

Waste to rDME projects

>> Converting Renewable & Recycled Carbon Feedstocks into rDME

Dr. Stefano Cocchi

Head of Business Development – Europe





CIRCULAR FUEL LIMITED

Circular Fuels Ltd (CFL) is a specialised **project development company**, which develops construction-ready **waste-torDME production plants** using KEW's proprietary **advanced gasification technology**, a form of Advanced Conversion Technology (ACT).

CFL is a joint venture between **Dimeta** (a joint-venture between **SHV Energy** and **UGI International;** two of the worlds largest LPG market players) and **KEW Technology Ltd** (a sustainable energy solutions company).

WHY rDME?

A simple product

Dimethyl-ether is a single molecule that can be produced from a wide range of renewable feedstocks.

Easy to handle

DME is chemically similar to propane and butane, and is a gas at room temperature and pressure. Like LPG it is easily transported as a liquid in pressurised cylinders and tanks.

Safe, clean and green

rDME **can reduce GHG emissions** by up to 85% compared to diesel and heating oil, and emits no harmful particulates.

Versatile Fuel

DME has been used for over 50 years in the chemicals sector as an aerosol propellant. It can also be used in the transport sector, for cooking, as well as domestic and industrial heating.

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rDME USE IN THE LPG INDUSTRY

Up to **20% rDME** can be blended into LPG with no modification to equipment or appliances: Opportunity to provide equipment compatible with readily-available, low-carbon fuel with no additional R&D spend.

Appliances and equipment can also be modified to take **100% DME**: Opportunity to supply larger customer with a bespoke solution which enables them to use 100% renewable fuel from today with little change from their existing fuel supply and delivery infrastructure.

Dimeta is a joint-venture between **SHV Energy** and **UGI International** advancing the production and use of renewable and recycled carbon Dimethyl Ether ("rDME"), a low-carbon sustainable liquid gas, to accelerate renewable solutions for the LPG industry.

By leveraging the expertise, innovation capabilities and distribution power of **SHV Energy** and **UGI**, leading global distributors of off-grid energy, the joint venture aims to develop the full potential of **rDME** as a sustainable solution.

KEW TECHNOLOGY LTD

Sustainable Energy Solutions company using proprietary technology and development capability to convert waste and biomass-based feedstocks into advanced energy vectors

Our vision: a world beyond fossil fuels

Proprietary and proven pressurised gasification technology provides unparalleled cost effectiveness and energy efficiency

Over 10-year from development to deployment with a full commercial product demonstrator (>£35m invested facility in Wednesbury, UK)

Co-funded by Energy Technologies Institute (ETI) – a partnership between the UK government, BP, Rolls Royce, Shell, Caterpillar, E.ON Clearly defined commercial roll-out plan supported by blue-chip strategics

KEW'S ACT PROCESS

- No combustion and no stack: high air quality
- Very high energy efficiency (>55%), compared to other energy recovery technologies
 - Utilization of nonrecyclable materials enables a robust **environmental** and **economical sustainability**

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KEW's is the unique pressurized advanced gasification process

KEW'S EQUILIBRIUM REACTOR (PATENTED)

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FEEDSTOCKS FLEXIBILITY

Agricultural Biomasses, straw, sewage sludge, digestate

Hazardous waste

KEW'S SUSTAINABLE ENERGY CENTRE

- Commercial-scale gasification plant (20.000ton/year RDF) in operation
- Standardization strategy with no scale-up/down of current configuration
- Commercial development based on the industrial skids pre-manufacturing of gasification plant

KEW'S OVERALL TECHNOLOGY ADVANTAGES

0,600

WASTE TO FUEL BENEFITS

Waste energy recovery GHG perspectives

Updating the waste hierarchy

A feedstock flexible solution that can efficiently convert unrecyclable solid wastes and low-grade biomasses to sustainable advanced fuels for defossilisation of harder-to-decarbonize sectors such as off-grid energy.

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2022: rDME 5TPD FACILITY

rDME synthesis under construction as an extension of **KEW's existing gasification** plant

Syngas to DME *direct synthesis* based on the single-step catalytic process developed by RenFuD[®]

LARGE SCALE PROJECTS FEATURES

50.000 ton / year rDME

Nr.11 KEW's ACT modules

85-90MW fuel input eq. 250.000 tons/year RDF

Area 50.000sqm

6-9 MWe of auxiliary consumption

Feedstock flexibility:

- MSW RDF
- C&I RDF
- Digestate
- Sludge
- Low grade biomass

TEESWORK: FIRST LARGE SCALE PROJECT

We enable local communities to reach their waste diversion and disposal goals producing renewable and recycled carbon DME enabling the shift to net zero in a circular economy framework.

Thank you