



News Release

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Chevron Marine Lubricants keeps ships sailing amid VLSFO engine challenges

Chevron Marine Lubricants has helped ship owner customers identify and manage a distinctive engine condition challenge associated with the widespread switch to low-sulphur fuels.

Some ship owners using very low-sulphur fuel oil (VLSFO) have reported build-up of red deposits on piston crowns and top edges, sometimes combined with red iron burrs in scavenge ports. The deposits are associated with abnormal liner wear (or scuffing) since the fuel switch, particularly on older two-stroke marine engines.

Chevron used a four-step laboratory analysis to narrow down likely causes. The deposits were found to include a compound of materials including harmless detergent additive residue and iron oxide. The detergent residue was determined not to be a source of wear as the deposits were only found in single cylinders rather than across the engine.

The fuels associated with the red deposit and scuffing incidences were also analysed. Chevron found that the VLSFO blends involved showed differences from others in two fuel characteristics, typically a lower calculated carbon aromaticity index (CCAI) and high estimated cetane number (ECN).

Although VLSFO has been found to offer a typically higher energy value content than heavy fuel oil (HFO), and therefore can offer value for money, its combustion engine density properties can result in harsher operating conditions and more stress on the engine components. While most users transitioned smoothly, these properties can cause trouble for older engines, said Luc Verbeeke, Senior Engineer, Chevron Marine Lubricants.

“While newer ships do not have a problem using these fuels, engines already closer to an overhaul did struggle sometimes,” said Luc Verbeeke. “Cylinder units that could have run for another six months or a year on HFO did not survive the tougher conditions with the new fuels.”

An engine maintenance programme recommended by Chevron Marine Lubricants – supported by routine testing with Chevron's DOT.FAST onboard testing kit - helped to provide protection against liner wear and damage. Incidences of red deposits and scuffing that were relatively frequent in the early days of VLSFO operation have since reduced significantly.

Download Chevron Marine Lubricants technical bulletin, [Scuffing & red deposits after fuel transition: causes and solutions](#).

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