

Bleecar[®]
powered by LMP



pininfarina

Bolloré



If it is to be realistic, any vision of the future must be built on solid foundations. To simultaneously rethink the concept of a car, help protect the environment and reconcile pedestrians with motorists thus called for a substantial injection of know-how and experience.

Pininfarina and Bolloré have just what it takes, each in its own right. Their respective track records of patient but daring innovation over the years in complementary fields have led them to join forces on a project to design a car that would meet the most stringent environmental requirements while providing all the benefits of a modern vehicle: safety, comfort, reliability and driving experience.

Since the 1960s, Pininfarina has been a pioneering designer of motor vehicles based on innovative architectures and powered by ever more economical engines.

For its part, Bolloré has developed two key energy storage components:

- Lithium Metal Polymer (L. M. P.) batteries, which are based on a unique technology and offer exceptional energy density as well as being very safe
- Super-capacitors, which provide additional power and can retrieve and store power generated when a vehicle is braking.

Out of their union, the new Pininfarina BLUECAR was born, a concentrated amalgam of clean technologies under cover of an uncompromisingly elegant design.



A full tank of clean and reliable energy

The Pininfarina BLUECAR is the first serially produced electric car to emerge from the BLUECAR programme, the first prototypes of which, fitted with L. M. P. batteries, began to be tested in 2005. Having secured regulatory approval from the authorities in the fall of 2007, the BLUECAR prototypes have to date accumulated tens of thousands of kilometres on the road, demonstrating the power and safety of the L. M. P. batteries combined with supercapacitors. The Pininfarina BLUECAR, which will soon enter production in Turin, Italy, at a plant and operated by Véhicules

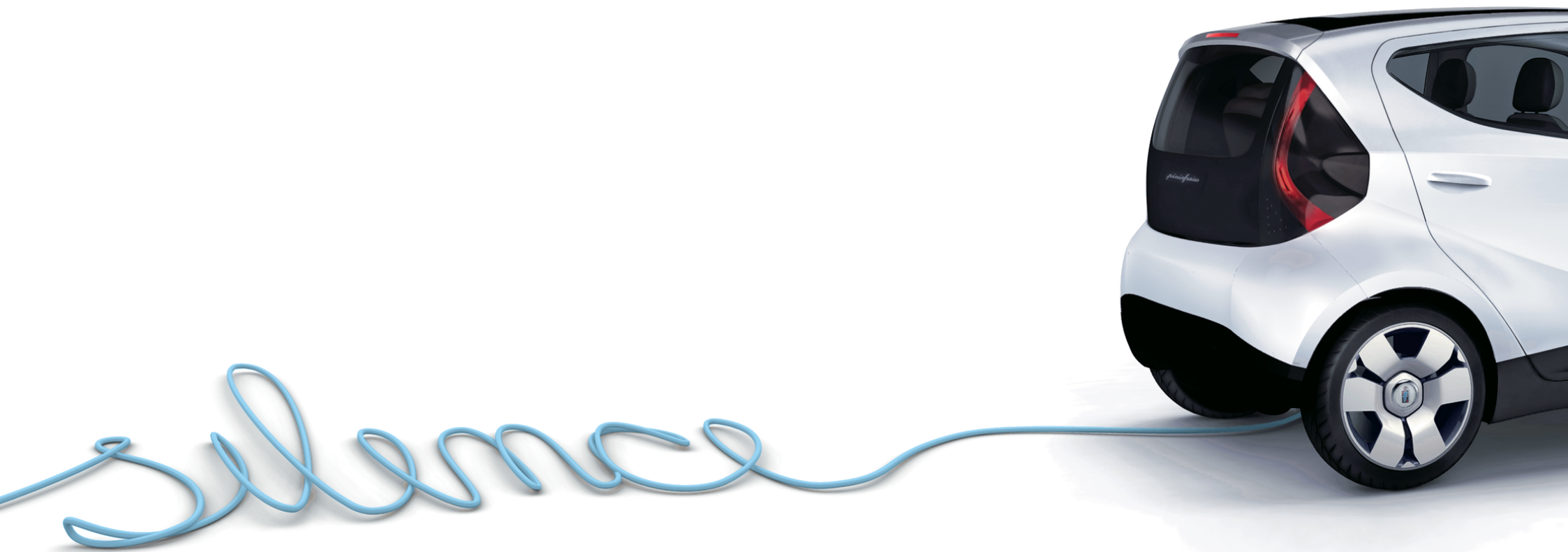
Electriques Pininfarina Bolloré (VEPB), a joint venture between Pininfarina and Bolloré, will benefit from the combined experience and track record of the two partners. The Pininfarina BLUECAR, which was designed to offer a means of individual transportation that is uniquely quiet and non-polluting, will delight its users through its elegance, outstanding driving experience and reliability.

performance



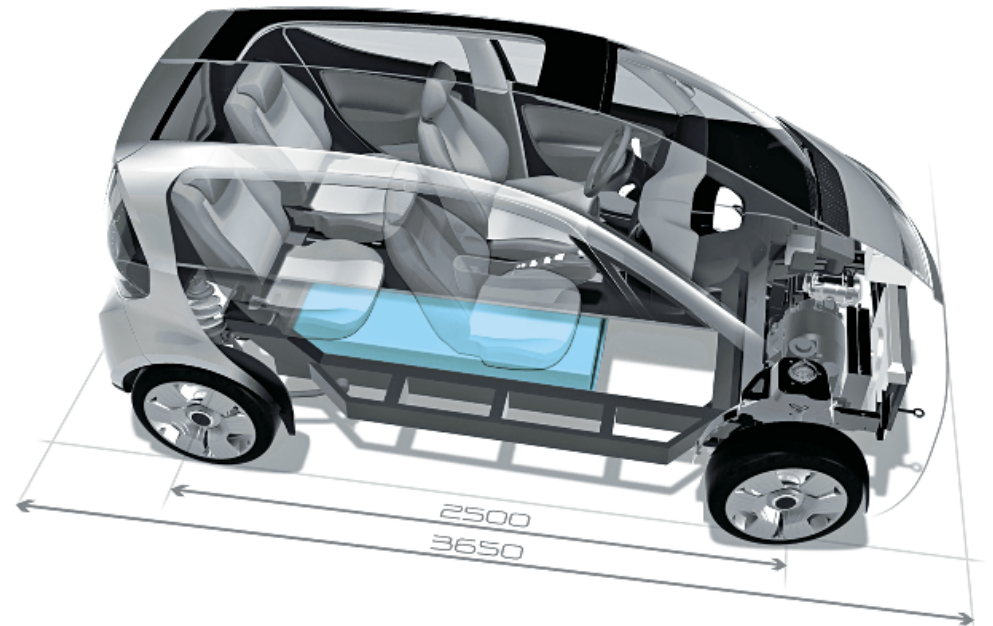
The BLUECAR is a compact and elegant town car with four seats, five doors and an automatic transmission. Its L. M. P. battery gives it a range of 250 km between charges, well in excess of the 40 km clocked up on average by a driver in an urban environment. To recharge the BLUECAR, simply plug it into a public power outlet or a standard power socket at home. It takes six hours to recharge the car's battery from a standard power socket, and only two hours on the future fast-charging outlets. If need be, the batteries can be fast-charged for five

minutes, giving the car enough power to run 25 km. In big cities, car parks are already being fitted with electric power outlets, demonstrating the commitment of leading private operators and local authorities to promoting and fostering the development of electric cars. In terms of performance, the BLUECAR will feature a top speed that is electronically capped at 130 km/h and enough acceleration to get it from 0 to 60 km/h in 6.3 seconds.



The BLUECAR will contribute towards reducing noise pollution in our cities. This is because, not content with being less polluting, the BLUECAR will run almost silently! Lower noise pollution in urban areas should make our cities more pleasant and liveable for both drivers and pedestrians. Once you take away the noise of the engine, all that's left is the sound of the tyres on the road, which is so much more muted, a whisper compared with the loud rumblings of big petrol-driven engines! In order to avoid posing a danger to pedestrians, or causing

them to get a fright each time they unwittingly cross paths with a BLUECAR, the Pininfarina BLUECAR is fitted with a "Soft Sound" button in addition to its normal horn, designed to advertise its presence with a gentle, humming sound.



Technological innovation

At the heart of the BLUECAR lies its battery, the source of the car's power but also of its outstanding driving experience thanks to the use of a unique technology. Basing itself on its know-how as the world's leading maker of polymer films for capacitors, another energy storage component, the Bolloré Group launched a research programme nearly fifteen years ago to develop a battery based on a radically new concept: Lithium Metal Polymer (L. M. P.) technology. Produced at BatScap, a subsidiary that was set up specifically for that purpose, the L. M. P. battery

provides a number of advantages: it can store five times more energy than a traditional battery weight for weight and can be recharged in a matter of hours.

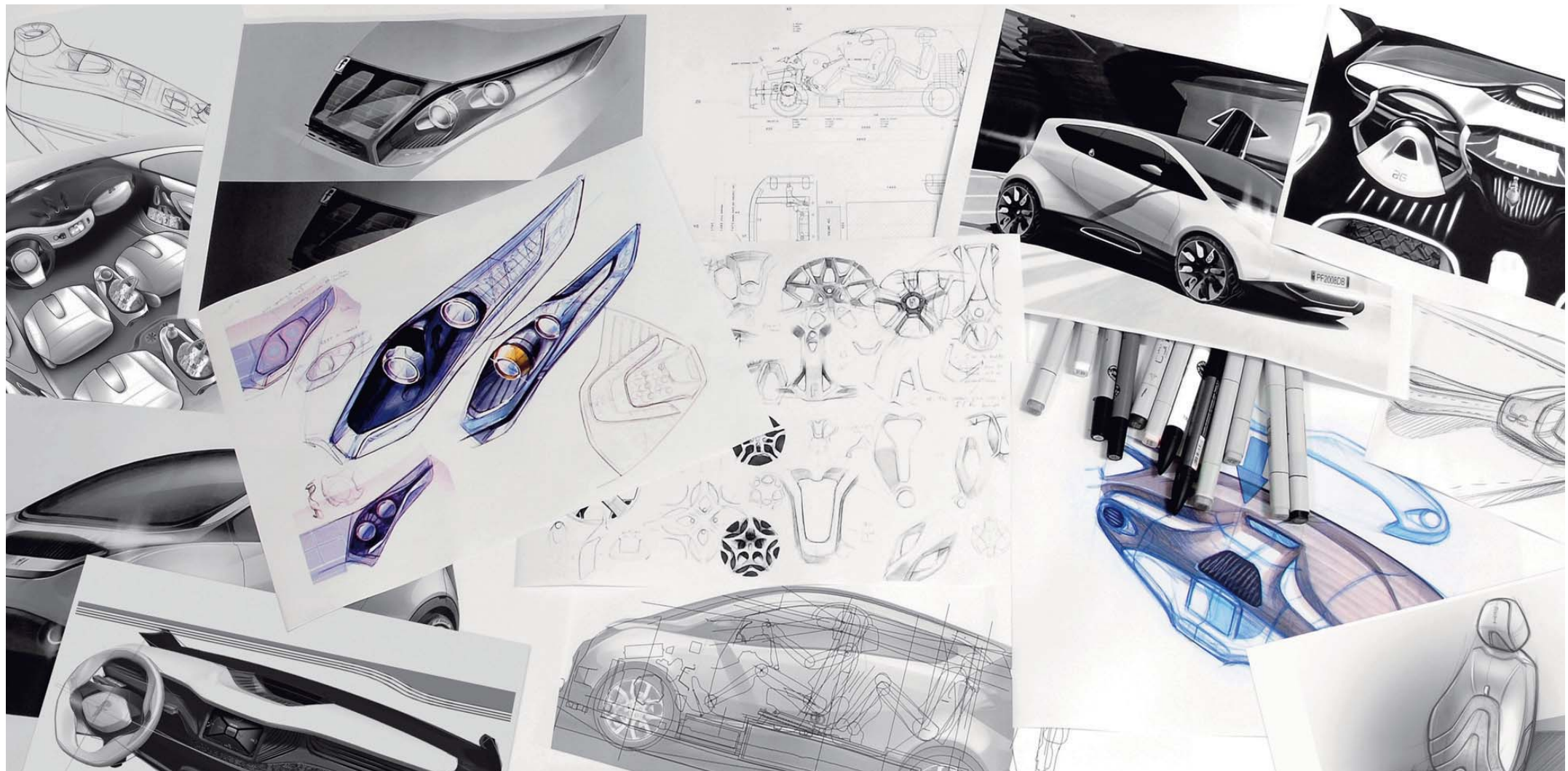
Its "solid-state" technology makes it safer too and its lifespan should outlast that of the car that it powers. Last, but not least, by combining an L. M. P. battery with an array of super-capacitors, the outcome is greater power for acceleration, a longer range thanks to the recycling of braking energy, and a longer lifespan for the battery thanks to the smoothing out of sudden power drains.



Style

The name of Pininfarina, the famous car design and bodywork company in Turin, Italy, needs no introduction. The mere mention of Pininfarina is synonymous with excellence in car design. One of Pininfarina's designs, the Cisitalia 202 SC, was the first car to have been exhibited on a permanent basis at the New York Museum of Modern Art (MoMA), the temple of contemporary design, where it was referred to as one of the "eight wonders of our time". Pininfarina has long been associated with electric cars.

The company reinvented the Solex, bringing out an electric version thanks to the talent of Lowie Vermeersch, its head of design. Clearly Pininfarina has what it takes to make its involvement in the BLUECAR project a great success. The BLUECAR is a clever blend of cutting-edge technology and sophisticated elegance. It transcends considerations such as fashion and is not merely an electric car: it is a car with a resolute styling, elegant lines, lots of dynamism and confidence. Welcome to the car of the 21st century, designed by Pininfarina.

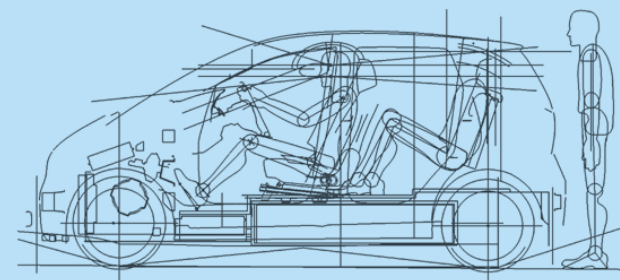


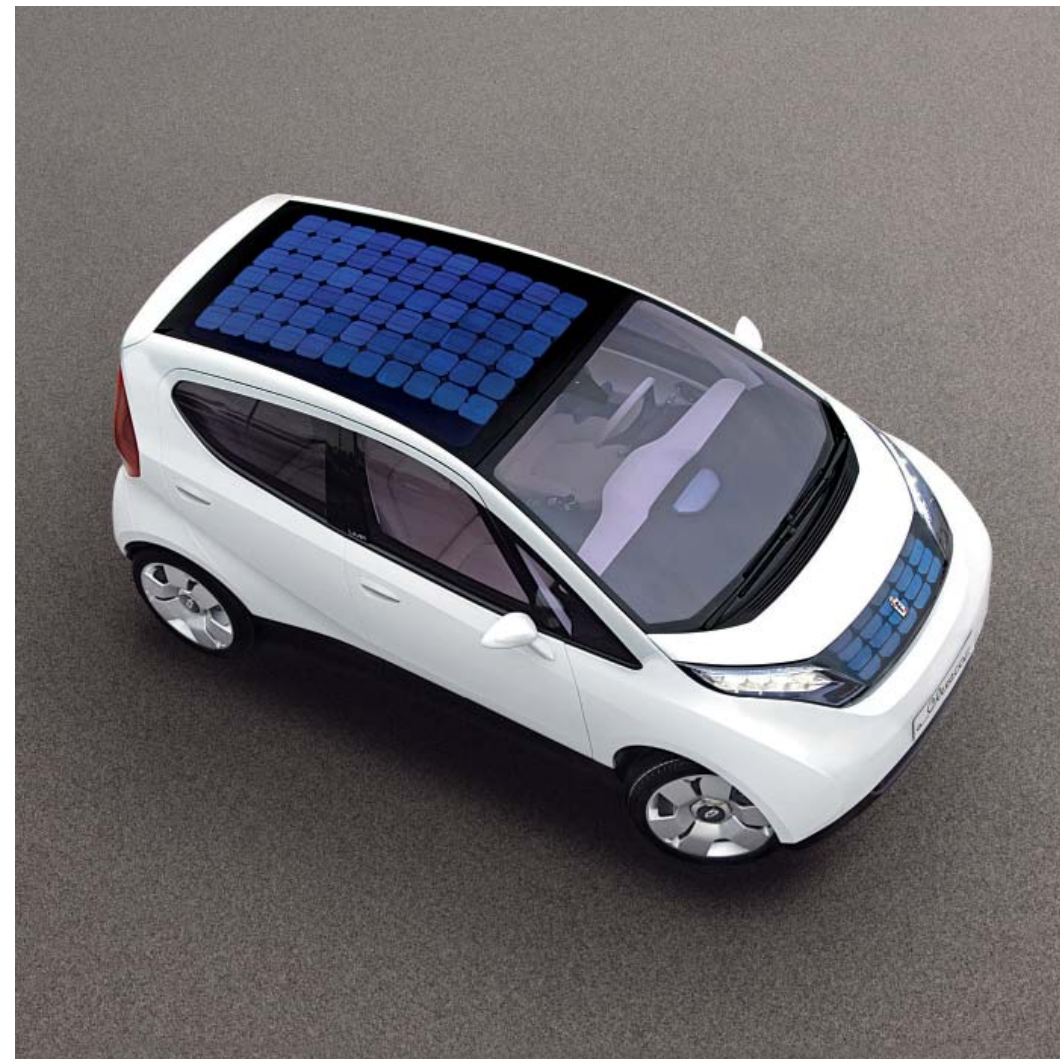




The cabin

The Pininfarina BLUECAR is a five door hatchback. It is short (3.65 m), wide (1.72 m), and tall (1.60 m), and provides comfortable space for four. Thanks to its diminutive electric power train and the ideal positioning of its battery in the centre between the two axles, the BLUECAR offers a spacious, welcoming and bright cabin. The positioning of the battery under the passenger seats also provides the car with outstanding road-holding thanks to the lowering of its centre of gravity and outstanding weight distribution.



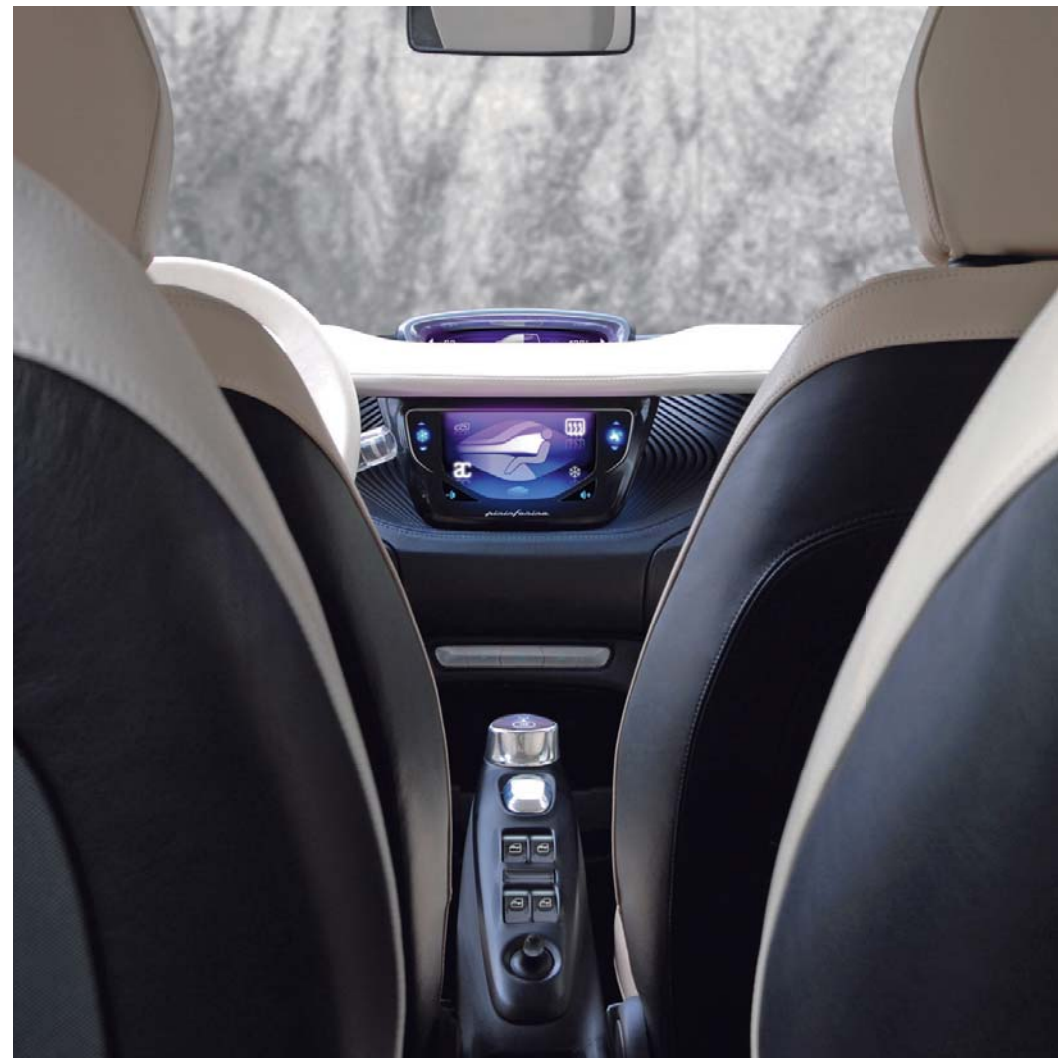


Environmentally sound down to the most minute details

The BLUECAR is a responsible and accountable choice. It is environmentally sound down to its most minute details, with fittings made out of materials that meet sustainable development criteria, such as leather-like seat covers produced from vegetable sources, and other natural products that respect the environment. Also, a first in the car industry, solar panels on the roof and bonnet will contribute towards powering the car's electrical equipment as well as its heating and air-conditioning system.

These innovations will come as a boon to all drivers who are keen to be able to do their bit to preserve their environment and that of future generations, are proud to be pioneers in this new adventure, and glad to be saving money while doing so.





Premium

When you buy a Pininfarina BLUECAR, you will be joining a very exclusive club – a club of people who are concerned about the quality of their environment and that of future generations, and who are prepared to do something about it, by opting for a car that is environmentally friendly. This does not mean that this will be an austere choice: the BLUECAR has been designed to procure genuine driving enjoyment. Its design is a delight to the eyes and its cabin provides unparalleled comfort and convenience.

But that's not all: in order to ensure that driving a BLUECAR is synonymous with peace of mind, a vast range of exclusive services will be provided in conjunction with the release of the vehicle: quick breakdown assistance and a replacement car in case of an accident, low insurance rates, concierge service, etc.



A communicative car

The Pininfarina BLUECAR uses the most advanced technologies to foster communication between the car and its driver. The upper screen, which is highly legible and clear, shows all the key indicators concerning the car's operation: speed, remaining range, battery charge gauge. The central touch-screen is the virtual core of the onboard computer; it provides access to all the functions linked to cabin comfort and driving enjoyment: temperature regulation, in-car audio system, GPS, breakdown assistance, hands-free telephony, driving mode

(economy, sport or icy roads). All these functions are controlled intuitively via 3D images. Finally, a remote control built into a smartphone can be used to remotely check the battery charge level and pre-heat the car's electric drive system so that it is ready to drive off immediately even if it has been left at the curb for a long time.





An ethically sound choice

L. M. P. batteries offer a tremendous advantage versus petrol-powered cars: they are powered by electricity. The production of electricity generates minimal amounts of CO₂. In France, EDF estimates it at less than 50 g/kWh. Although this does not hold true for certain countries which produce electricity using mainly thermal power plants, the general trend worldwide is for the development of sources of renewable energy such as wind turbine power, solar energy and soon water turbine power. In the near future, it will therefore be possible not only eliminate

CO₂ emission while driving, but also, thanks to the development of these green energy sources, not to emit any CO₂ when charging one's car. The electric car is therefore the best motoring solution to significantly reduce the effects of carbon dioxide emissions on global warming. Moreover, electric cars do not emit any other gases or particulates, spelling an end to noxious emissions that are so bad for everyone's health: in urban environments, two thirds of all air pollution is currently caused by emissions from cars. Reducing CO₂ emissions

can not only have a positive impact in reducing the greenhouse effect, but also in reducing the damage caused to the ozone layer and climate change.

The BLUECAR was designed from the ground up to make the most of all the benefits provided by electric motoring using high performance batteries. Electric cars must not be the preserve of the fortunate few. They must be accessible to everyone.



Ergué-Gabéric / Bolloré

L. M. P. batteries and supercapacitors were developed at the research centre of the Bolloré Group's production site at Ergué-Gabéric near Quimper in Brittany, France. They were the outcome of a concerted research effort founded on the Group's core activities, Bolloré being the world's leading producer of ultra-thin extruded films used in the production of capacitors, another energy storage component. The success of its research programme led the Bolloré Group to form BatScap, subsidiary dedicated to these activities, some 15 years ago. Nowadays, BatScap's employees, among whom are more than 150 engineers, research staff and technicians, have access to the most advanced laboratory and production facilities.



Montréal / Bolloré

In 2007, the Bolloré Group bought Avestor, the only other company in the world which possessed the technology and the patents required to manufacture L. M. P. batteries, from HydroQuébec and Adanarko. Avestor's Canadian team, which comprises some sixty highly qualified staff, was thus integrated into BatScap. Thanks to the pooled talent, technologies and facilities of both sites, the Bolloré Group wields major, highly sophisticated production facilities that are ample to cater to the production lines of the BLUECAR and electric Microbus vehicles.



Cambiano / Pininfarina

World-renowned for the talent of its design teams which have created many of the world's most beautiful cars over the years, Pininfarina is also a highly experienced carmaker which produces high-end vehicles on contract for many manufacturers. The BLUECAR electric car will be produced by the Pininfarina-Bolloré joint venture at a plant located near Turin. The joint venture will benefit from the tremendous know-how and experience of Pininfarina's personnel, who are proud to be involved in producing the world's first serial production electric car powered by L. M. P. batteries and supercapacitors under the Pininfarina badge.

The combined power of two major industrial groups

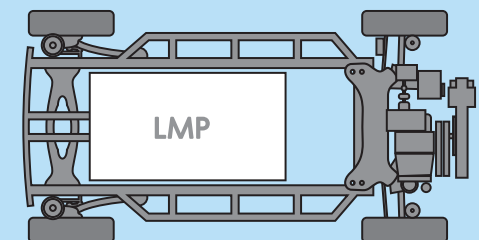
General characteristics	
Volume (l)	300
Mass (Kg)	300
Communication bus	CAN
Electrical characteristics	
Power rating	30 kWh
Nominal voltage	410 V
Peak power output	45 kW(30s)
Min./max. battery voltage	300/435 V
Capacity at C/4	75 Ah
Energy density per unit mass	100 Wh/kg
Energy density per unit volume	100 Wh/l
Thermal characteristics	
Internal temperature	60°C - 80°C
Operating temperature	-20°C to + 60°C

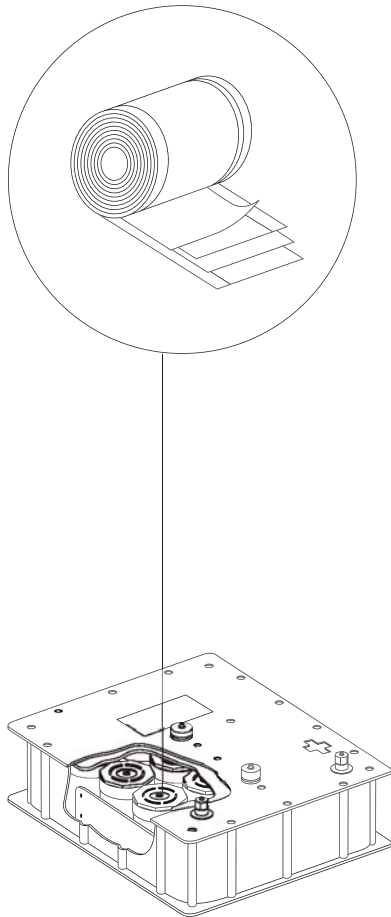


The L. M. P. battery

At the core of any electric car lies its battery. The BLUECAR's battery is produced by France's Bolloré group. The Bolloré group has a turnover of 10 billion dollars per annum and employs 35,000 people. For some 30 years, the Bolloré group has been the world's leading producer of components for capacitors. Thanks to the tremendous know-how of the Bolloré group in the fields of electricity storage and extruded polymers, Bolloré's subsidiary Batscap has been working for 15 years to develop a solid-state Lithium Metal Polymer battery. This battery

can store five times more energy than a traditional battery weight for weight, and can be recharged in a matter of hours. It does not require any maintenance and has a lifespan of around 200,000 km, providing outstanding safety throughout. Moreover, the L. M. P. battery is made out of non-polluting materials that do not pose any danger for the environment. At the end of its life, it can be retrieved and all its components recycled or reused.



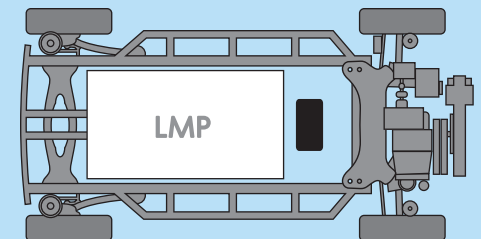


Supercapacitors: boosting acceleration and retrieving power from the brakes

Supercapacitors are energy storage components developed by the Bolloré group. In an electric car, supercapacitors draw and store energy generated while the car is braking, feeding it back into the system when the car moves off again. The result is greater acceleration, increased range and a longer lifespan for the car's battery.

The electric cars powered by BatScap's L. M. P. batteries and

supercapacitors have a range of over 250 km. They are fast (with a top speed of 130 km/h), fun to drive, safe, and long-lasting.





Technical specifications

Dimensions	
Length	3.65 m
Width	1.72 m
Height	1.60 m
Boot capacity	200 l

Performances	
Electric motor	50 kW
Max speed (electronically capped)	130 km/h
Acceleration	0 to 60 km/h in 6.3 s

Equipment
Hydraulic brakes, ABS as standard
Electric power steering
Electric parking brake
Airbag
Air-conditioning
"Soft Sound" pedestrian warning

"To think, draw, design and build cars is not only an enthralling mental process.
Nor is it simply a business choice. It is also and above all a great social responsibility."

Andrea Pininfarina (1957-2008)