

Clean(Air) GTL

Diesel for the Future

**Clean(Air) Fuels &
Technologies Ltd**

Low emission drop in diesel replacement fuels

What is Clean(Air) GTL?

- ▶ Gas to liquids (GTL) is a refinery process to convert natural gas or other gaseous hydrocarbons into longer-chain hydrocarbons, such as gasoline or diesel fuel (methane-rich gases are converted into liquid synthetic fuels).
- ▶ Clean(Air) GTL is a unique blend of GTL plus a fuel additive.
- ▶ Drop in fuel - Can be used as a direct replacement for conventional diesel fuels without the need for modifications to engines or infrastructure.
- ▶ Reduced emissions of regulated pollutants: Nitrogen Oxides, NOX (approx. 25%), Particulate Matter, PM (approx. 80%), Carbon Monoxide, CO (approx. 75%), and unburnt hydrocarbons, HC (approx. 60%) Carbon Dioxide, CO2 (approx. 5%) when compared with conventional diesel, as verified in independent test.
- ▶ Clean(Air) GTL is more biodegradable than conventional diesel. Classified as 'readily biodegradable' in tests it was not detectable in soil 51 days after being introduced.
- ▶ Clean(Air) GTL is competitively priced compared to Gas Oil
- ▶ Clean(Air) GTL lowers engine noise by facilitating a smoother, cleaner combustion cycle
- ▶ Clean(Air) GTL reduces required maintenance due to the cleaner burning of the fuel leaving fewer deposits both in the engine and in the exhaust system.
- ▶ Clean(Air) GTL can increase the operational life expectancy of an engine
- ▶ Clean(Air) GTL has been proven in tests to actually reduce fuel consumption
- ▶ No aromatics / low sulphur / reduced engine noise / these fuels a cost effective way to improve air quality immediately.

Clean(Air) GTL is a Paraffinic Diesel Fuel

Info & benefits:

- Meet EN15940 Class A standard and all EC fuel quality standards Directive 2009/30/EC).
- Are clean, high quality diesel fuels made from a wide variety of feedstocks and include GTL (Gas to liquid), as well as wastes and residues (HVO) hydrogenated Vegetable Oil.
- Regardless of feedstock, all paraffinic fuels are sulphur-free, low aromatic, high cetane, odourless and colourless.
- Can be used at any blending rate, or neat, in current and future diesel engines.
- Belong to the alternative fuel family and are available now.
- Are described by EU legislation as fuels that can serve as:

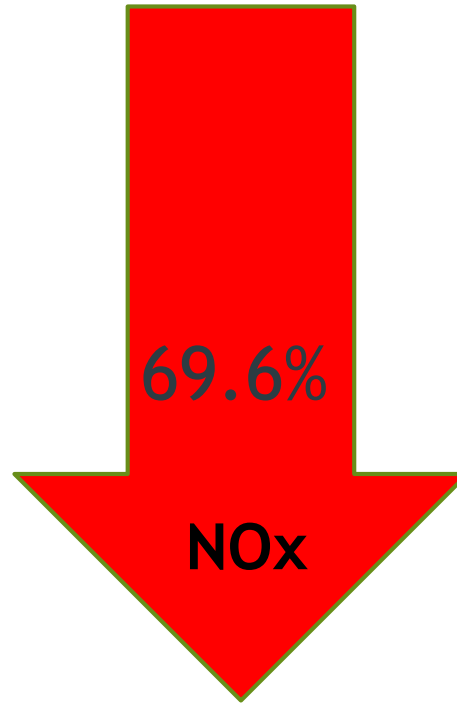
“substitute for fossil oil sources in the energy supply to transport and which have the potential to contribute to its decarbonisation and enhance the environmental performance of the transport sector.” (Article 2 of Directive 2014/94/EU).

- Drop-In Fuels can be distributed, stored and used with existing infrastructure. Directly replace conventional diesel fuels without the need for modifications to engines or infrastructure (approved / warranted by most engine manufacturers)
- Better cold weather starting performance due to a higher cetane number (approx. 70 vs 50 for regular diesel)
- Classed as non-toxic, odourless, readily bio-degradable and have a low hazard rating
- More readily stored and have a longer shelf life than diesel (no microbial growth / no fuel decay).
- Will enable the development of a new generation of internal combustion engine technologies with improved engine efficiency and further reduction of harmful emissions.

GTL SLASHED NOx in Euro V1 engine exhaust emissions in an urban cycle test by 69.6% allowing the engine to meet the legal requirement of 80mg/km



Millbrook/TFL test Dennis Eagle Elite 6 waste truck January 2017



Testimonials

CLEANER OPERATIONS

“The biggest advantage of GTL Fuel to us is that it burns visibly cleaner than the regular diesel we used before. In particular, we notice that the exhaust soot (particulate matter) is less. We ran tests for nine hours. The results have shown soot reduction in our modern engines up to 60% across the tested 2 locomotives and 2 robots compared to the regular diesel used before. In the older engines, we have measured results up to 95%!”

INSTANT BENEFITS

“It’s fantastic that GTL fuel yields immediate results without the need for engine modifications”

“Roteb Lease had previously tested several other types of fuel such as bio ethanol, bio gasoil and LPG. Most came with complications, such as the need to modify existing vehicles or the requirement for shorter maintenance intervals. A great advantage of GTL was that there was no modification or extra maintenance required. The product was directly applicable and ready to go!”

AN UNEXPECTED FUEL SAVING AND NOISE REDUCTION

“After monitoring fuel consumption for a couple of months, we saw an unexpected decrease in the regional Euro V buses' fuel consumption of more than half of one per cent. After a while, even the latest Euro VI city buses switched to GTL Fuel. The cleaner combustion of GTL Fuel also means a reduced burden on the particle filters of these Euro VI buses. So we save energy, increase the availability of the buses and therefore cut operational costs.”

“Recent measurements have also shown that the engines of the entire fleet are producing less noise (1 - 3 dB(A)), which is an added advantage for the residents.”

“GTL is slightly more expensive than conventional diesel, but this is amply compensated for by the added benefits.”

Leading engine manufacturers warrant their engines with our fuels



Thank you

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