Use case I Construction & Agriculture Sustainable Fuels

Basic parameters of the use case

320 kW	1,000 hr / year	HVO EN15940	92 %
Power rating	Operating hours	Fuel type	CO_2 reduction

Comparison: Competitor vs. ***mtu*** **6R 1300/OM 471 (EU Stage V)**

Fuel consumption

Competitor	51,570 l / year	17.6 % less fuel consumption
mtu **6R 1300/OM 471**	42,477 l / year	

Fuel costs and CO_2 emission per year by using different fuels

Competitor using fossil diesel	110,874 €*	136 t CO_2**
mtu **6R 1300/OM 471** using fossil diesel	91,324 €*	112 t CO_2**
mtu **6R 1300/OM 471** using HVO fuels	97,679 €*	11 t CO_2***

Fuel cost saving
12 %
Competitor with diesel vs. ***mtu*** engine with HVO

CO_2 reduction
92 %
Competitor with diesel vs. ***mtu*** engine with HVO

* The prices per liter assumed for this use case are 2.15 € for fossil diesel and 2.30 € for HVO fuel.
** 2,640g CO_2 per liter diesel
*** 264g CO_2 per liter HVO fuel

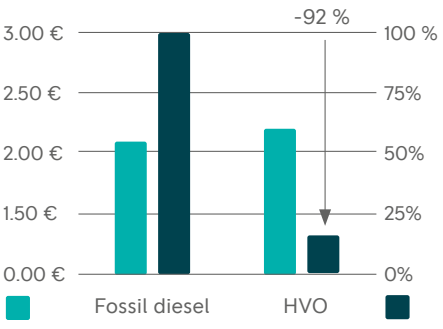
92 % CO_2 SAVINGS AND 12 % LESS FUEL COSTS

Significant reducing CO_2 emissions by using HVO fuels

Executive summary

Our engines of the ***mtu*** Series 1000/OM 936, 1100/OM 470, 1300/OM 471 and 1500/OM 473 (EU Stage V) are characterised, among other things, by very economical operation. ***mtu*** engines consume 17.6 % less fuel than comparable engines from the competition. Additionally, when using HVO fuel (EN15940), up to 92 % of CO_2 emissions and 12 % of fuel costs can be saved.

Fuel costs [l/hrs] + CO_2 reduction [%]:



What: A comparison of two engines in terms of performance and operating hours using fossil diesel and renewable fuel (HVO).

Where: Worldwide (highly regulated markets eg. EU Stage V)

Why: Net Zero target 2050, CO_2 reduction, product sustainability

Main benefits:
- CO_2 reduction
- benchmark in fuel consumption
- no performance reduction & no additional engineering required related with fuel EN15940 (system readiness)

A Rolls-Royce solution

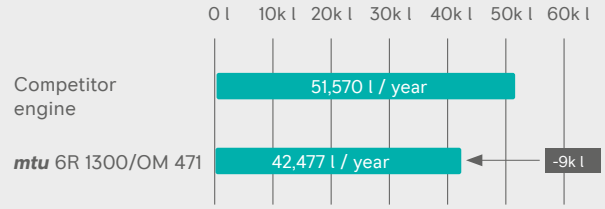
RESULTS OF THE USE CASE

As the comparison shows, ***mtu*** 6R 1300/OM 471 (EU Stage V) engines running on HVO fuel enable a significant reduction in CO_2 emissions at fuel costs well below those of the competition.

Fuel savings of up to 17.6 %

Compared with common competitor engines, ***mtu*** engines can save up to 17.6 % fuel while maintaining the same performance level. This has a direct impact on annual operating costs.
While a competitor engine consumes an average of 51,570 liters of fuel per year, the consumption of an ***mtu*** engine is only 42,477 liters.

Fuel consumtion per year in liters

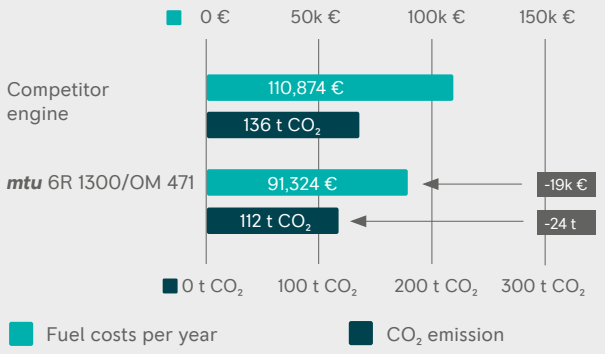


Lower costs, massively reduced emissions

In terms of hard figures, the diesel costs for a competitor engine can amount to around 110,874 € per year. In comparison, the running costs of an ***mtu*** engine over the same period, with comparable performance, are 91,324 €.

The running costs are not the only advantage of switching. In addition to possible savings of up to more than 19,549 € per year, the environmental impact of the switch is also significant. An ***mtu*** engine emits around 112 tons of CO_2 per year, far less than the 136 tons emitted by competitor engines.

Fuel costs and CO_2 emission per year with fossil diesel



Optimized costs for sustainable operation

Another advantage comes from the use of sustainable fuels such as HVO, for which ***mtu*** engines are already approved. The fuel savings of the mtu engine compensate for the surcharge for HVO.

In our example, this means that the fuel cost per year for the HVO-powered ***mtu*** engine is 97,679 € which is significantly lower than the annual fuel cost compared to conventional engines.

The real advantage of using HVO can be seen in the exhaust emissions. Compared with diesel, CO_2 emissions can be reduced by 92%.

Fuel costs and CO_2 emission per year with HVO