young entrepreneurs' flexibility and vitality.

ZOE: the world's best-performing mass-produced electric vehicle in terms of range thanks to the exclusive 'Range OptimizEr' system

With an operational radius of between 100 and 150 kilometres depending on driving style and weather conditions, ZOE has the biggest range in its class. As proof, ZOE is the only mass-produced electric vehicle to boast a homologated^(*) NEDC cycle range of more than 200km (210km). This success is due to the 'Range OptimizEr' system which equips all ZOE's. It features three major technical innovations: new-generation recovery of braking/deceleration energy, a heat pump and Energy™ E-V tyres.

It features three major technical innovations:

- new-generation regenerative braking/deceleration energy,
- a heat pump,
- and Energy™ E-V tyre.

“The technology packed by the 'Range OptimizEr' system allows us to extend ZOE's range by almost 25 percent. Each of the three innovations which make up the system – new-generation braking energy recovery, the heat pump and tyres – accounts for approximately one-third of this increase.”

Bernard Dumondel
Director, Electric Vehicle Specification

New-generation regenerative braking estores kinetic energy produced not only under deceleration but also under braking, then converts it into electrical current to charge the battery. The system distributes the braking effort between the wheels and the electric motor brake in order to maximise the action of the latter which then charges the battery. This innovation was developed in association with Bosch and is a world first in the case of ZOE.

In addition to providing excellent thermal comfort in the cabin, **the heat pump** also optimises vehicle range. It operates in the same way as reverse air conditioning:

- To cool the cabin, the system operates like a conventional climate control system.
- To heat the cabin, the system is reversed. Outside air at ambient temperature is compressed to heat it before it is channelled into vehicle.

This system, which is being used for the first time in a production road car, allows ZOE to minimise the energy it draws from the battery to heat cabin air.

The MICHELIN ENERGY™ E-V tyre

is an innovation jointly developed by Renault and Michelin. ZOE will be the first vehicle to be equipped with this highly energy-efficient tyre which enhances vehicle range. It benefits from more than two decades of research and development at Michelin and combines energy savings, safety and durability. Within the framework of new European tyre labelling legislation, it was awarded the maximum rating (A) for low rolling resistance and grip on wet roads. It is available for 15- and 16-inch wheels.



Caméléon battery charger: for a fast charge in 30 minutes (*)



ZOE is the first electric vehicle to be equipped with the Caméléon battery charger. Patented by Renault, this new-generation charger fits beneath the bonnet and is compatible with all power levels up to 43kW. ZOE is consequently able to charge up to 80 percent of the battery's maximum capacity in 30 minutes.

This system, which is built into the car, will considerably simplify the technology necessary for high-power battery charging stations which will consequently cost up to four times less and be easier to use. This innovation will favour the expansion of electric vehicle use.

0 g CO₂/KM :

RENAULT ZOE, THE FIRST MASS-PRODUCED ZERO-EMISSION CITY CAR!

Electric vehicles: a step forward for the environment



“The indisputable advantage of electric vehicles is their absence of emissions during their use on the road, and this will above all be beneficial in built-up areas. Electric vehicles also permit significant progress by reducing the impact on global warming and the depletion of non-renewable resources by up to a half, which is a major environmental challenge in today’s world. The footprint of electric vehicles is poised to come down further still as renewable energies become gradually more prevalent in the energy mix of different countries, and as the re-employment for batteries of materials recovered from battery recycling expands.”

Jean-Philippe Hermine
Director, Environment Plan

■ Rediscovering the pleasure of city motoring

Initially, the environmental gain represented by electric vehicles will concern built-up areas since the fact that they do not emit any polluting gases they respect their immediate environment. The growth of electric vehicle use will not only improve air quality but will also bring down noise in cities. If electric vehicles accounted for 20 percent of the number of cars on the road, we would see a reduction of up to 30 percent in the build-up of polluting emissions (according to a report by ARIA Technologie carried out in conjunction with the city of Rome).

■ Electric vehicles halve the global environmental impact of automobiles

Within the framework of its environment policy, Renault monitors the overall ecological footprint of its vehicles in order to quantify the progress achieved by each new model over its predecessor and to steer engineers in their design of upcoming vehicles. To achieve this, the internationally-recognised methodology known as “Life Cycle Assessment” (LCA) (ISO 14040) is used.

Life Cycle Assessment (LCA) of an electric vehicle

The LCA comparing Fluence Z.E. with the internal combustion-engined version of Fluence has been completed and submitted for appraisal by five independent international experts.

The environmental footprint of an electric vehicle depends of the way that electricity is generated in each country (hydroelectric, nuclear, thermal, wind, solar, etc.) and on the battery technology employed. The gradual decarbonisation of the electricity grid in Europe (the objective is for 30 percent of electricity to be produced by renewable means by 2020) is of immediate benefit to every electric vehicle on the road. Moreover, the development of 'green' electricity by providers will allow owners of electric vehicles to charge their batteries using electricity that has been certified as renewable and thereby reduce their environmental footprint. In France, for example, Renault has entered into a partnership agreement with CNR (Compagnie Nationale du Rhone), the country's second biggest provider of electricity which runs and provides 'weather'-generated renewable energy (hydroelectricity, wind farms, solar). The objective of this partnership is to develop a means for drivers to charge their electric vehicle using certified, 100-percent renewable electricity.

■ The 'LCA' for ZOE will get even better with time

By as early as 2013, ZOE's local content will be 55 percent thanks to the availability of the motor made at Renault's factory in Cléon, France. The proportion of local content will then continue to rise to further reduce the vehicle's environmental footprint. Furthermore, producing the vehicle near its major markets minimises transport requirements and also helps to combat pollution. Finally, France's more favourable electricity production mix ensures well-to-wheel CO₂ emissions for ZOE of just 12g/km, which is another major argument in favour of ZOE's LCA.

■ Battery recycling will impact positively on the ecological footprint of electric vehicles

More than 85 percent of electric vehicles are recyclable and the same figure for batteries is more than 50 percent. In 2011, Renault sealed a partnership with Umicore, the world's number one recycler of lithium-ion batteries for mobile phones. This company currently recycles the batteries used for Renault's prototypes test vehicles and early electric vehicles.

Ongoing research projects have highlighted new recovery techniques for raw materials such as copper, aluminium, cobalt and lithium which will gradually find their way into the production of new cars and batteries. This will reduce the impact of electric vehicles on the depletion of non-renewable resources, and also the phenomenon of acidification associated with battery production.



ZOE takes care of its occupants

■ Stress-free motoring

ZOE pulls away crisply and smoothly thanks its electric motor which instantly delivers 200Nm of torque. Acceleration is smooth and seamless thanks to the reducer gear which transmits the motor's rotational movement to the wheels without needing a clutch or convertor. The sensation is like driving with the market's very best automatic transmission.

The quiet, vibration-free ride inherent in electric vehicles contributes significantly to the comfort of the driver and passengers. Up to speeds of 30kph, the vehicle is perfectly silent. At speeds in excess of that threshold, only the sound produced by the wheels on the road and air flowing over the bodywork become audible and gradually increases with the speed. The noise levels inside ZOE at speeds of between 40 and 75kph are half those of a diesel-engined car.

For stress-free motoring in built-up areas, ZOE is fitted with 'Z.E. Voice', an alarm that warns pedestrians that the vehicle is approaching and allows them to estimate its speed (the volume changes as a function of the car's speed). 'Z.E. Voice' can be heard from one to 30kph (no noise is made when it is at a standstill) and was the subject of special design work to create a bespoke sound identity for ZOE. It was developed in association with the Sound Perception and Design team of the specialist research institute IRCAM (Institut de Recherche et Coordination Acoustique / Musique). The driver can choose between three different sounds, whilst it is possible to turn off the warning system by simply pressing a button. If the motor is switched off, the sound comes back on automatically when the vehicle starts to move again.



■ The perfect temperature inside ZOE's cabin

Programmable pre-conditioning can heat or cool ZOE's cabin when the vehicle is connected to a source of electricity. When the driver gets into the car, the cabin is just the right temperature and the energy used for the thermal comfort system is not drawn from the battery.

■ The air breathed in by ZOE's occupants is purer or purified

An activated charcoal air filter reduces bad smells in the cabin. The filter's electrostatic layers trap pollutants like particulates and gases.

■ 'Take Care by Renault' features for the wellbeing of occupants (ZOE ZEN)

- A relaxing or stimulating scent diffuser. The effectiveness of the scents has been proven by a study conducted by the German institute Psyrecon^(*). Two scents can be selected for ZOE from a range of six. The strength of the scent can be adjusted and it is diffused periodically so as not to be saturate the cabin air. 'Cocooning Flower' and 'Calming Ylang' will be available for ZOE's launch.
- A dual-mode purifying and relaxing air ioniser. The purifying function eliminates microscopic organisms such as fungi, allergens and germs found in the cabin air. The relaxing function generates negative ions to produce a balance with the positive ions, which tend to be present in high concentrations in confined spaces.
- Teflon® upholstery protection, for easier cleaning. This invisible, odourless treatment is both waterproof and stain-proof.
- The toxicity sensor detects excessive pollution levels and automatically switches on the air recycling mode in the cabin whenever necessary.

1 TOP-LEVEL FRENCH DESIGN UNDERPINS THE APPEAL OF OUR VEHICLES

ZOE and New Clio: beauties bred at the Technocentre

The reliability of Renault's vehicles is now globally acknowledged, notably by the reputable German automobile club ADAC^(*). ZOE and New Clio go even further, however. **Their intrinsic qualities are immediately apparent from the outside.** Creating this perception of quality, which make cars attractive to potential customers at first glance, is fundamental to the company's modus operandi. **ZOE and New Clio are genuinely ground-breaking** in this domain.

This principle was initiated from the cars' conception at the Technocentre, the very heart of Renault. As a consequence of cross-fertilisation between

customer surveys, product definition, its translation into technical language, engineering data and the designers' wishes, ZOE and New Clio evolved an attractive look that would best suit customers' demands. At the same time, they had to meet strict **quality-related criteria**.

In the case of ZOE, an innovative and genuinely ground-breaking car, it is worth noting that its electric powertrain (engine and battery) was also developed at the Technocentre, as close as possible to the teams in charge of electric vehicle projects.



(*) The 2012 ADAC report confirms the year-on-year progress Renault has made in terms of reliability. Recently-manufactured vehicles are rated as "good" or, indeed, "excellent". Moreover, older models are wearing well and, in the vast majority of cases, their reliability is rated as "good", even after five years on the road.

Lardy and Aubevoye: ensuring proven quality for ZOE and New Clio

At Lardy, mechanical testing enables powertrains for ZOE and New Clio to be tested for reliability and durability. Renault has invested €60 million in new internal combustion engine test facilities at its **Powertrain Innovation Centre (PIM)** which opened in June 2010. The factory houses some 30 latest-generation engine dynamometers.

Renault has also invested €28 million in an **Electrical Test Centre** which began operations late in 2011. Technicians and engineers from Lardy have thus been able to cultivate real expertise in the field of electric drivetrains. ZOE's avant-garde technology does not in any way compromise reliability and its powertrain comes with a five-year warranty.

Lardy also has **crash-test facilities** that provide key information about a vehicle's passive safety and the parameters EuroNCAP uses when making its assessments (see sidebar).

Meanwhile, ZOE and New Clio have covered hundreds and thousands of kilometres of **punishing treatment** (impacts, high-speed, slopes, water, dust, etc.) at Renault's Aubevoye proving facilities. This work was complemented by millions of kilometres in **real-world conditions on everyday roads** – a good gauge of how a vehicle performs over time. Such tests form part of Renault's contemporary **quality standards** procedure, which is applied to the whole model range – including electric vehicles.

Renault's **'EDA' durability tests**, implemented in 2010, reproduce the diverse routine of everyday motoring life. Technicians repeat these a precise number of times (two months of testing equates to three years of life on

the road): they cover getting in and out of the car, opening and closing the tailgate and so on... The objective is to **improve the breed from one generation to the next**.

In the case of New Clio, work focused on a number of areas, including quieter ingress and egress – with particular regard to the door stops, which have been redesigned. The sturdiness of interior and boot carpets has been improved, thanks to a change of material and a thicker specification. And long-life lacquer has been added to paintwork, to make it more durable and increase its resistance to bird lime and carwash brush rollers.



2 FLINS: APPLYING MANUFACTURING EXPERTISE TO THE SMALL CARS OF THE FUTURE

The Flins factory lies at the heart of the Renault Group's **2012 product launch programme**, with the same plant being used for the manufacture of two very different models: the all-electric ZOE and New Clio which is powered by a more conventional internal combustion engine.

Flins is **a benchmark in Renault's manufacturing lineage. Since 1952, 18 models and more than seven million vehicles have rolled off its production lines.** Its list of credits includes the Juvaquatre, 4CV, Dauphine, Renault 8, Renault 16, Renault 5 and Twingo, so the factory is blessed with real expertise in the field of small cars.

To prepare for production of ZOE and New Clio, the teams at Flins **collaborated closely** with Renault's **powertrain** and **vehicle engineering** divisions, as well as with the company's **prototype vehicle production centre (CRPV)**.

The strength of Flins lies in its ability to develop innovative solutions at a controlled cost by adapting existing installations (carry-over technology): the price of putting ZOE and New Clio into production amounted to €150 million, about half as much as the same figure for the Clio III alone. **And expectations are higher, too, particularly in terms of qualitative perception.**

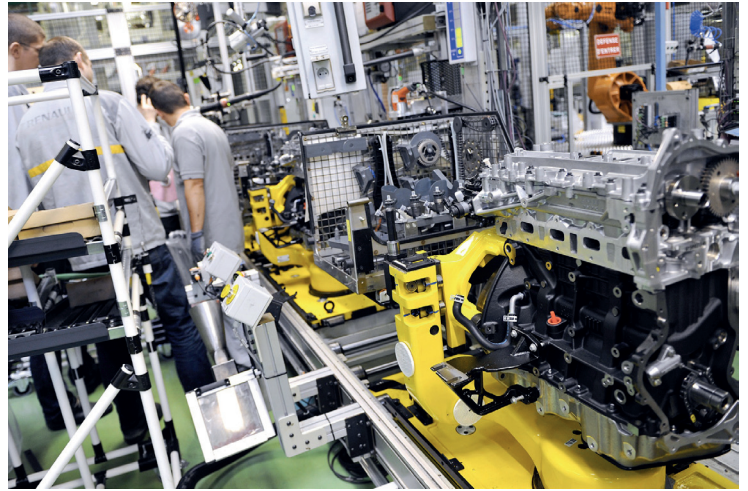
For example, significant work went into fine-tuning New Clio's paintwork and the use of a long-life lacquer has helped create a flawless finish that will offer even greater protection over the years. And work on tightening panel gaps will enhance perceptions of image quality and help reduce glitches that might affect the vehicle's overall reputation (without compromising reliability in any way).



3 CLÉON TAKES UP THE CHALLENGE OF ELECTRIC MOTORS

The Cléon plant is renowned for its expertise in the sphere of **high-tech engines**. Already acclaimed for the Renault Energy diesel family, Cléon is now taking up the challenge of electric power. In 2013, having started by producing junction boxes (part of the company's patented Caméléon charger) for ZOE's powertrain, **Cléon will start to manufacture an all-Renault electric powertrain**.

The factory is using **carry-over** methodology to manufacture electric motors and more than 55 percent of the production line features existing tools and machines that have been adapted for this purpose. This has helped to cap investment costs without compromising quality: all new motors **are tested statically** on the production line and then operationally on the dynamometer.





(www.renault.fr)

**KEEP A CHECK ON THE HIGHLIGHTS OF RENAULT'S PRESENCE
AT THE 2012 PARIS MOTOR SHOW:**

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