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Performance by ExxonMobil

Single lubricant protects dual fuel engines

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Analysis on the dual fuel engines of the liquefied natural gas (LNG) tankers Spirit of Hela and Gigira Laitebo proved the viability of using a single lubricant, Mobilgard™ M430 engine oil, to deliver cost-savings and excellent protection.

Situation

Dual fuel engine operators face unique challenges in balancing the right lubricant for the principal and secondary fuels being used. Typically, dual fuel engines that run LNG use a low Base Number (BN) cylinder oil, based on the assumption that the absence of sulphur in the fuel would cause additives in high BN lubricants to gradually accumulate and create problematic deposits. Consequently, it's common practice to change lubricants when switching fuels.

As a progressive company, MOL LNG is always looking at ways to improve efficiencies and investigated how it could further optimise engine lubrication.

Recommendation

Breaking convention, MOL LNG's tankers exclusively used Mobilgard M430 engine oil in their medium-speed, dual fuel engines to ensure full protection when running heavy fuel oil or distillate fuel.

Routine maintenance of the engines found no signs of deposits despite 18,000 hours of operating time. ExxonMobil engineers investigated further, reviewing the results from a total of 24 dual fuel engines running on Mobilgard™ M Series oils for 675,000 hours, finding that the engines' piston rings were exceptionally clean. This proved the bespoke formulation of Mobilgard M430 engine oil helps to keep engines clean and deposit-free when operating long-term on LNG.

Impact

This field trial dispels the industry perception that only low BN oils are suitable when burning LNG. It proves that engines can have the high levels of protection expected from a lubricant without the need to alter oils when switching fuels. The use of a single lubricant has delivered significant cost and time savings, as well as removed the complexity of storage and management of multiple lubricants.

Routine engine maintenance revealed no signs of deposits after operating for **18,000 hours.**

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