

# RC HYbrid4

Environmental efficiency  
combined with motoring passion



**The RC HYbrid4 is a concept car born from the passion and expertise of Peugeot's stylists and engineers. This "GT" coupe is the missing link between the RC ♠ and RC ♦ concept cars revealed in 2002 and the 908 RC, one of the stars of the 2006 Paris Motor Show. It is a real laboratory of future ideas, bringing together numerous stylistic, engineering and technological ideas in a single vehicle. The RC HYbrid4 is an accessible and versatile car, with four doors, four seats and four wheel drive, coupled with a highly innovative electric/petrol hybrid architecture (HYbrid4 technology).**

**Its aim: a very high level of efficiency both in terms of performance (with its potential 230 kW/313 bhp) and minimal impact on the environment (CO<sub>2</sub> emissions of 109 g/km in the combined cycle or Zero in electric mode).**

**It is an exciting, eco-efficient vehicle which has all the characteristics that create a real passion for driving. A synthesis of ideas that demonstrates that respect for the environment and driving pleasure can be compatible.**

The dawn of a new day... Over the distant horizon, the already powerful rays of the rising sun strike the façades of the buildings in their path. Among them, the expansive glazed façade of the Peugeot Design Centre which immediately embrace the new light of day.

Daylight then fills the immense workshop where undetected activity has long been in progress.

In fact, right here at this time, a small army of stylists are adding the final touches to their latest creation.

As their eyes gradually adjust to the brightness, each stands back from their work, exposing the contours of the car's body to the rays of the sun.

Centimetre by centimetre the sun's rays caress the car's

carbon "skin", highlighting its pure and sensual contours. They illuminate the Lion badge at the front of the car; the strongly styled lines of the bonnet and the expressive design of the headlamps, bringing the shape to life. The latter also blend harmoniously together in an uninterrupted flow that emphasises the muscular design of the wheel arches, the raised window line and the two doors on either side of the vehicle.

A second team of engineers also share these intense and short moments. They are finishing the installation of the particularly innovative hybrid traction system into this automotive sculpture.

As, in the great tradition of Peugeot concept cars, this vehicle is an automobile first and foremost. **It is a car which is fully in step with the times**, but it is technologically ahead of its time. The 1.6 litre THP engine which is fitted at the rear of the vehicle is combined with a 70 kW electric motor under the bonnet.

The end result is a maximum power of **230 kW (313 bhp)**, ensuring high levels of driving pleasure, combined with CO<sub>2</sub> emissions in the combined cycle of only **109 g/km**, or **zero** in electric only drive mode. Another major innovation made possible by the design is the vehicle's four-wheel drive system, which directly benefits road holding and therefore safety.

Many other new features are available on the vehicle, for example the original design of the suspension and the on-board technology within the passenger compartment, again benefiting both driving comfort and the wellbeing of its four potential occupants.

On this morning in the middle of August, the company's senior managers are also on the scene. Because being present at the birth of a new concept car is a rare event, a privileged moment. They soak up the atmosphere surrounding the new car, instilled with all the values of the Lion badge. These values, modernised or reinterpreted, remain fundamentally the same. In this cradle of design of future vehicles, there reigns a mood charged with emotion and passion, a genuine love of the motor car.

Right in front of the eyes of these onlookers, a new page in Peugeot's history is being written.

*The RC HYbrid4* is in fact the forerunner of many new traits: details, major trends, and also futuristic technologies...

It therefore occupies a place of honour in the Peugeot space at the Paris Motor Show, alongside other vehicles also pointing the way towards new horizons.

But this car is the forerunner of something else too. This four-door "GT", **the missing link between the RC ♠ and RC ♦ concept cars of 2002 and the 908 RC of 2006**, embodies **the permanency of Peugeot's values**, focused on driving pleasure from every perspective.

In this endeavour, the technology used to improve the environmental efficiency has in no way compromised the design, aerodynamics, style or driving pleasure. On the contrary, these innovations are adaptable and in the final analysis make driving pleasure more accessible.

*The RC HYbrid4* is therefore synonymous with pure motoring enjoyment, yet at the same time is environmentally-friendly.

It is a vehicle proud to assert that in a world where the pace of change grows ever quicker, the founding values of Peugeot have never been lost, and that **the flame of motoring passion continues to burn brightly**.

We are at the dawn of a new day...but one which is not so different from any other.

A day which follows on from those that preceded it. A day like many others in Peugeot's history. A day the likes of which we shall no doubt see again... made possible by passionate and inspired men and women bound together by a real confidence in themselves and in the future.

October 2008

At the start, the idea was to reinterpret the codes of a “leisure vehicle” in the form of an attractive and exciting concept car which offered a level of modernity and technology in harmony with the times and with the environment.

Next, came the notion of sharing and the ability to enjoy the car everywhere, from the racing track to the urban environment.

The concept engendered by these considerations is a four-door coupé with a strong, dynamic and pleasing style. A vehicle which through its visual dimensions and interior versatility would be accessible to the largest possible number of motoring enthusiasts.



Its proportions are governed by an original and innovative architecture allowing the incorporation of avant-garde mechanical assemblies. Mechanical assemblies oriented towards efficiency, capable of combining **high performance and environmental efficiency of the highest order.**

## Architecture/Engine

Externally, the vehicle’s architecture places the driver’s seat as far forward as possible, thereby benefiting style, driveability and available space for four potential passengers.

The vehicle’s carbon skin conceals a petrol engine, the **1.6 litre THP**, which offers a maximum power of 160 kW (218 bhp), the same as in the 308 RCZ concept car.

This engine is located transversally in a central position at the rear of the vehicle, allowing sufficient interior space to seat four occupants while at the same time ensuring a large boot capacity.

But in addition to this method of propulsion, the vehicle also has another mode of traction.

Under the bonnet is a 70 kW (95 bhp) **electric motor**. This is powered by “lithium-ion” batteries and is recharged by an **energy recovery** system which operates during both deceleration and braking. The batteries are ideally positioned in the central “transmission” tunnel running through the passenger compartment.

On the latter, the driver will also find the gear change control for the electronically-controlled six-speed manual gearbox. With no mechanical connections between the front and the rear power units, the system is controlled entirely and automatically by electronics using “**byWire**” technology as used for the first time on the Hoggar, the concept car which appeared in 2003 and was equipped at the time with two HDi FAP diesel engines.

The RC HYbrid4 can thus be driven in different ways:

- **in electric only** mode (to start up, in town at low speed and when decelerating),
- **in petrol engine only** mode, at constant speeds on the open road or on motorways, when the engine can achieve its optimal efficiency,
- **with both engines combined:**
  - During phases of acceleration for extra power (“boost” function), making possible a maximum power of **160+70=230 kW (≈ 313 bhp)** and a maximum torque of **178 Nm at the front and 280 Nm at the rear,**
  - **In four-wheel drive mode**, when road conditions warrant it.

In fact the layout of this electric/petrol hybrid system allows four wheel drive under all circumstances, benefiting safety and driveability.

This hybrid technology, as well as its special innovative layout, is an important vector of research and development within the PSA Peugeot Citroën group. On Peugeot’s stand at the Paris Motor Show this innovative system called “HYbrid”,

is presented in a number of different formats, featuring different types of engines. The “HYbrid4” technology is represented here in its most extreme version.

Finally, an additional benefit provided by the vehicle’s architecture is the optimal front and rear weight distribution, with minimal weight in both the front and rear overhangs.

## Exterior style

The vehicle’s innovative architecture is above all a plus for the style of the car.

Indeed technological developments required for the car’s dynamic and environmental efficiency, as well as the dimensions imposed by the presence of four seats in the passenger compartment, posed no constraints whatsoever on the flair of the stylists.

On the contrary, the size inspires and immediately suggests an aerodynamic and finely sculpted vehicle.

Every square millimetre of the bodywork has been carefully studied and modelled to give the concept a dynamic and appealing profile. This profile reinvents Peugeot’s inherent codes while going still further in the search for overall balance and modern, flowing contours.

The sense of motion begins at the very front of the vehicle, where the Lion badge is framed by air intakes that give indications of the car’s excellent aerodynamic efficiency.

This expressive character is enhanced by the headlamps, designed with Peugeot’s stylistic genes in mind, but made even more attractive here by the use of LED technology.

These headlamps are the starting point of a waist line which lends structure to the car’s overall dynamic and flowing profile, supporting the plunging window line and highlighting the muscular design of the wings. These lateral contours then come together at the rear to draw out a shape suggestive of the powerful claws of a lion.

The rear lights are contained within this area and also make a passing reference to the manufacturer’s

long history, the 504 coupé and cabriolet from 1969, the 307 CC, and now the 308 CC.

From a higher perspective, we discover more original characteristics, such as the double glass roof, crossed by lines originating on the bonnet which merge into the Naca unit at the rear of the roof and end finally in an embossed area on the boot encircling the rear logo.

## The interior



As for the bodywork, an original ambience reigns in the interior of the RC HYbrid4. The passenger compartment succeeds in **evoking the world of sport and ultra-modernity**, thanks to the finish of particular details and its contrasting play of light and shadow.

The high quality materials of the passenger compartment (leather, aluminium, chrome, carbon) and the four low-slung seats create an ambience that will delight the senses of smell and touch of motor car purists everywhere.

The very “aeronautical” design of the fascia panel helps give the interior space a modern feel, with a finish consisting of two horizontal sections. Between the latter, numerous items of equipment are housed on a uniform black-lacquered background: digital displays in front

of the driver (for instrumentation and visual feedback from the rear view cameras) and in front of the passenger (for leisure activities). In the centre there is a large touch screen controlling the audio functions of the Triangle® hi-fi system, the satellite navigation, the air conditioning and the car's various settings.

In another original stylistic feature, the central "transmission" tunnel continues onto the roof, in the manner of a "scorpion's tail", making a passing reference to the RC ♠ and ♦ concept cars.

This feature can be back-lit, as can the digital readouts on the fascia panel, to create an original ambience which can be personalised according to the mood of the driver.



## Structure and suspension

Weight is a key factor in the dynamic and environmental efficiency of any vehicle. The RC HYbrid4 has therefore been designed to optimise this parameter. Its structure thus comprises a "space-frame" type aluminium body ensuring overall lightness and rigidity, to which are fitted the mechanical assemblies and the suspension. Similarly, all bodywork components are manufactured from composite materials. The suspension, a field in which Peugeot has acknowledged expertise, consists of double aluminium wishbones at the front and at the rear. The system uses a particularly innovative technology known as "kinetic™ H2 CES". This system, developed by the company TENNECO,

allows a very high level of road holding with no adverse effect on comfort. The principle is to control body roll and damping functions by means of a hydraulic link between the right and left-hand shock absorbers. This system, which avoids the need for an anti-roll bar, ensures the car remains flat when cornering while at the same time providing excellent vibration filtration.

Braking is by means of four ventilated brake discs, and in particular the front electric motor which recovers energy in order to recharge the batteries. The wheels are fitted with Michelin 225/45 R19 tyres.

## Aerodynamics

The car's aerodynamic specification has been studied with particular care to attain a measured Cx value of 0.24 and an SCx of 0.494. Air flows have been modelled in the wind tunnel to optimise the car's performance and fuel consumption while ensuring the necessary cooling capacity for both engines.

The four-part front air intake overcomes the problem of heat build up in relation to the lithium-ion batteries. It is also favourable to aerodynamic performance, with extraction of the internal flow taking place upstream of the front wheels. To optimise overall efficiency at all times, these air intakes are controlled by a system of movable flaps.

Cooling of the petrol engine and its two intercoolers is by means of two side air intakes and the Naca unit located at the rear of the roof. Air is then extracted via two recesses in the lower rear panel.

A system of carbon wheel "discs" improves the vehicle's penetration through the air by covering and streamlining each wheel, while at the same time preserving their very dynamic style.

Lastly, the flat under floor and the rear diffuser help

enhance overall efficiency.

This carefully designed aerodynamic specification also avoids the need for a spoiler, thereby enhancing the car's pure profile.

### An environmentally-friendly car with passion

With its carefully designed aerodynamic specification and reduced weight, an electric motor at the front and a petrol engine offering excellent thermodynamic efficiency at the rear, the RC HYbrid4 is designed to offer a **new level of environmental efficiency** in its category and is fully in step with the times (4.5 litres/100 km, CO<sub>2</sub>

emissions of 109 g/km in the combined cycle or Zero in electric mode).

However this technology also makes it possible above all to **maintain the motoring passion and the values of the Peugeot Marque in terms of both style and driveability**. Powered by a hybrid power plant offering a maximum power of 230 kW (313 bhp), four-wheel drive and an ultra-modern suspension, its performance is worthy of that of the best GTs (0 to 100 kph in 4.4 seconds, 80 to 120 kph in just 3.0 seconds) and all this with **incomparable driving pleasure and minimal impact on the environment**.

Octobre 2008

ENGINES		
<b>1.6 litre THP (propulsion)</b>	Capacity (cm <sup>3</sup> )	1,598
	Maximum power	160 kW (218 bhp)
	Maximum torque	280 Nm ; 300 Nm with overboost
<b>ELECTRIC (front wheel drive)</b>	Type	Synchronous with permanent magnets
	Continuous power / Occasional maximum power Continuous torque / Occasional maximum torque	40 kW (54 bhp) / 70 kW (95 bhp) 102 Nm / 178 Nm
TYRES		
Type	Michelin	
Dimensions	225/45 R19	
TRANSMISSION		
Electronically-controlled six-speed manual gearbox (BMP6)		
PERFORMANCE (driver only)		
<b>Acceleration:</b>	0 to 1,000 m (s)	22.8
	0 to 100 kph (s)	4.4
<b>In-gear acceleration:</b>	80 to 120 kph in auto position (s)	3.0
<b>Maximum speed (kph):</b>		295
FUEL CONSUMPTION		
	Fuel tank (litres)	5.0
<b>MVEG CYCLE</b>	Combined cycle (litres/100 km)	4.5
	CO <sub>2</sub> (g/km)	109
<b>ZEV *</b>	Fuel consumption (litres/100 km)	0
	CO <sub>2</sub> (g/km)	0
	Maximum range at stabilised speed	12.5 kph
BRAKING - Electronically-controlled braking system: management of conventional hydraulic system and recovery braking by electric motor		
DIMENSIONS (m)		
	Overall length (m)	4.716
	Overall body width (m)	1.905
	Kerb height - with full tanks (m)	1.235
	Wheelbase (m)	2.900
	Front/rear overhang (m)	1.011 / 0.805
	Front/rear track (m)	1.670 / 1.684
KERB WEIGHT with full tanks (kg)		
		1,425
Cx / SCx		
		0.24 / 0.494
SPECIFIC FEATURES		
High-voltage Lithium-ion battery, voltage 200-400 V, Converter 150-400 V to 12V to ensure supply of in-car network in ZEV mode Inverter: operating voltage range: 150 to 400 V; liquid cooling PTMU: power train supervisor ensuring optimal consumption		

\* ZEV: Zero Emission Vehicle