

Use of Hydrotreated Vegetable Oil (HVO) in Solé Diesel Engines with Mitsubishi Base

NOTE 1) The term "HVO," as defined in this document, refers to a fuel that complies with EN15940 standards.

NOTE 2) Biodiesel fuel (BDF) derived from FAME (Fatty Acid Methyl Ester) or produced by blending FAME and diesel fuel is not covered by this bulletin. According to EN590 and EN15940, Solé currently allows a maximum FAME content of 7% by volume in the fuel.

This letter outlines the use of HVO in small Solé Diesel Mitsubishi-based diesel engines. The corresponding inboard engine models include MINI-17, MINI-29, MINI-33, MINI-44, MINI-55, MINI-62, MINI-74, SM-82, SM-94, and SM-103. The generator set models range from 6.6 kVA (7 GS/GSC) to 83.6 kVA (84 GTA/GTAC).

While these engines are not specifically designed for HVO fuel, our range of small engines can safely run on HVO that complies with EN15940 without the need for modifications to these engines. However, due to differences in the characteristics of fuels classified under EN15940 and those under EN590, the following points should be considered before choosing to operate the engines with HVO or diesel fuel+HVO blends:

Performance and Emissions

As mentioned earlier, it is feasible to use both diesel and HVO blends as well as pure HVO in the above-mentioned small diesel engines. Regarding fuel blends, both diesel and HVO fuels used must comply with EN590 and EN15940 standards, respectively. The final fuel blend ratio used will determine the engine's performance and emissions.

In general, it should be possible to mix up to 30% HVO with EN590 diesel and still produce a fuel that meets the characteristics defined by EN590. If the fuel used complies with the EN590 standard, the engine will operate without a noticeable impact on performance. However, for blending rates exceeding 30% HVO, the properties of the final fuel blend are expected to increasingly affect maximum power, fuel consumption, and engine emissions as the HVO content in the fuel increases.

Solé Diesel considers this to be explicitly understood and accepted by the operator when choosing to use the engine with HVO or a diesel/HVO fuel blend, and therefore, Solé Diesel cannot be held responsible for any deviation in resulting performance. It is always recommended that the engine's performance is carefully verified and confirmed to be suitable for the specific application by the customer or operator before opting to switch from EN590 fuel.

Regarding emissions, the use of renewable fuels like HVO is intrinsically linked to an overall benefit in greenhouse gas emissions. Additionally, the general market consensus is that the chemical properties of HVO have a positive impact on exhaust emissions such as CO₂, CO, HC, NO_x, and PM, measured in the exhaust pipe. Although improvements in emission levels during internal testing have been confirmed, Solé Diesel cannot commit to a specific reduction in emissions from our small engines when using HVO or diesel/HVO fuel blends.

Moreover, it is important to note that if the engine is used with an aftertreatment system, the operator must pay attention and verify that the system functions correctly when using HVO fuel or an HVO fuel blend and that the installation complies with relevant regulations. European regulations already allow the use of certain market fuels in non-road mobile machinery engines without the need to reapply for Type Approvals, as laid down in Regulation (EU) 2017/654 Annex I point 1.2.2 and 1.2.2.1. For diesel engines, the fuel must comply with Directive 98/70/EC and must also have a cetane number of not less than 45 and a FAME content of no more than 7.0% by volume. HVO fuel complying with EN15940 meets these criteria.

Maintenance and Warranty

Solé Diesel's maintenance plan, as described in the engine maintenance documentation, must be followed. If the manufacturer's maintenance plan is followed and documented, the use of HVO or diesel/HVO fuel blends, as specified above, will not affect the engine warranty. It is the operator's responsibility to ensure that the fuel complies with the standards mentioned above and that the maintenance plan is followed. Any failure and warranty claim resulting from the use of unapproved fuel is excluded, and Solé Diesel will not be responsible for any costs associated with such fuel use.