

Planning for 2020

A step-by-step guide to a safe and efficient switchover to compliant fuel

The International Maritime Organization's (IMO) 0.50 per cent cap on sulphur emissions for marine fuels came into force on 1 January 2020, a decision that has triggered wide-ranging change.

The most obvious concern is that vessel owners and operators have needed to reassess their fuel options: new low-sulphur formulations, LNG or installing scrubbers, which enable the continued use of high sulphur fuel oil. That choice is also likely to impact cylinder oil selection, adding an extra layer of complexity to the mix.

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A managed approach to switching

Fuel management is no longer solely the responsibility of the chief engineer. In order to help ensure a smooth transition to a low sulphur future, vessel operators and their onboard engineers should work hand-in-hand with procurement personnel and vessel charterers. The combination of their purchasing experience and marine management expertise should be leveraged to create a coordinated approach to compliance. They should develop a clear switchover plan, including a timeline and a detailed assessment of fuel choice impact.

When preparing for a switchover, operators must always take into account that fuel and cylinder oil formulations can vary in quality – not all suppliers are created equal. It is therefore essential to work with trusted providers that possess the technical skills to help you safely and efficiently switch to a low sulphur fuel.

This collaborative approach is crucial in navigating the potentially disruptive period that lays ahead.

Reputational damage

An ineffective switchover process could result in non-compliance with the IMO sulphur cap, which risks substantial fines and reputational damage. For example, financial sanctions triggered by bunkering a non-compliant fuel have the potential to harm the hard-won reputation of vessel captains/management and ship owners/charterers. The resulting damage to status could impact future business dealings – non-compliance could cause substantial long-term economic damage.



Fuel Switching

For vessel operators that opt to use 0.50 per cent sulphur fuel as their route to compliance there will still be a need to switch to 0.10 per cent sulphur fuel when entering an Emission Control Area (ECA).

For those who invest in a scrubber things may appear to be simpler – they will continue to use 3.50 per cent sulphur fuel. However, some port authorities have already banned the use of open loop scrubbers in their waters; meaning vessels that have chosen this technology will need to use a low sulphur alternative in these locations.

Ahead of any fuel switchover, you should first establish what best practise looks like:

- Where possible buy fuel that meets ISO 8217:2017 specification
- Only bunker from reputable fuel suppliers as this will help minimise fuel stability and compatibility issues
- Clean out bunker tanks as residues will contain sulphur, which could push emissions over the 0.50 per cent limit and result in non-compliance fines

Some new compliant fuels could contain elevated levels of cat fines, which, if not properly treated, could trigger catastrophic engine damage. If laboratory testing shows a higher than usual concentration of cat fines you should:

- Ensure your fuel treatment system is operating at peak efficiency
- Keep settling tanks at 85°C
- Operate purifiers at minimum throughput
- Drain water from fuel tanks to aid settling

There is a risk that two compliant fuels will not be compatible. This can trigger damaging sludge formation and it is therefore important to:

- Try to avoid mixing
- Store fuels separately until testing has been carried out
- If mixing is unavoidable, test the fuels for compatibility

If sludge does start to form, it is essential to ensure against further fuel blending before any remedial action is taken as this may exacerbate the problem. Then:

- Operate two or more separators in parallel at their lowest throughput
- Increase the frequency of purifier discharge
- Monitor and clean filters frequently
- In extreme cases a reduction in vessel speed may be required to assist fuel treatment



Lubricant Switching

Fuel choice will more than likely impact on the engine and cylinder oils required for engine protection post 2020. Establishing what cylinder oils your vessel needs is a crucial first step.

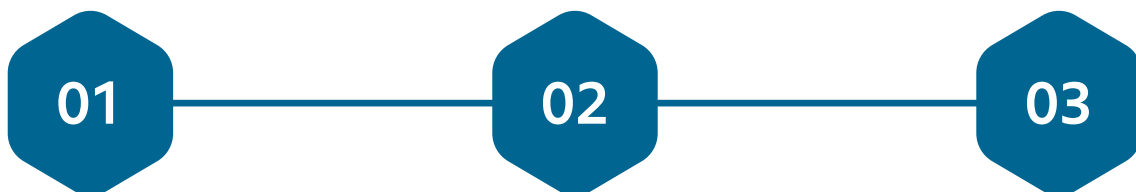
- For vessels operating on 0.50 per cent sulphur fuel a 40BN oil, such as Mobilgard™ 540 and Mobilgard™ 540 X, will be required for optimum performance
- Vessels switching to 0.10% sulphur ECA fuel may require lower BN products and OEM guidelines should always be followed. Mobilgard™ 540 X is specifically formulated for use with both 0.10% and 0.50% sulphur fuels and liquefied natural gas (LNG)
- For vessels continuing to burn high sulphur fuel oil that are fitted with a scrubber, a high BN formulation, such as Mobilgard™ 5100, should be used
- Vessels fitted with open loop scrubbers may need to switch fuels, and therefore lubes, in some ports, depending on local regulations. This will not affect closed loop scrubber designs
- Operators that choose LNG as their compliance option should discuss their cylinder oil requirements with a trusted lubricants supplier, and should ensure that OEM guidance is followed.

As part of this process, run down existing stock or surplus cylinder oils as far as possible ahead of the switchover. This process will achieve the best results if it is coordinated across the business – onboard engineers and procurement personnel should manage the procedure in tandem as this will:

- Minimise the potential for oil wastage
- Simplify the lubricant switching process
- Streamline your cylinder oil inventory

If in doubt, for additional guidance please speak to your ExxonMobil contacts or your OEM.

The majority of vessel operators will be converting from high sulphur fuel, so will also be switching from a cylinder oil with an appropriately high BN content. If your cylinder oil tank is not completely run down at switchover, and a low BN is required, you should take the following steps:



In order to reduce the BN reading to a suitable level for 0.50 per cent fuel it is possible to 'dilute' existing stock by loading a 40BN formulation on top

Blending to over 40BN for a short time is unlikely to cause major issues as lacquering or deposit build up from BN additives is a slow process

Blending to under 40BN, however, should be avoided where possible as this can quickly trigger corrosion and costly repairs

Note: Mixing BN is a linear blend – 25% 40BN oil + 75% 100BN oil = 85BN oil.

The benefits of used oil analysis

The combination of new fuels and cylinder oils makes it more important than ever to know what is happening inside your engine as fuel related problems, such as high cat fines, can rapidly cause significant damage and lead to equipment failure. You therefore quickly need to know if your fuel or cylinder oil selections are not performing as expected.

Leading marine insurer, The Swedish Club, singled out lubricant failure as the most expensive and frequent cause of engine damage. According to its 2018 'Main Engine Damage' report the average lubrication error cost \$763,320 to repair. As lubricant issues could initially increase as a result of the IMO decision vessel operators are advised to implement a fully featured used oil analysis service.

Mobil ServSM Cylinder Condition Monitoring

ExxonMobil's Mobil ServSM Cylinder Condition Monitoring is a fully featured used oil analysis service that delivers a range of key preventative maintenance and operational benefits. For example, it can check that feed rates are optimised for the best possible engine protection, spot issues before they become problems and potentially deliver significant cost savings. The service can also check fuel sulphur levels, which can help identify compliance issues and therefore help vessel operators avoid non-compliance fines and associated reputational damage.



