

HVO: Your questions answered

What is HVO and why is it worth using?

HVO stands for **Hydrotreated Vegetable Oil**. It is a **sustainable biofuel** which can replace fossil fuel in existing diesel engines. In some countries it is called HVO100 (see Abbreviations panel, p23). Sustainable HVO is produced from waste products such as used cooking oil and is certified as sustainable under the UK government Renewable Transport Fuel Obligation scheme. For more details, see en.wikipedia.org/wiki/Hydrotreated_vegetable_oil

Unlike FAME (biodiesel) the finished fuel contains no oxygen, as it is produced in a different way. The resulting fuel has a high calorific value, high cetane number, good **cold flow** properties and **low odour**.

HVO is paraffinic, and paraffins are inherently stable molecules, so HVO can be **stored without deterioration** for a long time. Paraffins also have a low affinity for water so water separation in tanks and filters will be improved over other fuels, and the absence of FAME means the **likelihood of diesel "bug" is greatly reduced**.

Isn't electric propulsion a better option?

Sailors and boat owners of all types are generally very environmentally conscious. The CA is committed to exploring ways in which our members can **reduce environmental impact** including encouraging the use of greener motive power. See the CA's Environmental Guidance for Cruising Yachtsmen

Alternative propulsion technologies such as electric drives, hydrogen combustion engines or fuel cells may well become the norm for new boats in the future, but the replacement rate of UK recreational vessels is estimated to be **just 2% per year**. Many of the diesel-powered recreational boats on the water today will still be fully serviceable for decades to come.

ICOMIA (the International Council of



Marine Industry Associations) has concluded that, for most existing yachts which make limited use of their engines, the most sustainable option is to retain existing serviceable diesel engines and to **switch to a sustainable biofuel** rather than to replace serviceable engines with a pure electric or hybrid electric drive. **HVO is such a fuel.**

Is HVO safe to use in my engine?

All of the major engine suppliers have certified that HVO is **suitable for use in their engines** and practical testing by the Inland Waterways Association has shown that it works well even in the oldest engines. See panel above.

Is HVO really sustainable?

HVO available in the UK is certified under the government RTFO scheme as having been produced from raw materials (generally used cooking oil, UCO) which are sustainable. This means that growing the feedstock actually absorbs CO₂ and does not contribute to de-forestation. Because production of the feedstock absorbs CO₂, the net CO₂ emissions when HVO is burned in an engine are reduced by up to 90% (minimum 65%) compared to releasing the CO₂ stored in fossil fuels into the atmosphere. Because of its chemistry it also reduces the harmful particulates produced by most of the engines found in our boats. For more details on the certification system, see the RATS page on HVO. The certification process is critical because historically, unscrupulous producers and suppliers in some far eastern countries have supplied non-sustainable raw materials; as a result these countries and suppliers are now subject to much more stringent checks and some are blocked from supplying the UK, European and international markets.

What are the disadvantages of HVO?

Technically the only disadvantage is that HVO has a slightly lower density compared to fossil diesel or FAME, so theoretically there may be a marginally

higher fuel consumption. Inland waterways boats have not seen this, however, and we await feedback from trials by our own members.

HVO is more expensive to produce than fossil diesel and so there will be a price premium. Fuel supplied under the UK RTFO scheme is currently only 10-20% more expensive than marine diesel, so benefits are now outweighing the additional cost, as Machiel Lambooj has discovered in the Netherlands (see above).

Where can I buy HVO

HVO is becoming increasingly available in the Netherlands (see above) and some other European countries. In the UK it is stocked by a few inland waterways marinas. However because of a policy decision by UK government, seagoing recreational vessels are currently not eligible to buy HVO under the RTFO scheme so it is not stocked by coastal marinas. The background to this restriction is explored in detail on the RATS HVO webpage at www.theca.org.uk/hvo

What is the CA doing to make HVO more available ?

The CA is a very active part of the HVO Joint Working Group in the UK, along with the Inland Waterways Association, Royal Yachting Association, British Marine and the UK independent Fuel Distributors Association (UKIFDA). The group is working to try to convince government that HVO should be available to all recreation craft (Inland and Seagoing) as part of a transitional plan to rapidly, cost-effectively and safely decarbonise the UK recreational boating sector.

How can I find out more?

Go to the RATS page on **Sustainability: Reducing CO₂ emissions from diesel engines** at www.theca.org.uk/hvo or use the QR code, right.

