Guascor Energy MODs&UPs: Oil cooler in High Temperature Circuit (HTC)

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Background

Currently, a significant number of engines operate with the oil cooler installed in the auxiliary cooling circuit, dissipating a substantial amount of energy that could otherwise be utilized in a facility or industrial thermal process where these engines are deployed.

One effective method to harness this energy is by relocating the oil cooler from the auxiliary cooling circuit to the high-temperature circuit."

Product Overview

The kit involves transforming the high-temperature circuit into a new system comprising a new oil cooler, oil piping, and water piping.

Figure 1 illustrates an example applied to a G-56HM engine.

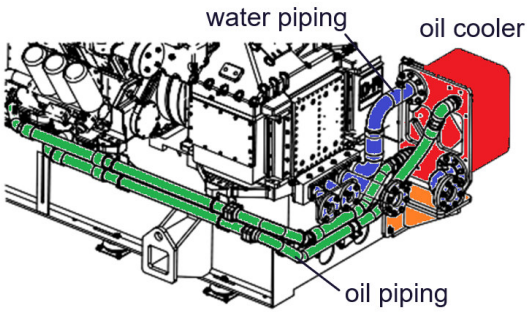

Figure 1 Kit implemented in a SGE-56HM

Application

The kit is compatible with all engines from the F, S, and H series, where the oil cooler is presently situated in the auxiliary cooling circuit, as depicted in Figure 2

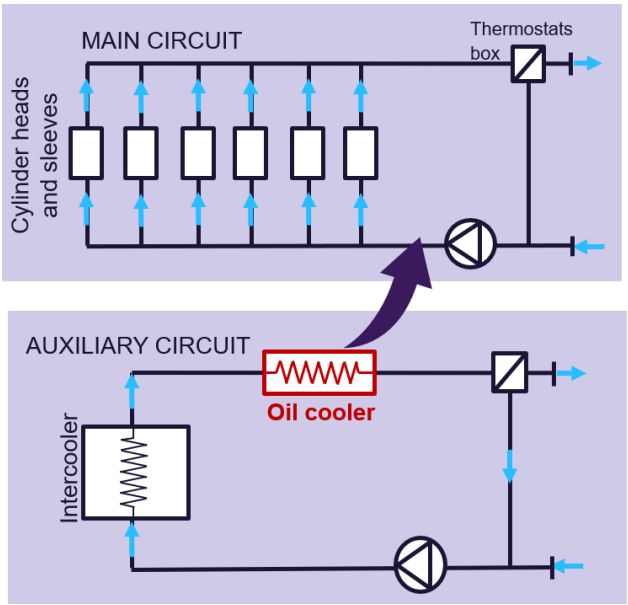

Figure 2 Scheme before the implementation

A prior inspection of the existing installation must be conducted to confirm the absence of mechanical interferences for the kit implementation in the engine. Additionally, it is essential to verify whether the facilities' thermal process can accommodate the additional power.

After implementing the kit modification, the engine cooling scheme would appear as follows

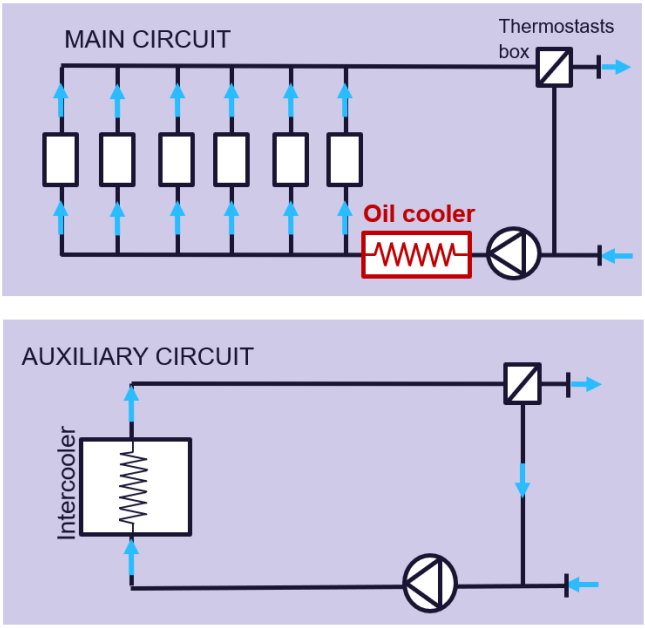

Figure 3 Scheme after the implementation

Benefits

The primary advantage of this solution lies in the augmented thermal power available within the high-temperature circuit, which proves invaluable for the thermal processes where the engines are utilized (such as steam production for industrial applications, wastewater treatment plants, district heating, etc.).

This increase in thermal power can reach up to 22%, contingent on the type of engine

As demonstrated in the following example, upon implementing the kit, all the thermal power generated by the oil cooler in the auxiliary circuit is transferred to the high-temperature circuit.

Guascor Energy gas engines								
G-56HM @ 1500rpm Natural Gas	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 [%]	217	188	161	139	81	59	41	30
Heat in intercooler [kW]	81	59	41	30	81	59	41	30
Heat in oil cooler [kW]	136	129	120	109	0	0	0	0
Total heat [kW]	840	686	547	437	840	686	547	437

Figure 4 Heat balance for a G-56HM

An additional 136 kW is added to the existing 623 kW in the high-temperature circuit, summing up to 759 kW. This represents a 22% increase in thermal power at nominal load.

The percentage of thermal power increase becomes even higher as the engine load decreases.

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