

Use of renewable DME in industry

A simple, clean-burning molecule with multiple applications

Defossilisation options, particularly for high-temperature industrial heating, are currently limited. rDME is a renewable fuel that can be used in a wide variety of industrial processes. It is clean-burning, increasingly available, and can reduce GHG emissions.

The industrial sector defossilisation challenge



Industrial production **provides the goods** that people require **to live healthy and fulfilled lives**.

AROUND
\$13.8
trillion/year



Globally, industry adds around **\$13.8 trillion / year to the global economy**, equivalent to around 17% of global GDP.¹



However, the industrial sector has **high energy demands and GHG emissions**: industry is responsible for approximately a third of global GHG emissions.² Pressure from policymakers and consumers is driving change.

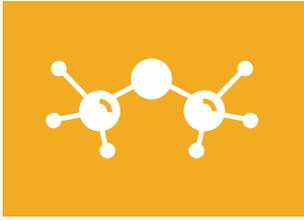


Whilst some industries can be electrified, many high-temperature industrial applications will continue to require a chemical energy source. **Renewable DME can be used from today with existing industrial infrastructure.**

¹ World Bank, data refers to manufacturing sector only, based on most recent available figures (2018 for contribution to global GDP and 2019 for value add to global GDP in \$)

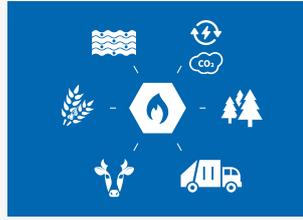
² IPCC AR5 Report, data from 2010, and includes direct emissions from industry and emissions from electricity and heat required for industrial processes.

Renewable DME could provide a solution for industrial sector defossilisation



A simple product

Dimethyl-ether is a single molecule. Gaseous at room temperature and pressure, it is transported as a liquid in pressurised cylinders and tanks like LPG.



Renewable

Produced from a **wide range** of renewable feedstocks.



Numerous applications

rDME can be used in the transport sector, for cooking, as well as domestic and industrial heating.



Safe, clean & green

rDME can reduce GHG emissions by up to 85% compared to diesel and heating oil. Its use also significantly improves air quality.

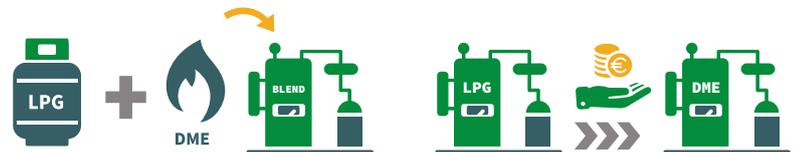
Use of renewable DME in industry

Industrial sites currently using coal and oil



- Are facing pressure to **switch to lower-carbon fuels**
- Can switch to a 100% DME boiler for roughly **the same cost** as a new LPG or natural gas boiler

Industrial sites currently using Gaseous Fuels



Boilers currently using LPG can use a **20% DME/LPG blend with no modification**

Boilers currently using LPG or natural gas **can be easily and cheaply converted to 100% rDME**

rDME can be supplied using existing LPG infrastructure



Delivery of DME to industrial customers **can be carried out using existing LPG delivery infrastructure** with only minor modifications. DME is already transported commercially today.

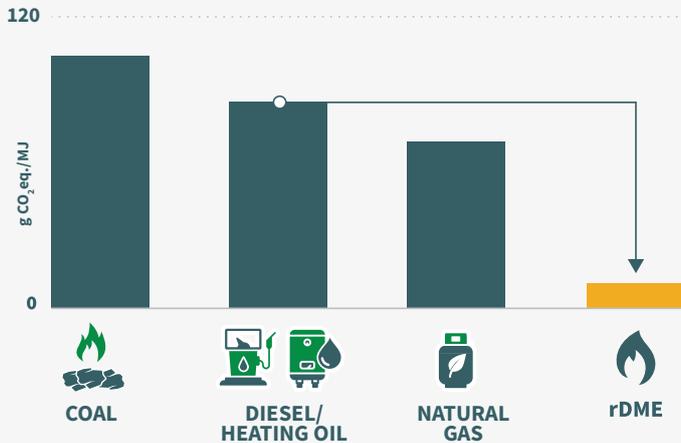


Use of DME **requires only minor modifications to existing LPG equipment**. Industrial users switching away from heating oil or coal could move directly to a DME boiler.

Sustainability

Carbon Intensity

- Up to 85% GHG emission reduction compared to diesel
- Can be produced from multiple renewable feedstocks including waste streams and residues, with a low GHG footprint



GHG
 UP TO **85%**
 GHG reduction saving could be higher if manure or in-process carbon capture are used

Air Quality



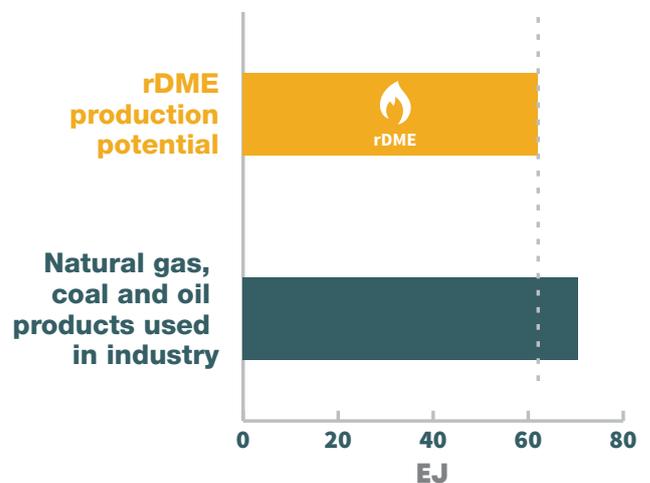
Diesel / heating oil, natural gas and rDME: Prussi, M., Yugo, M., De Prada, L., Padella, M., Edwards, R. and Lonza, L., JEC Well-to-Tank report v5, EUR 30269 EN, Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-19926-7 (online), doi:10.2760/959137 (online), JRC119036. ; Coal: BEIS (2019) <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2019>

How can renewable DME use in industry be scaled up?

- ✓ **Support scale-up** in the production of rDME
- ✓ **Ensure that** fuel standards and specifications allow the use of rDME in industrial boilers
- ✓ **Include rDME** in market-based support mechanisms for the use of renewable fuels in industry
- ✓ **Support the development** of new industrial appliances which can use 100% DME
- ✓ **Support the dissemination** of information on the potential use of rDME in industrial applications

Large production potential

The global rDME production potential is roughly equal to the entire global fuel requirement from industry.





www.shvenergy.com



www.aboutdme.org