



## Ford Leads Project to Develop Near Zero Particulate Emission Diesel Cars That Could Run on Converted CO<sub>2</sub>

- Ford European Research & Innovation Center is to lead a €3.5 million project to investigate alternative fuels that could one day offer diesel car customers enhanced fuel efficiency while minimising environmental impact
- The project consortium will develop the first passenger cars, based on a Ford Mondeo, to run on environmentally friendly dimethyl ether (DME), and oxymethylene ether (OME1)
- Both fuels can be generated from CO<sub>2</sub> captured from the air that is combined with wind and sun power, or waste products

Ford Motor Company is leading a €3.5 million research project to investigate the use of alternative fuels that could offer customers the power and performance of modern internal combustion engines with environmental benefits comparable to an electric vehicle.

The German government is co-funding the three-year project that will test the first-ever cars to run on dimethyl ether (DME), commonly used as a non-toxic propellant in aerosol spray gas, and oxymethylene ether (OME1), a liquid usually used as a solvent in the chemical industry.

Both ethers, which will power cars based on the Ford Mondeo, offer the potential for extremely low particulate emissions and enhanced fuel efficiency. They can be generated from fossil natural gas or bio-gas or through a sophisticated process called power-to-liquid that uses renewable sources such as solar or wind power together with CO<sub>2</sub> captured from the air.

This promising technology is being investigated in a parallel project together with RWTH Aachen University researching the viability of different DME generation methods, looking at conversion efficiency, estimated fuel prices and infrastructure aspects.

“The CO<sub>2</sub> produced by a car powered by DME from renewable sources could be comparable to the amount generated by a marathon runner covering the same distance – but with performance similar to a diesel powered vehicle,” said Werner Willems, technical specialist, Powertrain Combustion Systems, Ford of Europe. “This is a project that could help place vehicles with a significantly reduced carbon dioxide and particulate emissions on the market at affordable costs.”

Both DME and OME1 produce almost no particulates, and also share characteristics with diesel fuel that are expected to make conversion of diesel engines possible with comparable performance. It is estimated that DME from renewable energy sources could offer well-to-wheel emissions of about 3 g/km CO<sub>2</sub>. \* Like liquefied petroleum gas, DME must be stored in a slightly pressurised tank. OME1 can be stored in a conventional tank system. The DME-powered engines are expected to benefit from almost soot-free combustion, higher thermal efficiency and excellent cold start properties.

For the project Ford European Research & Innovation Center, Aachen, Germany, will work together with RWTH Aachen University, the Technical University of Munich, FVV, TUEV, DENSO, IAV Automotive Engineering, and Oberon Fuels. \*\* Through the FVV – the leading forum for joint research

projects on engine technology in Germany – the project findings will be shared with key-players within the automotive industry.

“The growth of the world’s population is putting ever-increasing demands on energy and especially fossil fuels. Alternative, renewable fuels like methyl ethers will play a pivotal role in the future,” said Andreas Schamel, Ford’s director Global Powertrain Research & Advanced Engineering. “DME is safe, burns cleaner than conventional diesel, and most importantly is versatile. The energy generated from solar, wind and other renewables can be stored within the fuel itself, and this enables DME and OME1 to be used across a range of applications.”

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\* Comparison based on estimates which factor in the CO2 emissions resulting from fuel production, with the DME-powered vehicle figure calculated from the use of renewable energy to generate the DME fuel, and the electric vehicle figure calculated from electricity generated from renewable resources. The comparative figure for diesel is 113 g/km CO2

\*\* DME from Oberon has received approval from the U.S. Environmental Protection Agency as a biogas-based fuel under the Renewable Fuel Standard, meaning it can be used as a fuel in the U.S.

## About Ford Motor Company

*Ford Motor Company, a global automotive industry leader based in Dearborn, Mich., manufactures or distributes automobiles across six continents. With about 195,000 employees and 66 plants worldwide, the company’s automotive brands include Ford and Lincoln. The company provides financial services through Ford Motor Credit Company. For more information regarding Ford and its products worldwide, please visit [www.corporate.ford.com](http://www.corporate.ford.com).*

## Ford of Europe

*is responsible for producing, selling and servicing Ford brand vehicles in 50 individual markets and employs approximately 53,000 employees at its wholly owned facilities and approximately 67,000 people when joint ventures and unconsolidated businesses are included. In addition to Ford Motor Credit Company, Ford Europe operations include Ford Customer Service Division and 23 manufacturing facilities (15 wholly owned or consolidated joint venture facilities and 8 unconsolidated joint venture facilities). The first Ford cars were shipped to Europe in 1903 – the same year Ford Motor Company was founded. European production started in 1911.*