New internal combustion engine that does not emit harmful gases or carbon dioxide

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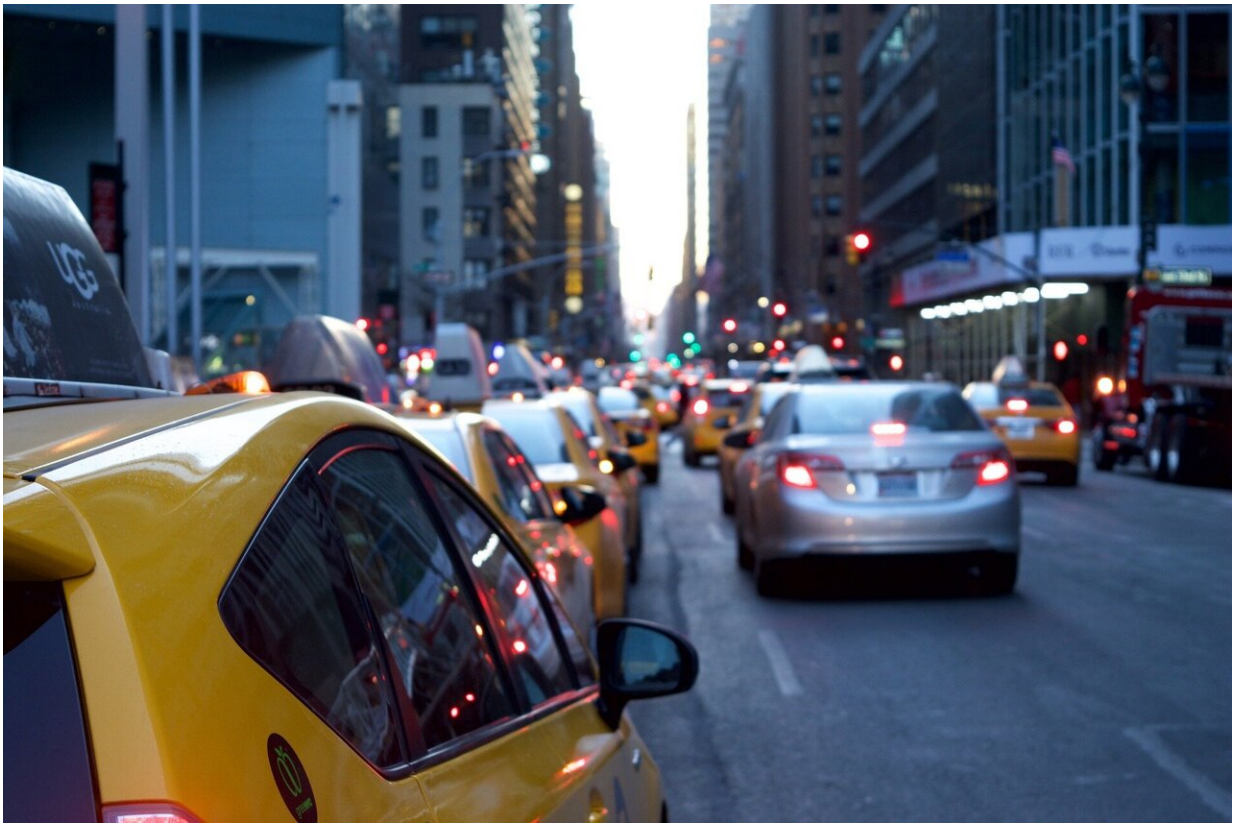

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Researchers from Valencia's Polytechnic University (UPV) have designed a new internal combustion engine that does not generate carbon dioxide (CO_2) or gasses that are harmful to people's health. According to

its creators, it is a revolutionary engine that meets the regulation on emissions planned for 2040 and also has high efficiency. The first two prototypes of this engine will become a reality in coming months thanks to funding provided by the Valencian Agency for Innovation.

The technology is based on MIEC ceramic membranes. Patented by the Institute of Chemical Technology, a mixed center of the UPV and CSIC, these membranes remove all gasses that are contaminating and harmful for health (NOx), capturing the engine's CO_2 along with environmental CO_2 and liquefying it.

"These membranes, included in the engine of the vehicle, enable the selective separation of oxygen from the air to produce the oxycombustion. This way, a pure combustion gas is generated, composed of water and CO_2, which can be captured inside the vehicle and stored, without having it expelled from the exhaust pipe," explains José Manuel Serra, researcher at the ITQ (UPV-CSIC).

This way, the technology developed by this team of researchers will make it possible to have an engine with the autonomy and refueling capabilities of a conventional one, but with the advantage of being completely clean, without any type of contaminating or greenhouse effect emission, just like electric engines. Therefore, we offer the sector a technology that combines the best of both types of engines, electric and combustion," adds Luis Miguel García-Cuevas González.

With the technology developed by the CMT-Thermal Motors and the ITQ, the vehicle also becomes a supplier of CO_2. As the researchers explain, in a conventional engine, a large amount or nitrogen and nitrogen oxides are generated in the exhaust pipe after the oxycombustion. However, in this case, only a very high concentration of CO_2 and water are generated, which can easily be separated from the CO_2 by condensing it.

"This CO_2 is compressed inside the engine and is stored in a pressure tank, which could be returned as a by-product, directly as pure high-quality CO_2, in a service station, for an industrial use. This way, inside the vehicle we would have a tank for fuel and another for the CO_2 that is generated after burning the fuel and which we could draw value from," says Luis Miguel García-Cuevas.

The technology developed by the CMT-Thermal Motors team and the Institute of Chemical Technology is mainly aimed at manufacturers of large vehicles for carrying passengers and goods, both on land and sea, and for aviation up to a certain level of power. Furthermore, it could also be used to transform current diesel engines into special vehicles.

"In the case of smaller vehicles, it could also be applied by sequestering only part of the CO_2 in the exhaust," says Francisco José Arnau, fellow researcher at the CMT-Thermal Motors of the UPV.

Provided by Asociacion RUVID

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