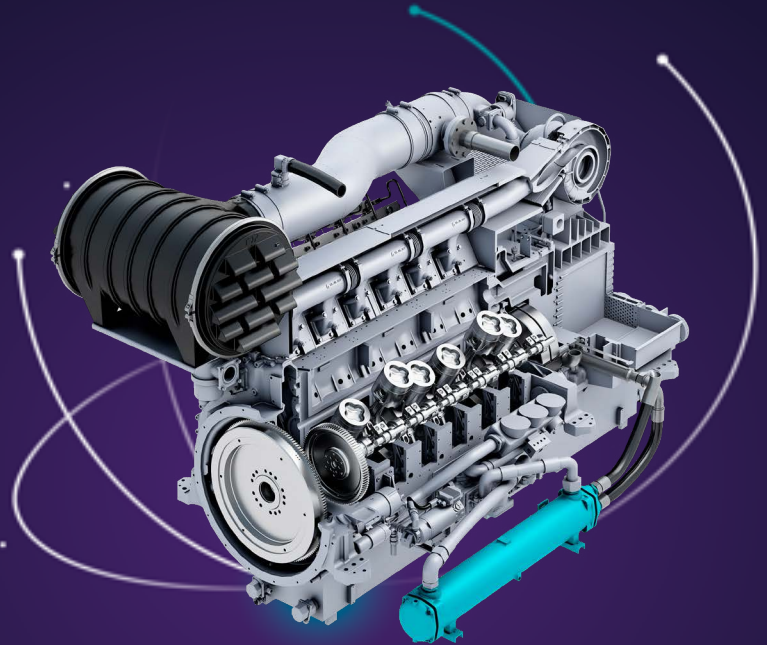


Oil Cooler in High Temperature Circuit

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Background

There is currently a considerable number of engines operating with the oil cooler installed in the auxiliary cooling circuit dissipating an important quantity of energy that could be used in a facility or industrial thermal process where the engines are installed.

One of the ways to take advantage of this energy is by migrating the oil cooler from the auxiliary cooling circuit to the high temperature circuit.

Product Overview

The kit consists in the transformation of the high temperature circuit in a new system composed by a new oil cooler, oil piping and water piping.

The figure 1 shows an example applied to a SGE-56HM engine.

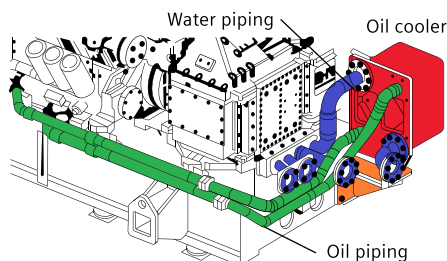


Figure 1
Kit implemented in a SGE-56HM

Application

The kit is available for all engines of F, S and H series in which the oil cooler is currently installed in the auxiliary cooling circuit, as seen in the figure 2.

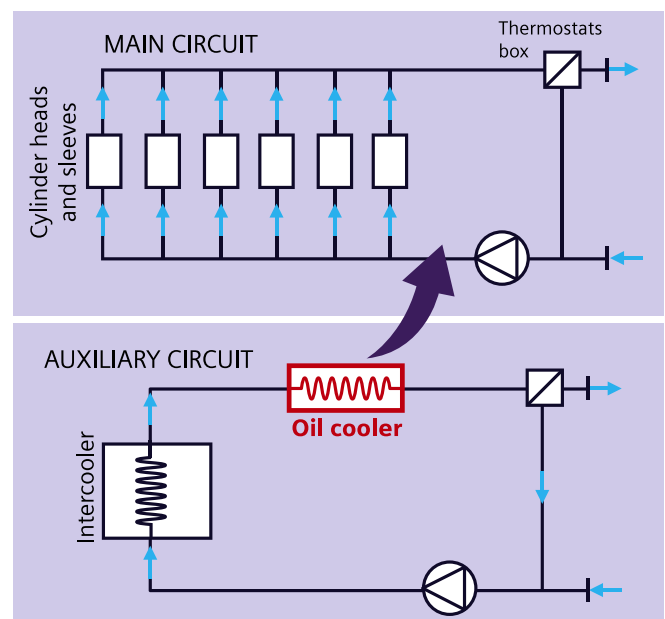


Figure 2 Scheme before the implementation

A previous verification of the existing installation shall be performed to assure that there are no mechanical interfer-

ences to implement the kit in the engine and also check that the additional power can be absorbed by the facilities' thermal process.

After the modification by the implementation of the kit, here is how the engine cooling scheme would be like:

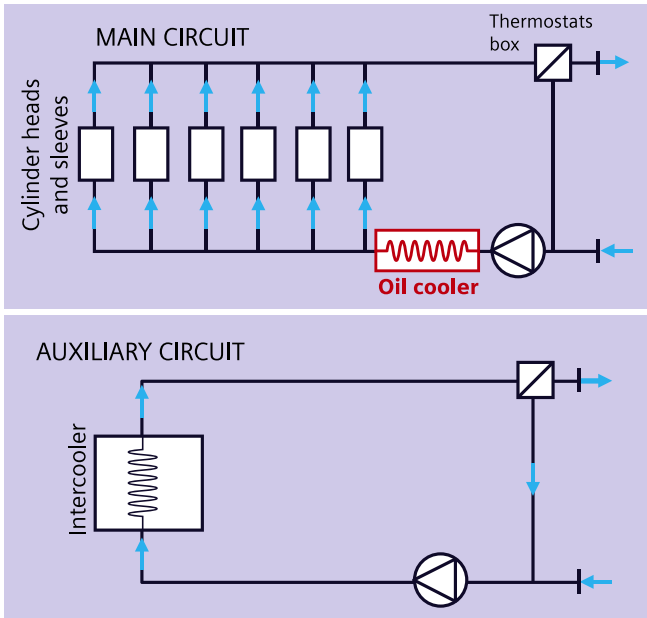


Figure 3 Scheme after the implementation

Benefits

The main benefit of this solution is the increase of thermal power available in the high temperature circuit, useful for the thermal process where the engines are installed (steam production for industrial applications, WWTP, district heating, etc.).

This thermal power increase can reach up to 22% depending on the engine type.

As shown in the following example, after the implementation of the kit all the thermal power out of the oil cooler in the auxiliary circuit is transferred to the high temperature circuit.

56HM @ 1500rpm Natural Gas	O/C in auxiliary circuit				O/C in auxiliary circuit			
	Nomi	Partial loads			Nomi	Partial loads		
	100%	80%	60%	40%	100%	80%	60%	40%
Heat in HT circuit [kW]	623	498	386	298	759	627	506	407
Heat increase [%]	-	-	-	-	22%	26%	31%	37%
Heat in aux circuit [kW]	217	188	161	139	81	59	41	30
Heat in intercooler [kW]	81	59	41	30	81	59	41	30
Heat in cooler [kW]	136	129	120	109	0	0	0	0
Total heat [kW]	840	686	547	437	840	680	547	437

Figure 4 Heat balance for a SGE-56HM

136 kW is added to the previous 623 kW in the high temperature circuit, totalizing 759 kW. It is 22% of thermal power increase at nominal load.

The lower is the engine load is higher will be the percentage of thermal power increase.

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