

A cleaner engine and an end to cold corrosion

Hapag-Lloyd | Colombo Express | Hyundai-MAN B&W 12K98ME engine



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A field trial of Mobilgard™ 5100 high-BN cylinder oil, onboard the Colombo Express container vessel, demonstrated that the oil counteracted cold corrosion, while also improving the cleanliness of piston ring and cylinder liners.

Situation

To reduce fuel consumption and cut the vessel's operating costs, Hapag-Lloyd reconfigured Colombo Express's Hyundai-MAN B&W 12K98ME engine for part-load operation. This included cutting out one of the three turbochargers and adjusting the engine timing. Unknown at the time, these changes made the engine susceptible to cold corrosion.

An evaluation carried out by ExxonMobil engineers included scrape-down oil analysis, checking deposits on the cylinders, measuring piston ring wear, and where possible, measuring thickness of deposits on the piston lands. The preliminary inspection revealed cold corrosion in the engine.

Recommendation

ExxonMobil recommended an increase in cylinder oil feed rates across all cylinders, as well as the introduction of Mobilgard 5100 oil into cylinders 1 and 2. Cylinders 3 through 12 were used as reference units and lubricated with a 70BN cylinder oil. Tests began with a feed rate of 1.2g/kWh, were incrementally lowered, and ended at a feed rate of 0.5g/kWh. The scrape-down samples were continuously monitored using onboard equipment and lab tests. During these tests, the vessel ran at a slow steaming pattern of 20 to 30 per cent load.

Impact

Cold corrosion was eliminated, while older black marks and carbon deposits were reduced. Sweep test findings also showed that Mobilgard 5100 oil continued to work very well at minimum feed rates, with ExxonMobil engineers recommending an Adaptive Cylinder-Oil Control (ACC) factor of 0.20 compared with between 0.27 and 0.30 for the 70 BN cylinder oil.

The results of the field trial confirmed that Mobilgard 5100 oil can counteract cold corrosion. Cost savings were also realised, which protected the engine at a lower feed rate.

Using Mobilgard 5100 oil, feed rates were reduced by **58.3%***



*Results achieved over the test period.

Based on the experience of a single customer. Actual results can vary depending upon the type of equipment used and its maintenance, operating conditions and environment, and any prior lubricant used.

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