

Market Update Note

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Updating the use of ACOM and ACOS cylinder oil mixing systems

From 1 January 2020, we will see engines operating on max. 0.50% sulphur fuel oil, on alternative fuels such as LNG, LPG, methanol, ethane, and biofuel, and engines with scrubbers operating on high-sulphur heavy fuel. For all engines, it should be considered whether to use either an ACOM (automated cylinder oil mixing) or an ACOS (automated cylinder oil switch) system.

The two systems offer the possibility to optimise the base number (BN) level at any time, thus ensuring the operator the highest liner and piston ring performance, safety, overall lifetime, and lowest possible cylinder oil consumption. They aim to simplify and optimise the lubrication technically as well as economically.

These systems are optional (except for GI and GIE engines for which they are standard), but we recommend shipowners/operators to consider these solutions either when ordering a new vessel or as a retrofit for existing vessels.

ACOM and ACOS description

The ACOM system is an automated cylinder oil mixing system that automatically mixes two commercial oils to the optimum BN depending on the sulphur content of the fuel used. It enables the operator to achieve a low cylinder lube oil feed rate and reduces the risks of bore polish and corrosion.

The ACOS is the simpler system designed to automatically switch between low-BN and high-BN oil and adjust the feed rate depending on the sulphur content of the fuel as according to the FRF-logic (feed rate factor).

ACOM and ACOS are both controlled by the ME-ECS (engine control system).

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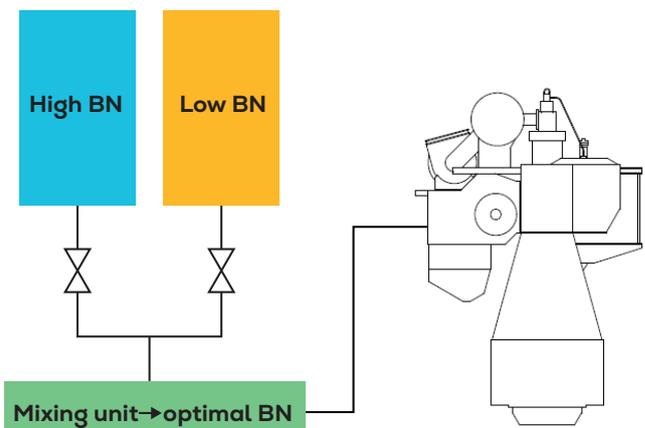


Fig. 1: ACOM: automated cylinder oil mixing system

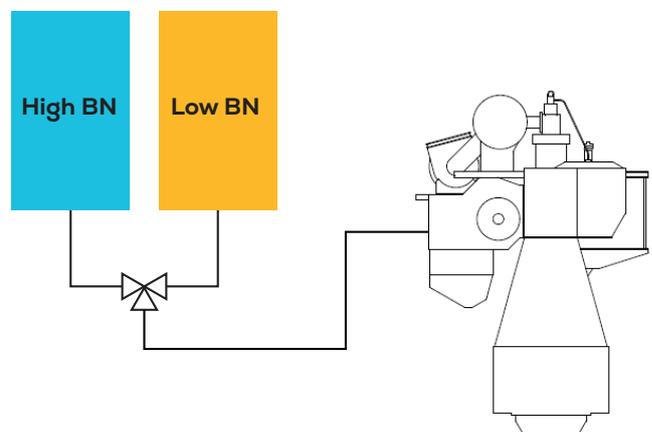


Fig. 2: ACOS: automated cylinder oil switch system

Application and use of ACOM and ACOS

Engines operating on max 0.5% sulphur fuel

Piston cleanliness is key for good performance. 40 BN cylinder oil should be used, but if deposits are observed in the piston ring pack, the feed rate should be increased or the oil should be changed to another type to keep the engine clean.

ACOM can be used to mix a suitable lube oil to keep the engine clean and protect against bore polish. ACOS can be used to easily switch between two oils and thereby keeping the engine clean and protect against bore polish.

Engines operating on low-flashpoint fuels, such as LNG, LPG, methanol, and ethane

These engines may be able to operate with different ratios of fuel oil and low-flashpoint fuel (LFF). This is called SDF (specified dual fuel) mode. The amount of sulphur injected in SDF mode will therefore depend on the use of respectively fuel oil and LFF in SDF mode. After 2020 it is not allowed to use fuel oil with more than 0.50% sulphur if the engine is not equipped with an exhaust gas cleaning system (SO_x scrubber).

ACOM and ACOS can both be utilised to ensure clean engines, adequate feed rates, and suitable BN levels – as for 0.50% S fuel.

Engines with scrubbers operating on high-sulphur heavy fuel

The sulphur range for these engines will be 0 to 3.50% sulphur or higher. An ACOM system would be the obvious choice to handle the sulphur since the cylinder oils could be ranging from 15/25/40 BN to 140 BN depending on the actual sulphur content in the fuel.

Example:

Depending on the operation parameters, the sulphur content in the fuel, and the lube oil used, the ACOM solution may also be an interesting business case when operating on high-sulphur fuel. Fig. 3 shows a case for a 6G80ME-C9.2 engine where ACOM mixing of 25 BN and 140 BN oil is compared to using a 25 BN oil and a 100 BN oil separately. In this example, the ship can save 22,000 USD/year by using the ACOM.

Engine data

Engine type	6G80ME-C9.2
Power	24,680 kW - part-load optimised using EGB
FRF	0.35 g/kWh * % sulphur

Table 1

Operation data

Operating time [%]	Engine load [%]	Fuel sulphur [%]
25	40	3.0
25	20	2.5
25	50	2.0
25	40	1.0

Table 2

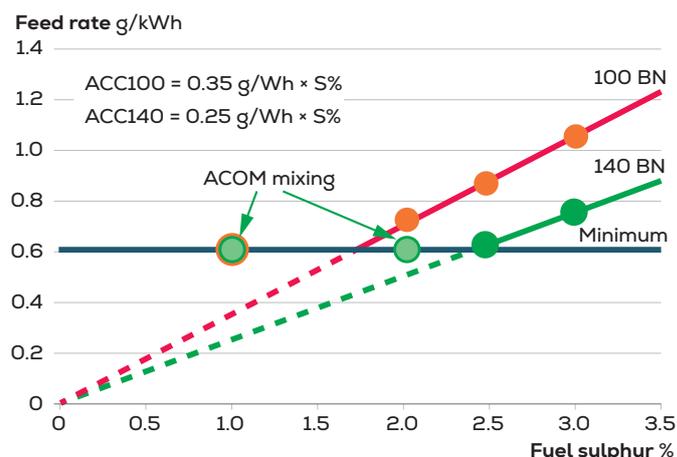


Fig. 3: Feed rate depending on fuel sulphur for a 6G80ME-C9.2 with an FRF = 0.35 g/kWh * %S

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