

MARPOL Annex VI – emission control measures approved and adopted during the recent MEPC meetings

Marpol Annex VI covers regulations to control emissions from ships that present major risks to both the environment and human health. This article looks at the amendments that have been adopted recently.



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Introduction

Regulations governing emissions from ships are included under MARPOL [Annex VI](#). In 2008, the International Maritime Organisation (IMO) adopted amendments to this Annex which enforced a gradual reduction of the sulphur content of marine fuels.

2020 global sulphur cap

The IMO's Marine Environment Protection Committee (MEPC) took several key decisions during its 70th session in October 2016 to enforce stricter air emission controls under MARPOL Annex VI. This decision was reaffirmed by MEPC during its 71st session in July 2017; and in order to guarantee consistent and effective implementation, it was agreed to include consideration on any transitional technical and safety issues in the IMO's Pollution Prevention and Response (PPR) subcommittee agenda for 2018-2019.

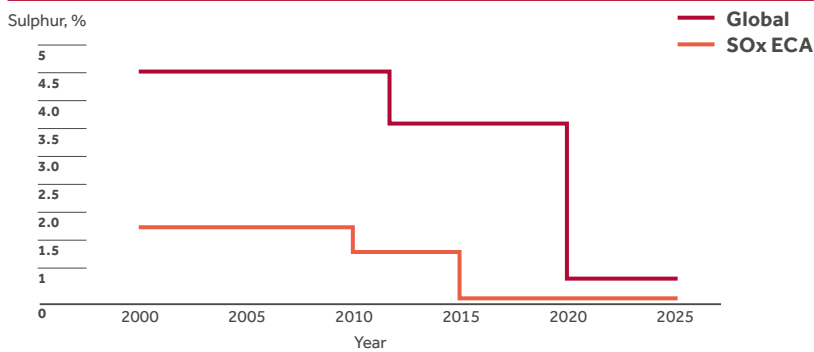
One such decision was the setting of a global sulphur cap of 0.5% on marine fuels starting from 1 January 2020. This represents a significant cut from the 3.5% m/m global limit currently in place and falls in line with the mandatory 0.5% sulphur cap for all EU waters (outside the North Sea and Baltic Sea, which are designated as Sulphur Emission Control Areas ([SECAs](#))) in accordance with the [EU Sulphur Directive](#) adopted in 2012.

This includes the fuel used in main and auxiliary engines and boilers. The regulations provide exemptions for situations involving the safety of the ship or saving life at sea, or if a ship or its equipment is damaged.

Apart from the ship operators, the decision will also impact oil producers, refiners and bunker suppliers, which will need to ensure availability of sufficient quantities of compliant low-sulphur fuel oil. The 2020 date was subjected to a feasibility review to ensure that sufficient compliant fuel oil would be available to meet the fuel oil requirements.

Now that the 2020 date has been confirmed, it is imperative that the industry starts preparing for implementation without delay.

There is no doubt that this decision will have a profound implication for shipping economics. The purchase price of low-sulphur compliant fuel was not reviewed within the mandate of the MEPC's decision.



Implementation options for shipowners and operators

To meet the requirements, ship operators will face a choice of switching their ships to low-sulphur compliant fuel oil, retrofitting ships to use alternative fuels such as LNG/methanol or installing approved scrubber systems which will clean the emissions before they are released into the atmosphere. Decisions should be made on the basis of ship type, ship size, trading pattern and sustained fuel availability. If opting for a retrofit solution, it is also vital to consider the complexity of installation, possible off-hire and the remaining life of the ship. Some ships may instead be sent for early recycling.

Option 1 – switching ship to low-sulphur compliant fuel oil

While switching over from residual heavy fuel oil (HFO) to distillate (diesel) fuel is the simplest option, the availability of this fuel could be an issue. Even though the IMO reckoned the availability of low-sulphur fuel to be sufficient, there is no universally accepted refining method for producing a 0.5% sulphur fuel. It is expected that the market for these fuels will be fragmented. There could also be uncertainty in regards to the quality of the compliant hybrid fuels as blended products. In particular, they may not be reliably stable or may be incompatible with other fuels.

Option 2 – installing approved scrubber systems

Scrubber technology is a very popular solution and is suitable in most cases for retrofitting existing vessels as well as for new builds. It allows ships to continue burning high-sulphur fuel oil and has the potential to meet both the 0.5% and 0.1% criteria. There are two technologies available today: dry and wet systems. The wet systems are by far the most predominant.

However, for existing ships, even though no changes will have to be made to the engines or fuel treatment plant, there will be a significant upfront investment for the installation of the exhaust gas cleaning plant, and there will also be operational expenses related to increased power consumption, the need for chemical consumables and sludge handling. The return on investment can only be determined over time, with knowledge of the price differential between high-sulphur fuel oil and 0.5% sulphur bunkers.

Option 3 – retrofitting ships to use alternative fuels

Alternative fuels such as LNG and methanol are rapidly emerging as the favourable option for the shipping industry (particularly for new builds) as they significantly lower the environmental impact, eliminating SOx and PM emissions, and reducing NOx emissions by 80% and CO2 emissions by 20%. However, this is a relatively new solution, and the supply infrastructure (bunkering facilities) is currently limited. It also involves large capital expenditure upfront, complex crew training considerations and, due to the comparatively larger fuel tanks, may mean a reduction in the cargo-carrying capacity of the ships.

Onboard verification of fuel sulphur content

It is not presently clear how the global sulphur cap will be enforced. However, MEPC 71 has tasked its Sub-Committee on Pollution Prevention and Response (PPR 5) to consider fuel sample verification procedure as a part of the 2020 low sulphur fuel implementation action plan. In current Emission Control Areas, the PSC usually checks the relevant documentation and may carry out spot sampling and analysis of fuel.



Transport Canada issued a [Ship Safety Bulletin No. 08/2016](#) in August 2016, informing that the PSC may request a ship's fuel samples during routine inspections and will use portable analysers to check the fuel sulphur content.

[Danish authorities](#) monitor compliance by not only taking fuel samples from ships calling at Danish ports but also from the air using a 'sniffer' detector installed underneath the Great Belt Bridge.

The Paris MOU has [confirmed](#) that its concentrated inspection campaign (CIC) on MARPOL Annex VI will take place in 2018.

The MEPC-70 approved guidelines for onboard sampling for the verification of the sulphur content of the fuel oil used on board ships and subsequently issued [MEPC.1/Circ.864](#) in December 2016.

These guidelines set out an acceptable sampling method from a designated sampling point(s) that is readily and safely accessible, downstream of the in-use fuel oil service tank and as close as safely feasible to the fuel oil combustion machinery (shielded from heated surfaces or electrical equipment), taking into account different fuel oil grades, flow-rate, temperature and pressure behind the selected sampling point.

The IMO guidelines also draw attention to the importance of only taking the fuel oil sample once a steady flow is established in the fuel oil circulating system as well as thoroughly flushing through the sampling connection with the fuel oil in use prior to drawing the sample.

Members are recommended to refer to the IMO guidelines to update their fuel oil sampling procedures to ensure that samples can be drawn safely from the ship's fuel service system when such sampling is requested by a PSC officer.

It is vital that the shipboard team is aware of the above requirements and is familiarised with the ship-specific system.

For ships not fitted with a dedicated/ approved sampling point, it is recommended to check and propose a location for sampling in compliance with these guidelines and in accordance with Class rules.

The collected samples are required to be properly sealed and labelled. The sample bottles should be retained on board the ship for a period of not less than 12 months from the date of collection.

Mandatory data collection system for fuel consumption of ships

Another [significant decision](#) taken during the MEPC-70 was adopting amendments to MARPOL Annex VI, Chapter 4 for mandatory fuel oil consumption data collection and reporting. A new regulation 22A in MARPOL Annex VI was adopted, which requires ships to collect and report data on their fuel consumption, starting from 1 January 2019 (Res.MEPC.278(70)).

Under the global data collection scheme, ships of 5,000gt and above will be required to collect consumption data for each type of fuel they use as well as data regarding the energy

efficiency of ships (such as distance travelled, service hours at sea and the cargo capacity for cargo ships).

The aggregated annual data will need to be submitted to the flag state in standardised format after the end of each calendar year, via a methodology to be included in the Ship Energy Efficiency Management Plan (SEEMP).

Upon verification of the submitted data, the flag states (or recognised organisations on behalf of flag states) will issue a statement of compliance to the ship. The guidelines on how the flag states will verify the reports was finalised at the MEPC-71 in July 2017 (Res.MEPC.293(71)).

Flag states will be required to subsequently submit this data to the IMO, which will maintain an anonymised ship fuel oil consumption database and produce an annual report to the MEPC summarising the data collected.

These requirements will enter into force on 1 March 2018, with the first reporting period being for the 2019 calendar year.

This requirement is in line with the EU data collection system adopted in 2015 ([MRV Regulation](#)), which applies to ships above 5,000gt, regardless of their flag, calling at EU ports from 1 January 2018 onwards.

Members will need to start developing a method for the collection of fuel oil consumption data that is most appropriate for each ship and update the SEEMPs of their ships to reflect this process.

Club cover

There is a global drive towards cleaner energy, and shipping is at the forefront. The key to environmental compliance in accordance with MARPOL lies in embracing these requirements within the core culture of the shipping company and ensuring effective implementation both on board and ashore.

Members are reminded that club cover for fines arising from breaches of low-sulphur fuel regulations and other MARPOL violations is strictly discretionary. The board is entitled to take into consideration the zero-tolerance attitude towards reimbursement of liabilities and fines for environmental offences, save in the most exceptional circumstances.