



Paris - 24 October 2013

OpEneR: PSA Peugeot Citroën & Bosch reveal two new functions to optimise vehicle range and safety

- ▶ Topographical data to provide the driver with an extended "vision" of the road
- ▶ A new sensors function to optimise vehicle safety and comfort

Bosch and PSA Peugeot Citroën, along with other partners, are cooperating on the OpEneR (Optimal Energy Consumption and Recovery) research programme, designed to improve the range of future hybrid and electric vehicles and optimise driver safety and comfort.

Two new technologies developed for the OpEneR project will be available for all types of motors (gasoline, diesel, hybrid and electric)

Navigation data for an extended vision of the road and 15% energy savings

OpEneR now includes navigation data for predictive driving adaptation. The driver's vision is considerably extended with a preview of the road, based on topographical data such as slopes, bend radii and infrastructure data, with indication of road signs and speed limits.

This innovation means gains in efficiency, with energy savings of up to 15%. Thanks to the road preview feature, the engine management system performs a dynamic calculation of the energy required from the electric motors.

On-board video camera and radars to optimise vehicle safety and comfort.

Sensors to help with driving comfort and safety, such as video camera and radars, are used to detect objects, other cars and pedestrians, as well as to recognise road signs, and also help bring down consumption. For instance, on the basis of the journey to be covered, a computer determines the vehicle's future speed curve, by integrating data going beyond the next bend. The Adaptive Cruise Control function automatically regulates the vehicle's speed and brakes before entering the bend, built-up areas and speed limited areas, as well as in the presence of obstacles and slower vehicles. This function means greater comfort and safety for the driver, who can concentrate on the wheel and the surrounding traffic.

In addition to its two new innovations, OpEneR enables the driver to reduce energy consumption, either by coasting, or by means of braking energy recovery for hybrid and electric vehicles. To date, more than 15,000 km of intensive testing have been carried out in real driving conditions and on varied road profiles, with consumption down by between 10% and 15%. The two partners have thus developed three technological innovations:

- An electric drive train based on 2 electric motors, offering 4-wheel drive with zero CO₂ emissions
- The new generation Stop & Start for coasting;

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- ESP® hev braking for energy recovery at braking and battery recharging, accompanied by the iBooster which can amplify the vacuum braking force.

OpEneR is part of the European Commission's "Green cars initiative" call for project proposals, with partners from the industrial and university worlds. Five partners are today working together on this research project: Bosch, AVL List and PSA Peugeot Citroën, representing industry, and the Karlsruhe research centre in Germany and the Galician Automotive Technology Centre, representing the world of university research.

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About PSA Peugeot Citroën

With its two world-renowned brands, Peugeot and Citroën, **PSA Peugeot Citroën** sold 2.9 million vehicles worldwide in 2012, of which 38% outside Europe. The second largest carmaker in Europe, PSA Peugeot Citroën recorded sales and revenue of €55.4 billion in 2012. The Groupe is the European leader in terms of CO₂ emissions, with an average of 122.5 grams of CO₂/km in 2012.

PSA Peugeot Citroën has sales operations in 160 countries. It is also involved in financing activities (Banque PSA Finance) and automotive equipment (Faurecia).

For more information, please visit www.psa-peugeot-citroen.com

About Bosch

The Automotive Aftermarket division (AA) provides the aftermarket and repair shops worldwide with a complete range of diagnostic and repair shop equipment and a wide range of spare parts – from new and exchange parts to repair solutions – for passenger cars and commercial vehicles. Its product portfolio includes products made as Bosch original equipment, as well as aftermarket products and services developed and manufactured in-house. More than 11,000 associates in 140 countries, as well as a global logistics network, ensure that some 450,000 different spare parts reach customers quickly and on time. In its "Diagnostics" operations, AA supplies testing and repair-shop technology, diagnostic software, service training, and information services. In addition, the division is responsible for the "Bosch Service" repair-shop franchise, one of the world's largest independent chains of repair-shops, with some 15,000 franchises. In addition, AA is responsible for more than 500 "AutoCrew" partners.

Additional information can be accessed at www.bosch-automotive.com.

The Bosch Group is a leading global supplier of technology and services. In the areas of automotive and industrial technology, consumer goods, and building technology, more than 300,000 associates generated sales of 51.5 billion euros in fiscal 2011. The Bosch Group comprises Robert Bosch GmbH and its roughly 350 subsidiaries and regional companies in

some 60 countries. If its sales and service partners are included, then Bosch is represented in roughly 150 countries. This worldwide development, manufacturing, and sales network is the foundation for further growth. Bosch spent some 4.2 billion euros for research and development in 2011, and applied for over 4,100 patents worldwide. With all its products and services, Bosch enhances the quality of life by providing solutions which are both innovative and beneficial.

Further information is available online at www.bosch.com and www.bosch-press.com