



A Yokogawa Company

# KBC'S RESPONSE TO THE IMO 2020 MARINE FUEL SULPHUR CAP: FAQs

## 1. What is the IMO?

The International Maritime Organization (IMO) is the United Nations global standard-setting authority for the safety, security and environmental performance of international shipping.

## 2. What is the IMO 2020 marine fuel sulphur cap?

The IMO has set a limit on sulphur in the fuel oil used by ships of 0.5% by mass, down from the current limit of 3.5%. It will become binding on January 1, 2020. Its purpose is to significantly reduce sulphur oxide (SO<sub>x</sub>) emissions from ships which should have positive health and environmental benefits for the world, particularly for populations living close to ports and coasts.

## 3. Where can I find the actual regulation?

The regulation is in Annex VI to the International Convention for the Prevention of Pollution from Ships (MARPOL Convention), adopted in 1997. Annex VI entered into force on May 19, 2005 and a revised Annex VI with significantly strengthened requirements was adopted in October 2008 which entered into force on July 1, 2010, which set the enforcement date to January 1, 2020. The IMO web site has all the details at [www.imo.org](http://www.imo.org).

## 4. What about in SO<sub>x</sub> Emission Control Areas (SECAs)?

The sulphur limit for fuel oil used by ships in SECAs is already set at 0.1% m/m equivalent emissions and remains unchanged.

SECAs are protected areas established under MARPOL, currently defined as: the Baltic Sea; the North Sea; the North America (covering designated coastal areas off the United States and Canada); and the US Caribbean (around Puerto Rico and the US Virgin Islands).

## 5. What controls will there be once the new global cap takes effect?

Ships taking on fuel oil for use on board must obtain a bunker delivery note which states the sulphur content of the fuel oil supplied. Samples may be taken for verification.

Ships must be issued with an International Air Pollution Prevention (IAPP) Certificate by their Flag State. This certificate includes a section stating that the ship uses fuel oil with a sulphur content that does not exceed the applicable limit value as documented by bunker delivery notes, or uses an approved equivalent arrangement.

Port and coastal States can use port State control to verify that the ship is compliant. They could also use surveillance, for example air surveillance to assess smoke plumes, and other techniques to identify potential violations.



A Yokogawa Company

**6. Do you think the IMO will enforce the change from 3.5% to 0.5% to open sea or only coastal areas?**

These rules will apply to all global waters – there will be no exceptions. The IMO is serious about enforcing the new bunker rules as are major shippers to ensure a level playing field on fuel pricing, freight rates and competition overall. The IMO understands that inconsistent and ineffective implementation would increase the uncertainty for both suppliers and consumers to determine actual supply and demand for 0.5% sulphur fuel oil.

The IMO's Sub-Committee on Pollution Prevention and Response (PPR) agreed in January 2017 that consistent and effective implementation of the 0.5% sulphur limit is critical for commercial considerations and to achieve the environmental benefits. The IMO is in the process of developing standard guidelines and bunker delivery reporting systems for effective enforcements. The scope of the work is proposed to be completed during PPR meetings in 2018 and 2019.

**7. What sanctions will there be for not complying?**

Implementation is the remit and responsibility of the Administrations (Flag States and Port/Coastal States). Ensuring the consistent and effective implementation of the 0.5% sulphur limit is a high priority. Sanctions are established by the individual MARPOL signatories, not by the IMO.

**8. How can ships comply with the IMO marine fuel sulphur cap?**

Ships will mostly meet the requirement by using low sulphur compliant bunker fuel oil.

It is allowable to use "approved equivalent methods." These would typically be scrubbers (exhaust gas cleaning systems) to clean the SOx emissions before they are released into the atmosphere. In this case, the equivalent arrangement must be approved by the ship's Flag State. An increasing number of ships are also using natural gas as a fuel since combustion leads to negligible SOx emissions. Another alternative low SOx-emitting fuel is methanol which is being used on some short sea services.

**9. What is the actual average sulphur content of bunker fuel oil used on ships?**

The IMO monitors the sulphur content of fuel oil used on ships globally. Samples are taken of residual fuel oil – the 'heavy' fuel oil commonly used on ships – as well as distillate fuel oil ('light', low sulphur fuel oil, which is more commonly used in ECAs which have stricter limits on sulphur emissions).

The latest figures showed that the yearly average sulphur content of the residual fuel oils tested in 2015 was 2.45%. Even though significantly below the current limit, it is far above the limit imposed by the new regulation.

**10. Have ship owners been ordering new vessels with scrubbers or installing scrubbers?**

The shipping industry today is burdened with over capacity and historically low margins and freight rates. In addition, shippers are facing a complex array of other regulatory issues, such as ballast water controls, future CO<sub>2</sub> emissions targets and mandatory stack monitoring.

Shippers could opt to buy new vessels with scrubbers, or invest in retro-fitting scrubbers to existing vessels. Ship owners, however, are not convinced that scrubbers along with ancillary sludge retention and disposal issues, are affordable at a cost of around \$6-10 million per ship. The caustic intake (loss of cargo), weight of scrubber (loss of cargo) and disposal of hazardous waste at port (cost) will result in increased cost and personnel training which may result in an overall negative return on capital. Additionally, 50% of ships are chartered. Since the company leasing the ship will not take on the cost of any scrubber installation, the owner would not see any return on its investment and therefore will not make the investment in its charter fleet.

KBC expects the majority of shippers to opt for low sulphur fuel oil or to switch to other fuels with lower environmental impact. Our assessment is that the shipping industry expects compliant fuels to be available in the market to meet the IMO requirements, and therefore the burden of investments will fall on the refiners.



A Yokogawa Company

#### 11. Who will provide such a large amount of low sulphur fuel oil?

The refining industry will have to reconfigure itself to supply the required fuel quality to the shipping industry. The pool of components that will make up bunker fuels will be low sulphur atmospheric residues, vacuum gas oil (VGO), hydrotreated blendstocks and gas oils. Refiners will need to adjust their operations to keep low sulphur blendstocks segregated, driven by market economics that will place a strong premium on crude oils and other intermediates that can be added to the bunker pool.

#### 12. How can refiners justify the potential heavy investment to upgrade their high sulphur fuel oil production?

Some refiners are lucky. They find themselves sitting on a supply of low sulphur crudes with the necessary conversion capacity to produce the low sulphur fuels already. These are mostly located in the United States and they are poised to take full advantage of this fortuitous situation.

For those refiners tied to high sulphur crude sources, and with low conversion capability, responding appropriately to this IMO regulation could be a matter of life and death.

Given other demands and regulations, the consideration of bottom of the barrel management is a long term strategic consideration and not just a response to the IMO regulations. A refinery must consider their options of adding upgrading systems and changing crude diet.

KBC can help refiners to develop such a strategy in light of these regulations in order that the refiner remains competitive.

#### 13. What are the overall implications of additional refining capacity coming on line in the Middle East and Indo Asia regions?

If all of the projected new refining capacity in the Middle East and Indo Asia regions becomes available in 2025, global capacity will exceed demand in the range of 20% or more. The impact of this will be that marginal plants are at risk from competition outside of a region. This highlights the point of long term strategic analysis by region on the value and risk of any investment against competitive forces.

Looking at this new capacity, they are full conversion complex systems and many are tied to petrochemical production. For the standalone plant there will be challenges and we advise carrying out a risk analysis now to evaluate what is right for them. KBC can help assess the impact of this new capacity specific to a particular refinery.

#### 14. Are there other options for refiners to survive apart from changing crudes and bottom of the barrel investment?

We do not see any options other than one or both of the above.

This opens the door for others to come into the clean fuels market and displace incumbent suppliers, further driving down margin. Severe cost cutting, lower crude rate to re-optimize asset utilization, potential outlet of bottom of the barrel in a niche market that maintains value are some of the options that could be evaluated as part of an overall risk analysis.

KBC can help refiners with this evaluation.

#### 15. Where can I get help to assess the options for my refinery?

KBC offers a 1-day on-site workshop to evaluate and identify the best option for your refinery. Ask your KBC or Yokogawa account manager, or visit KBC's web site at [www.kbc.com/info/imo2020](http://www.kbc.com/info/imo2020) to register your interest in hosting a workshop.