



MAKING OUR BOATING SUSTAINABLE

A journey towards HVO

Machiel Lamboij reports on his experience of finding and using HVO in European waters

Abbreviations

HVO Hydrotreated Vegetable Oil, a sustainable biofuel which can replace fossil fuel in existing diesel engines. See next page for more details

FAME Fatty Acid Methyl Ester, vegetable-derived biofuel which is currently mixed with road diesel in varying amounts. It is less stable than mineral diesel and more prone to diesel bug

B0 Diesel does *not* include FAME; some but not all red diesel in the UK is B0

B7 Diesel including 7% FAME, now standard across most of Europe

GTL Gas-to-Liquid, a synthetic, cleaner-burning diesel alternative, made by converting natural gas into a liquid

HVO100 Fuel which is 100% HVO. Mixed fuels have other numbers, for example **HVO50** is 50% HVO and 50% fossil diesel

RTFO The UK's Renewable Transport Fuel Obligation

UCO Used Cooking Oil

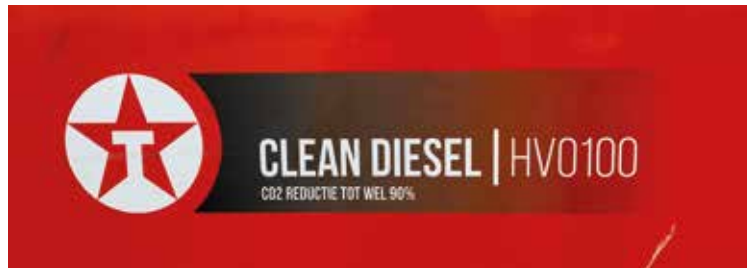
My partner and I have a Botnia Targa 46 ft planing motorboat (built in 2020) with two Volvo Penta D6 engines, 440 HP each. We do coastal cruising, but also inland water cruising. At sea, we mostly travel at planing speeds (usually around 25kt). Sightseeing closer to the coast or in inland waters happens at displacement speed (6kt). Our fuel consumption typically is 2 litres per kilometre at planing speed and 0.5l/km at displacement speed. Our fuel tank has a capacity of 1,500 litres. Because of the size of the fuel tanks, fuelling at roadside fuel stations with containers is not an option for us.

In the Netherlands, all diesel sold at roadside and waterside fuel stations is, in principle, B7 (7% FAME/biodiesel, see *Abbreviations* panel). Last year, HVO became more readily available for boats in the Netherlands, but usually not at waterside fuel stations yet. It is being promoted by a website on sustainable boating (sponsored by provinces with recreational boating), which publishes a map viewer showing fuel stations with HVO100 and other HVO products: www.duurzamewaterrecreatie.nl/kennisbank/kaartviewer-hvo-tanklocaties/ (see screenshot, right).

Last year, at some stations, HVO20 (20% HVO) became available. It was already possible to order larger quantities of HVO100 by having it delivered with a fuel truck. However, the price differential was still in our view prohibitive (a difference of €0.60 per litre).



Blue blobs are waterside filling stations; green blobs are on land.



Left, a B0 label in Jersey and above, typical HVO branding on a Dutch waterside pump.

This year, we noticed a substantial decrease in the price differential for HVO100 compared with regular diesel (B7). Over a couple of months the difference decreased around €0.20-0.30 per litre. No government subsidy was introduced; the price decrease was caused by market forces.

More fuel stations now offer HVO at the waterside; in the course of this season the number seems to have doubled. Stations that typically sold GTL (Gas-to-Liquid, see *Abbreviations* panel) to sailing boats, have switched to HVO. Sailing boat owners clearly avoid B7 diesel because of fear of diesel bug. As an example, the fuel station in our home marina changed from GTL (which they had sold for several years) to HVO this summer. Only HVO is now sold (no regular diesel and no GTL). The marina caters mostly to sailing boats so there always was a clear interest from those customers to avoid having to buy B7 diesel. The harbourmaster told us that the transition from GTL to HVO was problem-free. No customers asked questions or went elsewhere. Turnover did not change because of this transition.

We researched the potential effects of HVO100 for our boat and found that Volvo Penta encourages users of this type of engine to switch to HVO. It only uses HVO in its testing centre for new engines in Sweden.

Because HVO100 is now available at our own marina, we took on some 800 litres to top up the tanks before overwintering. We did an inland water trip afterwards, with some stretches on the IJsselmeer at planing speeds. It is too early to come to any conclusions on fuel consumption or performance, but so far, we have not seen any negative influence of taking

on HVO instead of regular diesel. For clarity, the tanks were not empty when we fuelled up with HVO, so in fact the engines have not yet run on HVO only (HVO100 mixed with regular diesel becomes probably HVO60, in our case).

In previous years, we used a bug killer to add to our diesel, although this is probably not very environmentally friendly. Last year we fuelled up from a fuel truck with B0, to avoid overwintering with a substantial FAME component in the tanks. During the summer our fuel turnover is high, so we do not have diesel bug concerns, but it matters more for overwintering. Last year B0 was a couple of cents more than B7 diesel, as the fuel provider must purchase a certificate to compensate for the absence of the 7% FAME.

This spring, we did a coastal tour along the Belgian and French coast, visiting some Channel Islands and ending up in Brittany (Saint-Malo and Paimpol). The total fuel consumption for this trip was 4,127 litres over 2,078km (around 2l/km). As far as we could see, only regular diesel was available in all fuel stations along the route. Most fuel station attendants had no idea whether they sold B0 (without FAME) or B7. At self-service stations, mostly no indication was given of the type of diesel sold; the signs just said "Diesel", although we understand there is an obligation to use B0 or B7 stickers on the pump.

Our experience in 2023 was that in Sweden "blue diesel" was available at some fuel stations; it probably was an HVO mix, but we found no details (somewhere between HVO20 and HVO100?). We understand it was subsidised by the Swedish government. We fuelled up anyway, and saw no noticeable effects on consumption or performance on the way back.

We have decided that we will now take HVO100 where available and

consider the current price differential acceptable, hoping it will go further down. Availability is still an issue; we have to properly plan fuelling up. The chart-viewer helps. For large quantities (over 1,000 litres), a fuel truck is normally willing to deliver HVO100, but we have to agree a suitable rendezvous point.

Sometimes there is still a huge price difference between roadside and waterside fuel stations, in our view often caused by the fuel station operator abusing the monopoly of a sole waterside station in an area. For this reason we still will carefully look at prices and price differentials and may resort to topping up with regular diesel if the price differential is unreasonably high.

Is HVO safe in my system?

These manufacturers have approved use of HVO in their engines

Marine engines

- Perkins
- Volvo Penta
- Yanmar
- Nanni
- Solé – Mitsubishi based engines
- Vetus

Generators

- Fischer Panda
- Kohler
- VTE (Paguro) No specific approval but they use Yanmar engines
- Cummins Onan

Base engines

- Kubota
- Mitsubishi

Heaters

- Webasto
- Eberspächer

Other manufacturers

- Ford
- VW – Newer engines only
- Cummins

For links to the approvals go to www.