

Researchers develop a new two-stroke engine, notable for its low consumption and low level of pollutant emissions

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Researchers at the Universitat Politècnica de València have participated in the development of a new two-stroke engine, notable for its low consumption and low level of pollutant emissions. This engine is the

result of Powerful, a European project led by the French multinational company Renault, in collaboration with the Czech Technical University in Prague, the IFP Energies Nouvelles and the companies Delphi and Le Moteur Moderne (LMM).

The main feature of the Spanish, French and Czech researchers' work is the reduction in the [engine](#)'s weight and size, which results in a high specific [power](#), using only two cylinders instead of the four used in the four-stroke engines currently on the market. "We have been able to reduce the engine weight by between 50 and 60% with regard to the equivalent four-stroke engine. This entails a significant saving in fuel consumption, as well as a reduction in the cost of the engine itself", explains Ricardo Novella, researcher at CMT-Motores Térmicos of the Universitat Politècnica de València.

Moreover, since it has fewer cylinders, the friction produced in the engine is reduced, increasing its mechanical output and, finally, its overall performance.

Regarding its implementation in the automobile industry, the engine has been designed for small vehicles, categorized as Class A, such as the Renault Twingo. The viability of this concept was demonstrated with one of these cars by the French multinational.

Validation of the engine

The validation tests of the engine were performed in the installations of CMT-Motores Térmicos. The researchers of the UPV proved its potential for reducing [pollutant emissions](#) and fuel consumption compared to the four-stroke version currently available on the market. Moreover, they studied the possibility of implementing new advanced combustion concepts, as alternatives to the conventional diesel system, with very promising results.

Today, the research effort is focused on the development of a boosting system that increases the actual levels of maximum power to the equivalent of a four-stroke engine. "Now the engine needs 20% more power, but it weighs 50% less, so the ratio gives more power per unit of weight (specific power), but not twice as much, which is what it should be. It gives around 1.7 times more. It is necessary to increase the power to a ratio of 2", explains Ricardo Novella. Renault and the IFP Energies Nouvelles are leading this work.

In addition, Renault and CMT-Motores Térmicos continue their collaboration focusing on the analysis and optimization of new advanced concepts of combustion.

The researchers at CMT-Motores Térmicos presented the performance, characteristics and output of this new engine at the conference Thiesel 2014, held at the beginning of September at the Universitat Politècnica de València.

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