

IMO 2020 and beyond

Changing marine emissions regulations are at the core of current uncertainty over fuel oil's future – and the lower sulfur cap in 2020 won't be the last we hear from the IMO.



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The present uncertainty over fuel oil's prospects has been driven by the International Maritime Organization, a UN body to which much of the oil industry is now begrudgingly paying attention for the first time.

The IMO's lower sulfur limit for marine fuels in 2020 should not have come as a surprise to the oil and shipping industries. This change has been on the cards since at least October 2008, when the IMO set in place its revised Marpol Annex VI agreement on marine pollution.

Nonetheless, the final decision in October 2016 to proceed with the 2020 deadline has occasioned a degree of angst among shipowners, operators and in the wider commodity markets in the two years since then.

The effect on commodity markets will be profound: a large majority of the world's commercial fleet will shift from burning fuel oil to middle distillate-based bunkers, and refiners are expected to increase crude runs to maximize distillate output for the shipping industry's needs. S&P Global Platts Analytics forecasts a bunker demand shift of more than 3 million b/d and Brent crude price rise of as much as \$7/b in 2020.

The main problem the shipping industry has to address is how it will cope with

an unfamiliar set of new fuels in 2020. Little is yet known about the new 0.5% sulfur blends the refining industry is developing, but a wide range of products is expected to be on offer.

Refiners will blend new marine products primarily using the 0.5% sulfur limit as their target – rather than the 380 CST viscosity specification they currently aim for when blending high sulfur fuel oil – and they will have a broad array of options for how to meet it.

Products could range from a largely unaltered low sulfur straight run fuel oil to a primarily distillate-based product, or use other refinery streams including VGO and hydrocracker bottoms. The trouble will come when the products are mixed and some blends prove incompatible with one another: when a more aromatic 0.5% product comes into contact with a more paraffinic blend, the products are likely to separate and form sludge, blocking filters.

The risk of a spate of engine failures across the world in 2020 is currently keeping marine engineers awake at night. A contamination crisis in the bunker fuel industry in 2018 after harmful off-specification product seen first in the US Gulf was exported across the global supply chain has also concentrated minds

on how similar problems may arise with the new fuels.

And 2020 will not be the end of the shipping industry's struggle with emissions regulation. A proposal to extend the European Emissions Control Area to include the Mediterranean is currently under discussion at the IMO – a measure that would impose an even more stringent 0.1% marine fuels sulfur limit across European waters, further tightening middle distillate supplies.

IMO member states are also examining the possibility of banning the use of fuel oil – and possibly some of the new 0.5% sulfur blends – in the Arctic, where marine traffic is expected to increase significantly in the years ahead.

But the biggest challenge for the shipping industry after 2020 will be in meeting the IMO's initial strategy for reducing greenhouse gas emissions, adopted in April 2018 and due to be revised by 2023.

The strategy aims for GHG emissions to peak as soon as possible and for the shipping industry's total emissions to drop by at least 50% from 2008's levels by 2050. Given the rate of growth expected in shipping over the coming decades, this strategy will need zero-GHG-emission vessels to come into service at commercial scale sometime in the 2030s.

The shipping industry's options for reducing GHG emissions are limited at present, and much research and development work will need to be done over the next decade before zero-GHG designs are viable at the right scale.

One option in the short term could be mandatory slow steaming and energy efficiency measures across the global fleet. Reducing speed to maximize fuel efficiency and mandating other energy-efficiency measures like using LEDs instead of light bulbs could deliver significant savings within a short time-frame.

But over the longer term the shipping industry will need to take on new energy sources. Switching to methanol or LNG derived from biomass may be suitable for some segments of the industry. Some owners may opt for hybrid ship designs that incorporate conventional fuel sources as well as wind-powered rotor technology, batteries or solar power – although none of these technologies alone are likely to be viable as the only energy source for a large commercial vessel for some time yet.

Most of the industry for now is pinning its hopes to developments in hydrogen fuel cells. Several companies are already developing the technology – which produces no emissions – for use in ships.

The challenge will be in whether the technology can be developed – and delivered at the scale required by the shipping industry – within the relatively short timetable set by the IMO.

If progress in research and development appears prohibitively slow, or if the implementation of the sulfur cap in 2020 is widely seen as flawed among the world's politicians, IMO member states may be inclined to set less ambitious targets when they revise the initial strategy on GHGs in 2023.