

High Performance Seals Extend DME Fuled Transport Operations

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DICHTOMATIK

Derby ([RPRN](#)) 03/20/13 — Dimethyl ether (DME) burns much cleaner than diesel oils, and is also proving to be an economic and effective alternative fuel or fuel additive for use with gas turbines as well as petrol and diesel powered engines.

However, the seals used on diesel

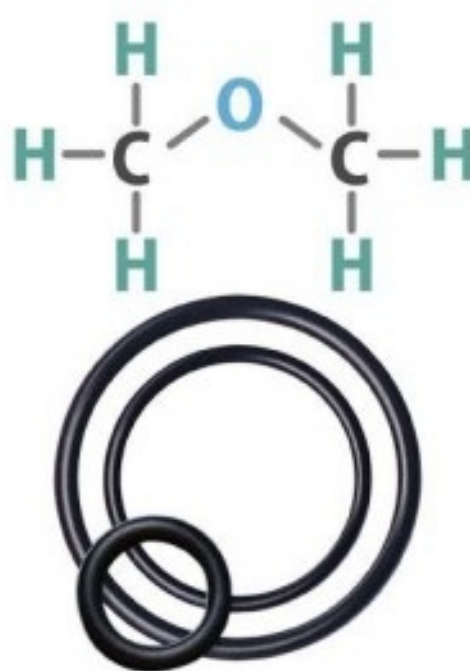
engine injector tips must be specified to resist degradation where an aggressive alternative fuel such as DME is being used. Several elastomers and even fluoroelastomers (FKM's) have been evaluated for use with DME powered engines, but operating temperatures above 100° C have led to seal degradation resulting in reduced engine performance and reliability.

However, the operation of diesel engines powered by DME fuel for commercial passenger transportation, with [DuPont™ Kalrez® 6375 O-ring seals](#) fitted to the fuel injectors, has achieved and maintained reliable engine performance without premature seal degradation. The broad chemical resistance of the Kalrez® parts, coupled with their high temperature compatibility enabled a significant improvement in engine performance as well as considerably extending useful operating life.

DME's low calorific value means that there is a higher ratio of DME to diesel fuel required for the same distance travelled. However, the clean-burn characteristics of DME means that the environmental gain outweighs the lower energy density, and DME also helps to reduce overall petroleum

dependence. Historically the largest use of DME has been as a substitute for propane in LPG, where it has been used in China as a household and industrial fuel. Other applications are as aerosol propellant and as a refrigerant, together with applications as a low-temperature extraction agent in specialised laboratory processes. DME is primarily produced by converting hydrocarbons from natural gas or coal, but manufacture from biomass has also now been established. The product has very low emissions, it is sulphur free and meets even the most stringent emission regulations in Europe, USA and Japan.

The [DuPont™ Kalrez®](#) range of sealing products are available in the UK from Dichtomatik Ltd, an authorised distributor for these products. [DuPont™ Kalrez® 6375 seals](#) are designed to give outstanding performance when operating with the widest possible range of chemicals and temperatures. The curing system for this product allows for a continuous upper service temperature of 275°C with even higher temperature short excursions also acceptable. Low volume swell, which is an excellent predictor of performance, is also a recognised positive feature of this product.



DME fuel applications

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