



CGCL Methanol and DME plant  
La Brea, Trinidad and Tobago

## Commercial Operations Begin at First New Large-Scale DME Plant in the Americas

Caribbean Gas Chemical Limited (CGCL) has announced the launch of commercial operations at its new methanol and DME plant located on the Union Industrial Estate in La Brea, southwestern Trinidad. The plant, with an annual production capacity of 1 million tons of methanol and 20,000 tons of DME, is the largest DME plant constructed in the Americas for more than a decade and the first downstream plant in the country producing and utilizing methanol as a raw material.



Built with a total investment of US \$990 million, the plant is operated by CGCL, a joint venture established in 2013 whose shareholders comprise Mitsubishi Gas Chemical (MGC), Mitsubishi Corporation (MC), Mitsubishi Heavy Industries (MHI), the National Gas Company of Trinidad and Tobago (NGC) and Massy Holdings. Technology licensor MGC's process is already used for commercial-scale DME production in several countries, including an 80,000 TPY DME plant in Niigata, Japan that began commercial operation in 2008 and that has supplied DME to numerous projects for automotive, industrial heating and other fuel applications.

### Local Feedstock – International Delivery Capabilities

NGC is the project's primary gas supplier, using locally-sourced natural gas, with NGC Petrochemicals (NPL) having offtake rights for all of the DME produced. The plant is capable of supplying DME to customers using various modes of transport, with DME loading facilities including a ship loading arm, vehicle loading and cylinder filling installations. Trinidad and Tobago has a well-established petrochemical industry and has long been a major supplier of methanol to the United States, until recently accounting for almost half of all imports of the commodity in the US.



Project agreement signing ceremony (2015)



Project groundbreaking ceremony (2015)

## FPT Industrial Leads New DME Heavy-Duty Engine Project

Following initial research completed in 2020, global powertrain manufacturer FPT Industrial has announced the start this year of a new innovation project into DME's use as an alternative fuel in one of the company's heavy-duty diesel engines. A brand of CNH Industrial, FPT Industrial is dedicated to the development, production, and sale of powertrains for on- and off-road, marine and power generation applications, and covers a diverse range of industry sectors serving well-known international brands such as **IVECO** (trucks, buses and specialty vehicles), **Case IH**, **New Holland** and **Steyr** (agriculture and construction), and **Magirus** (fire and rescue).



The company's initial research, completed last year using the company's most popular long haul engine, the Cursor 11, was done with a focus on efficiency, emissions and exhaust aftertreatment. In an edition of the IDA's online DME Briefing Series in November, Daniel Klein and Gilles Hardy of FPT Industrial's Powertrain Product Engineering reported that the research, done using neat (100%) DME without lubricity improver, demonstrated soot free combustion even at high EGR levels, hydrocarbon emissions close to zero for most operating loads, engine out NOx down to 1 g/kWh, and a reduction of CO<sub>2</sub> emissions of >=10% compared with a diesel baseline.

The project is being conducted by FPT Industrial's Research & Development Centre in Arbon, Switzerland, using test facilities at the Swiss Federal Laboratories for Materials Science and Technology (Empa) in Dübendorf. The new innovation project's goal is to advance the understanding of DME's use as a diesel alternative in the industrial goods sector, and to demonstrate clean combustion at comparable efficiency levels. Because DME's combustion produces practically no particulate emissions, a comparable simple selective catalytic reduction (SCR) system may be enough to comply with strict emissions standards without the need for a diesel particle filter (DPF).

CNH Industrial brands were pioneers in the use of natural gas and biomethane for transport, with IVECO being the first manufacturer to offer a full range of natural gas models from light- to heavy-duty vehicles and buses.

More information: [www.cnhindustrial.com](http://www.cnhindustrial.com)

## KEW Technology Joins the IDA



The International DME Association is pleased to welcome biomass and waste gasification technology developer KEW Technology as its newest member. KEW Technology's small-scale, modular technology enables the conversion of locally-generated biomass and solid waste to power, heat, hydrogen, and low-carbon liquid fuels including DME.

The company's advanced waste gasification technology was developed in the United Kingdom as part of a project funded by the Energy Technologies Institute (ETI), a public-private partnership between global energy and engineering companies (BP, Caterpillar, EDF, Rolls-Royce and Shell) and the UK government to accelerate the development of low-carbon technologies. In a competitive assessment involving other well-known technology providers to develop a commercially viable small-scale process for the conversion of waste to power (and potentially fuels, chemicals and hydrogen), the company's technology was selected for the second phase of the project, involving construction of a demonstration plant.

### Decentralized, Community-Scale Production from Biomass and Waste

The company's demonstration plant, the UK's first municipal waste gasification facility, is located at the Sustainable Energy Centre just outside Birmingham, and is capable of processing 15,000 tons per year of locally-sourced mixed waste for delivery to local power and heat customers.

KEW Technology's ambition is to promote higher efficiency use of solid waste feedstocks via energy products such as liquid fuels, heat and power, for onsite and local consumption as part of an embedded infrastructure solution involving small-scale plants in local communities or on commercial and industrial premises.

More information: [www.kew-tech.com](http://www.kew-tech.com)

## DME Event Calendar

**IDA-CSA DME/Propane-DME Blend Standards Workshop**  
20 May 2021  
Online

**DME Briefing Series**  
Online

> **Series Edition 27 May**  
Unwrapping the European Green Deal –  
The EU's Climate Ambitions and DME

**European E-Fuels Conference**  
3 – 4 November 2021  
Hamburg

OME powered Ford F-350 V8



## Ford Leads North American Consortium Demonstrating Renewable, High Energy-Density Fuels for Diesel Engines

A consortium involving global industry members and major academic and research institutions has revealed its work in North America related to the development of renewable, high-energy density drop-in automotive fuels produced from various renewable feedstocks including biomass, municipal solid waste and waste plastics.

**Ford** Powertrain Engineering Research and Development Centre Canada (PERDC) in Windsor, Ontario, led by Dr. Jimi Tjong in conjunction with Dr. Werner Willems (Research & Advanced Engineering – Germany) and Ryan Delaney (Commercial Vehicles Engineering – USA) have been playing a critical role in the multi-discipline consortium to reduce the carbon footprint of future Ford vehicles by developing technologies related to renewable high energy-density drop-in fuels, including polyoxymethylene dimethyl ethers (OMEs). Like DME, OMEs are synthesized from methanol, which can be produced from various types of feedstock containing carbons such as biomass, municipal solid waste, and waste plastics via gasification and syngas conversion utilizing recycled CO<sub>2</sub>. Consortium members contributing technological expertise include **Enerkem** (Dr. Stéphan Marie-Rose), the **University of Toronto** (laboratories of Dr. Mohini Sain, Dr. Cathy Chin and Dr. Geoff Ozin), and the **University of Windsor** (Clean Combustion Engine laboratory of Dr. Ming Zheng). Enerkem is supporting the project with expertise in technology scale-up gained with the company's pioneering technology for the production of liquid fuels from biomass, waste plastics and recycled CO<sub>2</sub>.

### Low-Carbon Fuel Siblings: OME and DME

For industry members interested in downstream methanol fuel topics in general, and DME in particular, the OMEs present interesting potential that overlaps with that of DME, particularly as electrofuels (e-fuels). Professor André Boehman, Director of the W.E. Lay Auto Lab and the IDA's Senior Vice President for R&D, notes that "not only do the OMEs share a production pathway with DME as they can be produced from methanol, but in purely physical terms OME<sub>0</sub> is, in fact, DME. While OME<sub>1</sub> (dimethoxymethane) is a compound too volatile to be blended into diesel fuel, the OMEs 3 to 8 have very clean combustion characteristics and could potentially serve as drop-in replacements for diesel fuel, without requiring the modified fuel supply and injection system involved with DME."

### Ford Diesel and DME Development Leadership

Ford has designed and produced its own diesel engines since 2010, and from its Research & Advanced Engineering Centers in Europe and North America the company is leading numerous projects and initiatives related to the development and demonstration of low-carbon automotive fuels, including DME light-duty vehicle applications. These efforts include the recently completed **xME Diesel** project, the **C3 Mobility** (Closed Carbon Cycle Mobility) project, leadership of DME fuel standards development for both the **DIN** (German) and **CEN** (European) standards, and IDA industry initiatives related to European regulation and powertrain applications.



Ford's Dr. Werner Willems behind the wheel of the world's first OEM-built DME passenger car, a Ford Mondeo demonstrator **xME Diesel** project