**PRESS RELEASE**

June 18, 2008

# A YEAR AFTER THE INTRODUCTION OF RENAULT ECO², THE BRAND CONTINUES TO ADVANCE ON THE ENVIRONNEMENTAL FRONT

**In May 2007, Renault introduced its Renault eco² label – a system for badging its vehicles so that customers can identify the most environmentally friendly versions.**
**In November 2007, Renault entered an eco²-labelled Logan Concept in the Michelin-organized Challenge Bibendum, demonstrating that a car could be both 'ecological and economical' without stinting on performance or equipment.**
**Renault has maintained its commitment with the unveiling of TCe 130, Powertrain Engineering's latest innovation in downsized engines.**

**Renault's long-standing efforts have made it one of Europe's three most carbon-efficient automakers. Its achievements in $CO_2$ reduction are paramount, but it considers that it is just as critical to curb pollutant emissions. The NOx Trap unveiled at the Environment Workshop is proof of its efforts to counter pollution.**

**Renault has continued its strategy of developing an electric vehicle (EV). In January 2008, the Renault-Nissan Alliance sealed a deal with Project Better Place to mass-market EVs in Israel and Denmark by 2011. Other markets could follow soon.**

**In 2006, Renault announced that as part of the Renault Commitment 2009 growth plan it would test vehicles powered by fuel cells derived from the Alliance's advanced technology. In keeping with that pledge, Renault has now taken the wraps off its EV prototype Scenic ZEV H2, which it plans to test. Powered by a fuel cell, the ZEV H2 emits nothing more harmful than water vapour.**

**Additional projects further illustrate Renault's environmental commitment.**
**There are some simple, everyday steps that motorists can take to reduce their fuel consumption by up to 20%. Renault is to offer its customers environmental driving**

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**lessons with simulators installed in dealerships by the end of 2008. Visitors can try out a simulator at the Environment Workshop.**

**For years now Renault has led the way in lifecycle management. In February 2008 it created the Renault Environment Business Unit to support the domestic and international roll-out of action in recycling and new areas of environmental protection. Earlier this year it also signed a contract creating a joint-venture with SITA, a subsidiary of Suez Environnement. The joint-venture, the first of its kind in the world, aims to accelerate the incorporation of end-of-life vehicle (ELV) recycling into operations.**

**Renault's manufacturing sites have also kept up their efforts. All have now secured ISO 14001 environmental certification.**

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# 1. THE ENVIRONMENTAL DRIVE OF POWERTRAINS

**As part of its commitment to producing an environmentally friendly, affordable line-up, Powertrain Engineering constantly addresses a dual challenge: to reduce emissions of both pollutants and $CO_2$ (which contributes to the greenhouse effect).**

**The response from Renault's engineers has been to design downsized, supercharged powerplants with lower $CO_2$ emissions and high standards of performance. A prime example of this approach is the TCe line of petrol engines, the latest of which is the TCe 130. With its low-inertia turbocharger, this 1.4-litre plant delivers the power of a 1.8 and the torque of a 2-litre engine for the fuel consumption of a 1.6-litre unit.**

**To reduce pollutant emissions in compliance with European regulations, Renault's engineers have also been working on the reduction of emissions at-source through improved burning of exhaust gases and post-combustion systems. The NOx Trap which will be fitted to the 2.0 dCi is the best example.**

**Downsizing for low consumption and high driving pleasure**

Upgrading the efficiency of traditional petrol and diesel engines is one of the most economic ways of controlling fuel consumption and, by the same token, greenhouse gas emissions. Engine downsizing, a field of Renault expertise, does just that. It involves making engines smaller, thereby reducing their $CO_2$ emissions, while boosting their size-to-output performance (torque and power per litre).

Turbocharging provides the power. It extracts energy from exhaust gases to compress air in the intake manifold. This energy recovery, coupled with the fact that, for a given vehicle, a small engine yields greater efficiency ratios, reduces fuel consumption and, at the same time, $CO_2$ emissions to levels that are slightly less than for a 1.6-litre engine.

A 2.2-litre diesel, for example, which once powered Laguna and delivered output of 115hp has now been replaced by 1.5 dCi unit delivering 110hp, which represents $CO_2$ emission gains of 60g/km and fuel savings of 2.3 litres/100km.

| | 1996 | 2001 | 2007 | |
|---|---|---|---|---|
| | Laguna | Laguna II | New Laguna | |
| Diesel engine | 2.2 dT 115hp | 1.9 dCi 110hp | 1.5 dCi 110hp | |
| Fuel consumption (litres/100km) | 7.2 | 5.6 | 4.9 | 1996 → 2007 = **-32%** |
| $CO_2$ emissions (g/km) (combined cycle) | 190 | 150 | 130 | 1996 → 2007= **-32%** |

The TCe 100 engine now powering Clio has replaced the 1.7-litre petrol powerplant which delivered 90hp in 1991. The TCe 100 reduces $CO_2$ emissions by 75g/km, while increasing power output.

| | 1991 | 2001 | 2002 | 2007 | |
|---|---|---|---|---|---|
| | Clio | Clio II | CLIO III | CLIO III | |
| Petrol engine | 1.7 – 90hp | 1.4 – 98hp | 1.4 – 98hp | TCe 100 (1.2 16V Turbo) | |
| $CO_2$ emissions (g/km) (combined cycle) | 212 | 174 | 158 | 137 | 1991 → 2007 = **-35%** |

In the C-segment line-up, 2-litre petrol engines which delivered 136hp and 191Nm of torque in 2002 are to give way to the 1.4-litre turbocharged TCe 130 in a few months. It will reduce $CO_2$ emissions per kilometre by 16%, while output and torque will be practically unchanged.

| | 2002 | 2009 | |
|---|---|---|---|
| | Mégane II | Renault C-segment vehicle | |
| Petrol engine | 2.0 16v 136hp | TCe 130 (1.4 16V turbo) | |
| Fuel consumption and $CO_2$ emissions | Rating 100 | Rating 84 | **2002 → 2009 = -16%** |

**With TCe 130, a new addition to the TCe family**

The latest Renault petrol engine, the TCe 130, is a perfect illustration of the automaker's downsizing expertise. With the 130hp output of a 1.8-litre powerplant and the 190Nm torque of a 2-ltre engine, this new 1.4-litre unit yields C-segment $CO_2$ emission levels that

are just below those of a 1.6-litre engine. Like its smaller sibling, the TCe 100, the TCe 130 combines a small engine with a low-inertia turbocharger that is responsive even at low engine speeds. Its very low fuel consumption and environmental credentials ensure that the TCe engine anticipates the potential resurgence of interest in petrol engines that the introduction of the Euro 5 emission standard is likely to trigger.

Developed as part of the Renault-Nissan Alliance the TCe 130 is a perfect illustration of the synergies between the partners' engineering expertise: Nissan's lies in developing petrol engines, while Renault has built up experience in combustion and turbocharging.

Derived from the normally aspirated HR15 and HR16 engines (the 1.5 and 1.6-litre units in the Nissan line-up), the new TCe 130 has an aluminium sump and a single-flow turbocompressor. The profile of its inlet ports has been redesigned compared with those of the normally-aspirated engine. The new ports create a swirling inflow, which mixes fuel and air more evenly, so improving combustion. Thanks to this tumbling flow of air the combustion flame propagates more efficiently, improving torque at low revs without impairing performance at higher engine speeds. A continuous camshaft angle variator at the intake port improves performance at all engine speeds and helps reduce fuel consumption. The engine has a timing chain that which not only cuts noise but is also reliable and durable.

The TCe 130 drives through a six-speed manual gearbox and is made at the Valladolid plant in Spain.

**TCe 130 engine: technical characteristics**

| | |
|---|---|
| Type (Renault) | H4Jt |
| Cubic capacity | 1,397cc |
| Bore x stroke (mm) | 78 x 73.1 |
| Number of cylinders / valves | 4 / 16 |
| Compression ratio | 9.2:1 |
| Maximum power | 96kW (130hp) at 5,500rpm |
| Maximum torque | 190Nm at 2,250rpm |
| Fuel injection | Sequential multipoint |
| Emissions standard | Euro5 |
| Gearbox | Six-speed manual TL4 |
| Use | Renault C-segment vehicles |

**Technology for air quality**

To reduce pollutant emissions and comply with future European legislation, Renault's engineers worked first on emission reduction at source (e.g. air intakes, fuel injection, and air-fuel blends), then on exhaust gas aftertreatment devices (e.g. catalytic converters, particulate filters for diesel engines).

In the case of petrol engines, higher quantities of the precious metals used in three-way catalytic converters will help meet future European emission standards. (Euro 5 is due to come into force on September 1, 2009, for new vehicles, and then on January 1, 2011, for all vehicles.)

The Euro 5 standard will require all diesel vehicles to be fitted with particulate filters, which already equip Renault's 1.5 dCi, 1.9 dCi, and 2.0 dCi diesel engines. Some vehicles will probably need to have exhaust gas NOx post-combustion systems if they are to meet Euro 5 standards. Thereafter, Euro 6 will make aftertreatment a compulsory feature.

**Renault's NOx Trap**

The NOx Trap fits firmly with Renault's determination to reduce pollutant emissions. This chemical process captures harmful nitrogen oxides, then converts them into neutral gas. This post-combustion system will be available from September 2008 in France and Germany in private fleets of 2.0 dCi Renault Espaces. Renault has filed 36 patents for its NOx Trap.

The new NOx Trap with catalytic converter has a dual function:

- the traditional function of oxidising hydrocarbons (produced by partial combustion) and carbon monoxide (produced by partial combustion due to a lack of oxygen);
- the treatment of nitrogen oxide (produced by the combustion of diesel fuel at high temperatures).

**How the NOx Trap works**

The NOx Trap operates by capturing and storing NOx (for 10minutes/10km) then releasing it – a five-second process that vehicle occupants do not notice.

During the capture phase, the NOx Trap traps the nitrogen oxide contained in the exhaust gas on a porous carrier in the catalytic converter which is impregnated with chemicals – platinum, barium, rhodium. The platinum converts nitrogen oxide into nitrogen dioxide ($NO_2$). The barium, which oxidises into barium oxide, traps and holds $NO_2$ as part of an aqueous barium nitrate solution – $Ba(NO_3)_2$.

In the release phase a chemical process known as reductive elimination purges the NOx Trap of the stored NOx, with the engine operating in rich-burn mode, i.e. when the air-fuel mixture has just enough air for complete combustion of the diesel. The nitrogen oxides are converted into neutral gases, mainly nitrogen. In this way the NOx trap is regenerated and is ready to go on trapping more NOx.

To ensure the NOx trap operates smoothly, additional (oxygen and heat) sensors are positioned at the intake manifold and on the tailpipe. The data they capture is transmitted over the controller area network to the ECU for managing the NOx Trap (deciding when to purge) and determining combustion modes (how to purge).

## 2. TOWARDS ZERO EMISSION

**At the end of 2007, Renault CEO Carlos Ghosn spoke of the Renault-Nissan Alliance's "zero-emission ambition". The ambition rests primarily on the mass-marketing of EVs in Israel and Denmark by 2011 under the terms of a partnership with Project Better Place, a company that builds networks of battery charging facilities. More markets could follow.**
**In the longer term, Renault and Nissan are considering developing EVs powered by fuel cells. Renault has now taken the wraps off its EV prototype Scenic ZEV H2, which emits nothing more harmful than water vapour.**

### a. The electric vehicle

Renault is working on range of solutions to reduce $CO_2$ emissions in the short and medium terms with the goal of providing all customers with mobility solutions best adapted to their needs.
Against this background, the mass-marketing of all-electric vehicles is a prime objective. Through its partnership with Project Better Place, the Renault-Nissan Alliance will be in a position to market EVs in Israel and Denmark by 2011. More markets could follow.

Now, for the first time ever, **all the required conditions for the successful marketing of electric vehicles have been brought together**:

- worldwide awareness of global warming due to $CO_2$ emissions;
- tougher legislation to control vehicle $CO_2$ emissions (taxation, restricted access to towns and cities);
- oil price increases;
- evolving technology (longer-range batteries and the improved incorporation of electric drive trains into vehicle designs);
- growing urban mobility needs: in 2007 people living in towns and cities outnumbered country-dwellers for the very first time;
- growing local mobility needs: 80% of Europeans travel less than 60km a day.

• **Objective zero emission** will be achieved, while ensuring that performance is on a par with vehicles powered by 1.6-litre petrol engines. Renault's **all-electric vehicles** will be powered by lithium-ion batteries. They have longer ranges and longer lives, and weigh less than earlier generation batteries. Vehicles will recharge at charging stations that will be part of networks built by Project Better Place. Renault has capitalised on earlier experience – with Kangoo Elect'Road, for example – and can now meet the new demands of the market.

• **An innovative economic model**: It will be the first time that customers will be offered a comprehensive service that encompasses batteries, electric power, and an on-board computer showing not only available battery autonomy but also the charging stations and battery-exchange points in the vicinity. This kind of services can be charged as a monthly fee or per kilometre – formulas similar to those in use for cell phones.

### b. The Scenic ZEV H2 prototype

The Renault-Nissan Alliance's longer-term outlook focuses on continuing work on EV prototypes powered by fuel cells. Though they offer significant gains in range they are more complex to mass-produce and mass-market. Rolling out such breakthrough technology requires production, transportation, and distribution infrastructure – there are less than 300 filling stations worldwide in 2008. A further requirement is reducing the cost price of fuel cells, particularly by using less noble metals.

Derived from Grand Scenic, the ZEV H2 is a joint Alliance project. Nissan has supplied the fuel cells stack, the high-pressure hydrogen tank, and lithium-ion batteries. Renault's engineers have repackaged Grand Scenic so that its underbody can incorporate the fuel stack, tank and batteries. They have redesigned the floor and raised the vehicle's ground clearance by a further 60 mm. They have also managed to keep the vehicle's initial spaciousness (five adult seats), which is a first in fuel cell prototypes.

Renault's Vehicle Engineering have also incorporated Renault's and Nissan's electric and electronic systems. The fuel cell in itself is a relatively self-sufficient electronic system which was designed by Nissan to communicate with vehicle components and features like

the dashboard, ABS/ESP, climate control, and airbags. All perform to the fullest of their original capacity.

Some instrumentation, however, has been adapted to the vehicle's new drivetrain. The fuel gauge, for example, is now a hydrogen pressure indicator, while the temperature display shows the fuel's temperature, and the rev counter displays the electric motor's revolutions per minute.

Scenic ZEV H2 is also a vehicle that boasts unrivalled driveability. Its silent engine and lively, responsive acceleration combine with particularly smooth handling on a par with European standards. Driven by an electric motor, Scenic ZEV H2 fully embodies the driving sensation associated with EVs, the only difference being that there is an additional fuel stack on board (see 'Hydrogen and fuel cells').

Although a prototype, Scenic ZEV H2 has all the qualities of a 'real' car. The levels of travelling comfort and performance it affords make it perfectly well suited to everyday use. And it emits nothing more harmful than water vapour.

**The Scenic ZEV H2 project**

In 2006, Renault and Nissan decided to pool their efforts to produce a demonstration vehicle powered by a fuel cell that drew on Alliance technologies. Scenic ZEV H2 was designed in just 15 months, testing included. Once the detailed engineering had been completed, assembly work on the first vehicle kicked off in France in the summer of 2007. At the end of September 2007, the French and Japanese partners met to carry out a joint check. Its aim was to be sure that both Renault and Nissan components fitted with vehicle design in accordance with computer calculations. The first prototype was then transferred to Japan for final assembly. At the end of 2007, the first vehicle was on the road. The project reached completion at the end of April 2008 once all fine-tuning had been finalised.

**Hydrogen and fuel cells**

Made up of a nucleus and a single electron, hydrogen is the simplest and lightest of chemical elements: it is 14 times lighter than air. Its freezing point is -259.14°C and its boiling point is - 252.87°C. In a fuel cell, hydrogen and oxygen are forced into contact with each through a polymer membrane, the electrolyte. They combine to form water (Scenic ZEV H2's only 'emission') to produce electric power and heat. This electric energy is the fuel that drives the vehicle's electric motor.

A fuel cell vehicle is in fact just an electric vehicle that produces its ow

n electricity on-board and does not necessarily require any external power supply.

## SCENIC ZEV H2: TECHNICAL CHARACTERISTICS

- Asynchronous electric motor (power rating: 90kW).
- Lithium-ion battery, operating at a voltage of around 400V and delivering a power output of 25kW.
- A fuel cell using compressed hydrogen gas at 350 bar.
- Optimized hydrogen consumption: brake energy regeneration and storage of energy in the battery which feeds it back as required.
- Top speed: approximately 160kph.
- Acceleration from standstill to 100kph: 14.65 seconds.
- Range: approximately 350km (NEDC combined cycle) with a 350 bar hydrogen tank (3.7kg of $H_2$). The plan is to use a 700 bar tank at a later date, which would ensure a range of more than 500km.
- Outstanding acoustic comfort: the motor produces no noise; the only sound is that of road noise at low speeds and wind noise at higher speeds.
- Identical cabin space: the same cabin space for occupants as that of the current Scenic.
- Easy to use: the same dashboard as the production car. The only differences concern the display of additional information relating to the hydrogen (e.g. the rev-counter displays the speed of the electric motor, while the Energy Display is incorporated in the Renault navigation system display).
- Weight: 1,850kg (Scenic 1.9 dCi: 1,550kg).

**How the vehicle operates:**

The fuel cell system that powers the demonstration vehicles comprise five main sub-assemblies: the **hydrogen tank** which supplies fuel to the stack, **power electronics** in conjunction with a **regulator** which interfaces between the stack and **electric motor**, and **lithium-ion batteries**.

The vehicle can operate in five main modes thanks to its hybridized power system:

- **The battery alone supplies power directly to the electric motor**. This power supply mode operates when the vehicles starts, when parking, or when driving in the city. It also kicks in when the car accelerates sharply, as the battery can deliver bursts of high power to complement the fuel stack.

- **The fuel stack alone supplies power to the electric motor**. The vehicle generally uses this mode when travelling at a steady speed, e.g. on a motorway. Power not used by the electric motor is directed to the battery.

- **The stack and the battery deliver power to the electric motor** when the vehicle's requires an extra power boost, e.g. up a long gradient or when overtaking at speed.

- When the vehicle is at a standstill with its engine running, **the electricity produced by the stack is used to recharge the battery.**

- When the vehicle is decelerating, the **electric motor feeds the power battery**, acting as a generator. The fuel stack can also recharge the battery.

## 3. ECO-DRIVING OR HOW TO DRIVE ECOLOGICALLY AND ECONOMICALLY

### a. What is eco-driving?

As an automaker, Renault's duty is to provide novel solutions that help its customers reduce their fuel consumption and, at the same time, curb the production of greenhouse gases.

Motorists can play a major part in reducing the fuel consumption of their vehicle.
**Eco-driving** entails drivers going easy on their vehicles, which should be serviced properly and adapted to their needs.

**Eco-driving can reduce fuel consumption by up to 20%**.
It is for this reason that Renault has decided to introduce a system to teach its customers to eco-drive by the end of 2008. Virtual driving simulators will enable motorists to assess their driving style and identify how they can improve. The simulators, where customers will be at the wheel of a virtual vehicle, will be gradually installed across the dealership network.

Drivers will get practical advice on how to switch to ecological, economical behaviour.
Awareness-raising days for the general public are planned in partnership with yachtswoman Ellen MacArthur. They will kick off 2008, October, 4 in Paris, then strike out into Europe.

These eco-driving awareness days will involve:
- Free eco-driving lessons
- Sessions on eco-driving simulators
- An eco-driving family rally.

**Ellen MacArthur in partnership with Renault eco²**

Renault's global approach when it comes to reducing a vehicle's impact on the environment at every stage of its life has won over Ellen MacArthur, an emblematic sports personality from the world of sailing and an active player in the bid to see our society shift towards sustainable development.

A two-year partnership was signed in April 2008 with Ellen's sailing team, BT Team Ellen, to seal a collaboration that has been up and running with Renault UK since 2002.

To read the full story, click on www.btteamellen.com/ellen/article.asp?id=16672

### b. Practical tips

Eco-driving is primarily about **anticipating** and **controlling** one's driving.

**Tip n°1: Improve your gearshifts**

- Shift down at approximately 1,000rpm
- Shift up to the next gear at approximately 2,000rpm in diesel vehicles and at 2,400rpm in a petrol-engine vehicle

➢ At 50kph, you should already be in fourth or fifth gear.

**Tip n°2: Drive smoothly**

- Maintain a steady speed as soon as possible (from 40kph)
- Brake with the engine and use your foot brake as little as possible. Allowing the vehicle to slow naturally helps to cut the fuel flow.

➢ At 50kph in fifth gear, lift off the accelerator 100 metres before a red light.

**Tip n°3: Think about how you accelerate**

- Up to 50kph, it is preferable to accelerate briskly up to fifth gear
- At speeds in excess of 50kph, acceleration should be restrained

➢ Change gear very swiftly up to fifth gear.

**Tip n°4: Climbs and descents**

- Keep to the same speed when going down a hill
- On an uphill gradient, let the car shed speed, but without becoming obstructing other road-users. If possible, maintain your vehicle at a steady speed above 40kph

➢ Use descents to take your foot off the accelerator.

**Tip n 5: Use your motor smartly**

- Turn off your engine if you stop for more than 30 seconds
- Do not preheat your engine even in winter

➢ Pull away as soon as the engine has fired up

**Tip no. 6: Treat your vehicle well**

- Check tyre pressures every month
- If you have to use the air conditioning, make sure the difference between the temperatures inside your vehicle and outside is not too great
- Do not leave any unnecessary loads in your vehicle
- Remove roof bars and roof boxes when not in use.

➢ Proper servicing and proper use of your vehicle are as important as eco-driving.

# 4. LIFECYCLE MANAGEMENT, A MAJOR CONCERN FOR RENAULT

### a. Renault confirms its lead in end-of-life vehicle management

Aware of the environmental stakes and its responsibilities as an automaker, Renault has, since 1995, pursued an ambitious international environmental policy which considers a vehicle's entire lifecycle, from design to end-of-life management.

In February 2008, Renault broke new ground when it created the Renault Environment Business Unit. The mission of this wholly Renault-owned subsidiary is to foster domestic and international projects and partnerships to promote the recycling of end-of-life vehicles (ELVs) and develop new environment-related services.

Renault recently announced a plan to create Re-Source Industries Holding, an equally owned joint-venture company with SITA, a subsidiary of Suez Environnement. The aim is to step up the deployment of ELV recycling practices in France with all those involved in that area of business. To bolster its business development, Re-Source Industries Holding is considering the takeover of Indra Investissement SAS, a company that has been shredding and recycling automobiles for 20 years.

Automaker Renault and major waste management company SITA, together with Indra, with its dismantling network and stripping plants, boast new, complementary competencies to ensure the success of the joint-venture project. The resulting synergies will play a part in accelerating the incorporation of ELV practices into operations in more ecological, economical conditions.

- **Renault, an acknowledged leader in recycled plastics**

For over ten years Renault has been designing vehicles so that, at the end of their lives, they may be easily dismantled and recycled. Renault has thus made a major contribution to the emergence of the first high-tech plastic recycling processes. Its engineers have

worked closely with waste treatment professionals and the company's suppliers. Cars bearing the Renault eco² badge contain at least 5% recycled plastic. New Laguna, marketed in 2007, holds the record with 17% of recycled plastic – in other words, 100 or so parts environmentally designed with Renault suppliers.

### b. All Renault production sites are ISO 14001-certified

The International Standards Organisation (ISO) certifies that a facility complies with standard 14001 when it achieves continual improvement in reducing the impact of its activities on the environment. Certification is delivered following an extensive audit by approved organisations – in Renault's case, UTAC1 and SGS2.

In order to help production plants improve their environmental management performance in compliance with standard ISO 14001, Renault undertakes an internal audit of the sites every year. The auditors are mixed teams of environmental professionals and Renault employees whose skills complement each other. This approach helps to strengthen employees' environmental competencies, while fostering active networking between sites.

The certification story goes back 10 years and is still going strong.
The Sandouville plant was the first in the group to be certified. That was in December 1998. That same year the Ayrton Senna Complex powertrain plant in Brazil was built. It was designed to emit and discharge zero industrial waste – a powerful asset in a country with little in the way of waste management facilities. The plant also signed an agreement with the authorities, pledging to preserve its green spaces and to consider 60% of them as biodiversity conservation areas.

Whenever Renault moves into a new country to build a plant there, it makes substantial efforts to ensure it contributes to local economic, environmental, and social development there. The Pitesti site in Romania is a case in point. In 2002, the Renault Group included it in its environmental reporting and by 2005 it had secured its first ISO 14001 certification**.**

In Morocco Renault included the Somaca facility in its 2006 environmental report. It was first certified as ISO 14001 compliant in 2008. Renault has invested heavily in human resources and equipment to control Somaca's impact on the environment. A new waste treatment plant which treats industrial effluent both chemically and physically will be commissioned in 2008. Another significant example of the plant's environmental commitment is that it introduced general waste management practices of a European standard in 2007. It also put in place action plans to save energy in its manufacturing processes, which brought savings of 15% per vehicle produced in 2006 and 22% in 2007.

The AvtoFramos site in Russia was first included in the Renault Group's environmental reporting in 2005 and won ISO 14001 certification in April 2008. It is the latest Renault manufacturing facility to be certified to date. Special efforts have been made to raise employee awareness of environmental issues.

Results speak for themselves:
In the last ten years, environmental management practices put in place at Renault production sites have brought the following savings:

- 25% less energy consumed (kW/vehicle),
- 61% (m3/vehicule) or 10 million cubic metres less water consumed
- 64% less waste generated (kg/vehicle),
- 34% less volatile organic compounds, or VOCs (kg/vehicle),
- 47% less toxic waste discharged into waterways.

All Renault employees have committed to protecting the environment. Progress in this area must be visible to customers. Economics and ecology must come together in an effort to achieve continuous progress in reducing environmental impacts on a massive scale. Results must be the work of the greatest number for products that can be used by the greatest number.

## ISO 14001 certified sites

| SITES | Initial certification date |
|---|---|
| **ACI Le Mans** | 10/2000 |
| **ACI Villeurbanne** | 02/2004 |
| **ACI Romania** | 02/2006 |
| **AUBEVOYE** | 05/2000 |
| **GUYANCOURT / TCR** | 05/2000 |
| **BATILLY (SOVAB)** | 06/1999 |
| **BURSA (Oyak)** | 09/1999 |
| **CACIA** | 06/2000 |
| **CHOISY LE ROI** | 07/2000 |
| **CLEON** | 10/1999 |
| **Ayrton Senna Complex** | 12/1999 |
| **PITESTI (DACIA)** | 05/2005 |
| **DIEPPE (Alpine)** | 12/1999 |
| **DOUAI** | 06/1999 |
| **FLINS** | 11/1999 |
| **CORDOBA FOUNDY** | 01/2003 |
| **GRAND COURONNE** | 11/2006 |
| **LARDY** | 12/2000 |
| **MAUBEUGE (MCA)** | 05/1999 |
| **NOVO MESTO (Revoz)** | 07/1999 |
| **PALENCIA** | 03/1999 |
| **BUSAN** | 05/2003 |
| **LOS ANDES (Cormecanica)** | 06/2004 |
| **VILVOORDE (RIB)** | 06/2006 |
| **RUEIL** | 12/2001 |
| **RUITZ (STA)** | 12/1999 |
| **SANDOUVILLE** | 12/1998 |
| **Santa Isabel CORDOBA** | 06/2006 |
| **SEVILLE** | 09/2002 |
| **St ANDRE de L'EURE (Sofrastock)** | 09/2003 |
| **VALLADOLID Assembly Plant** | 02/1999 |
| **VALLADOLID Powertrain** | 06/1999 |
| **VILLIERS St FREDERIC** | 06/2000 |
| **MEDELLIN (Sofasa) Colombia** | 08/2002 |
| **TANDIL** | 11/2002 |
| **KIHEUNG** | 05/2006 |
| **SOMACA** | 02/2008 |
| **AVTOFRAMOS** | 04/2008 |

High-definition photos relating to the environment can be downloaded from **www.media.renault.com** > Picture Library > Innovations > Environment.

High definition photos of the TCE 130 and the NOx Trap can be downloaded from www.media.renault.com > Picture Library > Powertrains

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