



**Introducing our new  
cleaner, greener fuel product**

**HVO**

**Hydrotreated Vegetable Oil**

**For a cleaner, greener future.**



# Introducing our new cleaner, greener fuel product

# HVO

## Hydrotreated Vegetable Oil

Ukay energy always strive towards quality in everything we do and are aware of the pressures on the environment.

We are therefore proud to announce our NEW cleaner, greener HVO fuel.

This is a diesel and gas oil alternative fuel, **HVO** (Hydrotreated Vegetable Oil) is a fossil free, paraffinic fuel made from 100% raw materials.

A more sustainable, high quality of diesel fuel, that is suitable for all diesel-powered vehicles and industrial powered generators. Produced from waste fats and vegetable oils, the fats are transformed into biofuel by hydrogenation.

**HVO** can reduce emissions by as much as 90% and has excellent cold weather performance.

Providing a cleaner, greener future.



# What is HVO?

**HVO** (Hydrotreated Vegetable Oil), is a fossil-free, paraffinic fuel made from 100% renewable raw materials. A more sustainable, high quality of diesel fuel, that is suitable for all diesel-powered vehicles and industrial powered generators.

Produced from waste fats and vegetable oils, the fats are transformed into biofuel by hydrogenation.

With the Government pledging that by **2050** carbon emissions are to reduce by up to **80%**, the need for sustainable fuels has never been greater.

This means that emissions from homes, transport, farming and industry will have to be avoided completely.



## HVO Diesel

# Alternative Diesel

Our alternative fuel for diesel powered engines is **HVO Diesel**, this is a cleaner fuel than diesel, or FAME (fatty acid methyl ester – biodiesel); it complies with EN15940 & ASTM D97 5.

Unlike biodiesel it does not deteriorate over time and can be used in temperature extremes. **HVO Diesel**, is a drop-in replacement which can be used in all diesel engines.

**HVO Diesel** is an enhancement of HVO, achieved by inclusion of an additive system which chemically reduces NO<sub>x</sub> (to N<sub>2</sub>) in the exhaust gases whilst oxidizing incomplete combustion products (HC, PM and CO).

Our fuel is formulated as HVO Diesel and then enhanced with our proprietary additive package to produce **HVO Diesel**.

The base HVO is sourced from two European Suppliers including the world's leading supplier of renewable diesel.



# HVO Gas Oil

## Alternative Gas Oil

HVO is affected by the duty changes from April 2022 so therefore only those who are exempt from those changes are able to use HVO Gas Oil. If you are not eligible to use rebated fuels but are looking for a more environmentally sustainable alternative to standard diesel you can use HVO Diesel.

Our alternative fuel for off road vehicles which are still eligible to use rebated fuels is **HVO Gas Oil**, this is a cleaner fuel than gas oil, or FAME (fatty acid methyl ester – biodiesel); it complies with EN15940 & ASTM D97 5.

Unlike biodiesel it does not deteriorate over time and can be used in temperature extremes.

**HVO Gas Oil** has been adopted as our solution to meet clients environmental obligations.



# HVO Gas Oil



# The Benefits

HVO Diesel  
HVO Gas Oil

## KEY BENEFITS OF USING HVO



**NO<sub>x</sub>**  
NITROGEN OXIDES

LOWER NO<sub>x</sub>  
NO levels are reduced by **up to 30%**



**PM**  
PARTICULATE  
MATTER

LOWER PARTICULATES  
Particulate, PM25 & PM10  
are lowered by **up to 86%**



**CO<sub>2</sub>e**  
CARBON DIOXIDE

LOWER CO<sub>2</sub>e LEVELS  
HVO generates **up to 90%**  
greenhouse gases (co<sub>2</sub>e) and  
emissions reducing your carbon  
footprint significantly.

**350L = 956KG**

USED HVO

REDUCED CARBON OUTPUT

- 💧 **ENVIRONMENTALLY FRIENDLY & SUSTAINABLE**  
Made from sustainable and renewable raw materials, HVO reduces greenhouse emissions by as much as 90%.
- 💧 **LOW VISCOSITY LEVELS**  
Has excellent cold weather performance.
- 💧 **GREAT ALTERNATIVE SOLUTION**  
Compatible with diesel engines.
- 💧 **LONG STORAGE SHELF LIFE**  
Improved safety, shelf life and storage compared to regular diesel, therefore reducing the need for regular testing.
- 💧 **DROP-IN FUEL**  
HVO can be used a direct replacement for conventional diesel fuels in heavy-duty and light-duty engines.
- 💧 **NOISE REDUCTION**  
Noise levels in some engines can be reduced by 1-4 dB.



# Technical Info.

**HVO** is a bio-based paraffinic diesel fuel defined in the EN15940 specification.

Our supplier guarantees no FAME is added in the product and that it does not contain manganese.

**HVO** is 100% renewable waste.

| PROPERTIES                                                                                                | TEST METHOD          | UNIT                           | EN590                      | ASTM D975        | EN15940                    | HVO Diesel              |                       |
|-----------------------------------------------------------------------------------------------------------|----------------------|--------------------------------|----------------------------|------------------|----------------------------|-------------------------|-----------------------|
|                                                                                                           |                      |                                |                            |                  |                            | MIN                     | MAX                   |
| Cetane number                                                                                             | ASTM D4737           | -                              | > 51                       | > 40             | > 70                       | > 70                    | -                     |
| Density at 15°C                                                                                           | ASTM D1298           | kg/m <sup>3</sup>              | 820-845                    | -                | 765 - 800                  | 770                     | 790                   |
| Sulfur content                                                                                            | EN ISO 20846         | mg/kg                          | < 10.0                     | < 15.0           | < 5.0                      | -                       | 5.0                   |
| Flash point                                                                                               | ASTM D975            | °C                             | > 55                       | > 52             | > 55                       | 61                      | -                     |
| Carbon residue (on 10% distillation residue)                                                              | ASTM D4530           | %(m/m)                         | < 0.30                     | < 0.35           | < 0.30                     | -                       | 0.10                  |
| Ash content                                                                                               | ASTM D482            | % mass                         | < 0.010                    | < 0.010          | < 0.010                    | -                       | 0.001                 |
| Water content                                                                                             | ENISO 12937          | mg/kg                          | < 200                      | -                | < 200                      | -                       | 100                   |
| Total contamination                                                                                       | ENISO 12662          | mg/kg                          | < 24                       | -                | < 24                       | -                       | 10                    |
| Copper strip corrosion (3h at 50°C)                                                                       | ENISO 2160           | Rating                         | Class 1                    | Class 3          | Class 1                    | Class 1                 |                       |
| Oxidation stability                                                                                       | ENISO 12205          | g/m <sup>3</sup>               | < 25                       | -                | < 25                       | -                       | 25                    |
| Lubricity, corrected wear scar diameter (wsd 1.4) at 60°C                                                 | ENISO 12156-1        | mm                             | < 460                      | < 520            | < 460                      | -                       | 400                   |
| Viscosity at 40°C                                                                                         | ENISO 3104           | mm <sup>2</sup> /s             | 2.0 - 4.5                  | 1.9- 4.1         | 2.0 - 4.5                  | 2.0                     | 4.0                   |
| Distillation<br>IBP<br>% (V/V) recovered at 250 C<br>% (V/V) recovered at 350 C<br>95% (V/V) recovered at | ENISO 3405           | °C<br>% (V/V)<br>% (V/V)<br>°C | -<br>< 65<br>> 85<br>< 360 | -<br>-<br>-<br>- | -<br>< 65<br>> 85<br>< 360 | 180<br>-<br>85<br>-     | -<br>< 65<br>-<br>320 |
| Cloud point (Summer/Winter) & CFPP                                                                        | ENISO 23015 - EN 116 | °C                             | Down to -34                | -                | -                          | -15/-32 (CFPP reported) |                       |
| Appearance                                                                                                | Visual               | -                              | -                          | -                | -                          | Clear and Bright        |                       |
| Total aromatics content                                                                                   | EN 12916             | % (m/m)                        | -                          | < 35             | < 1.1                      | -                       | 1.0                   |
| Electrical Conductivity                                                                                   | ISO 6297             | pS/m                           | -                          | -                | -                          | 100                     | -                     |
| Acidity total (TAN)                                                                                       | ASTM D3242           | mgKOH/g                        | -                          | -                | -                          | -                       | 0.01                  |
| Sediment, particular matter                                                                               | EN 12662             | g/kg                           | -                          | -                | 10                         | -                       | < 1                   |
| Net heat of combustion, measured                                                                          | ASTM D4809           | MJ/kg                          | -                          | -                | 42                         | -                       | 44                    |

HVO Diesel  
HVO Gas Oil

# OEM Approved.

These OEMs (Original Equipment Manufacturers) have already approved HVO to use in heavy duty road vehicles, passenger cars and non-road vehicles.

OEM approvals include:

- DAF
- Scania
- Mercedes Benz
- Caterpillar
- IVECO





# FAQ's.

## CAN I USE HVO IN MY CURRENT OFF-ROAD DIESEL ENGINE?

Yes. HVO Diesel is a 100% drop in fuel and with any EN590 & ASTM D97 5 red diesel compatible engines, such as generators.

## HOW LONG CAN I STORE HVO FOR?

Due to it's chemical make-up, our HVO can be stored indefinitely without any performance loss.

## DOES HVO COME FROM PALM OIL?

Our supply of HVO meets the regulations of the ICSS and has been sourced from 100% sustainable raw materials and waste.

## DOES HVO SMELL LIKE DIESEL?

Our HVO is composed entirely of linear and branched paraffins with no aromaticity, no saturation, and no Sulphur compounds, making it odourless and biodegradable.

## HAS HVO BEEN APPROVED BY OEMS?

HVO has been approved by many OEMs, including DAF, John Deere, Volvo, Mercedes- Benz, IVECO and many more.

**HVO Diesel**  
**HVO Gas Oil**

Driving down emissions together.

Our aim is to help all businesses achieve their sustainability targets and help to protect our future. That's why we are dedicated to bringing you the best fuel solution for every business need.

Call our experienced Sales team today and start to see the benefits of using **HVO**.

CALL

**01376 574 650**

EMAIL

**[sales@ukayenergy.co.uk](mailto:sales@ukayenergy.co.uk)**

VISIT

**[www.ukayenergy.co.uk/HVO](http://www.ukayenergy.co.uk/HVO)**

For more FAQ's please visit our website

## CASE STUDY

# 21 Moorfields

BARBICAN, LONDON

25,000 litres of **HVO\*** were used to power two generators on site whilst the contractor transfers the mains power supply from low to high voltage.

REDUCED CO<sub>2</sub>e  
**68.5Mt**

REDUCED NO<sub>x</sub>  
**29%**

REDUCED PM  
**77%**

\* HVO Gas Oil was used as an alternative prior to April 2022 rebated fuel changes



CASE STUDY

# Winter Wonderland

HYDE PARK LONDON

**HVO\*** was supplied to Winter Wonderland in 2019 and powered over 30 generators across Hyde Park in London.

With our 3.5 million visitors, the use of HVO not only reduced the levels of CO<sub>2</sub> into the atmosphere, but the NO levels were reduced dramatically to enhance the visitors breathing air quality.

↓ **1,600,000L**  
OF HVO GAS OIL REDUCED CO<sub>2</sub>e LEVELS BY  
**4,368 Mt**

\* HVO Gas Oil was used as an alternative prior to April 2022 rebated fuel changes



For a cleaner, greener future.

# HVO

**If you would like to know more about our HVO product, please contact us on the details below and speak to one of our friendly advisors.**

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