

Maritime environmental requirements cut air pollution by more than half

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To improve health conditions and protect the environment, the European Union has focused on different aspects of air pollution produced by maritime transport. Tighter rules on sulphur emissions from ships came into effect on January 1 2015, under which all ships operating in northern EU waters must comply with strict new emission limits. Estimates of their impact vary and different issues are at stake, but the initial Danish results indicate a significant reduction in sulphur rates in Danish air.

Context

In 2008 Annex VI of the International Maritime Organisation's (IMO) International Convention for the Prevention of Pollution from Ships (the Marpol Convention) was revised and stricter limits for air pollution from ships inside and outside of emission control areas were introduced. As contracting parties to the IMO, EU member states agreed to new standards on the sulphur content of marine fuels.⁽¹⁾ The new rules apply to all vessels sailing in the Baltic Sea, the North Sea and the English Channel, which the IMO has designated as the European Union's Sulphur Emissions Control Area (SECA), but do not cover other EU waters.⁽²⁾

Implementing new rules

In practice, ship operators can opt for cleaner and more expensive fuel or use an approved abatement technology. The cleaner fuel option means switching from high-sulphur fuel to low-sulphur fuel or converting a ship to use liquefied natural gas. As running on low-sulphur fuel only is costly, ships operating inside and outside of the SECA are likely to use low-sulphur fuel inside and high-sulphur fuel outside. The changeover takes several hours and can result in a mixture of both types of fuel, with sulphur content that is still above the required limit. Converting to liquefied natural gas has additional environmental benefits and can be less costly in the long term, but:

- supply facilities are limited;
- availability is low; and
- improved supply is not planned until 2025.

A second option is to run on high-sulphur fuel and install an exhaust gas cleaning system (scrubber) to achieve equivalent sulphur emission reductions. Two major issues with scrubbers are their cost and the lack of clear rules for the discharge of cleaning residues (wash water).

First experience with stricter rules

Since January 1 2015 ships have had to comply with new and stricter environmental requirements in

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Danish waters as part of the SECA. The Ministry of the Environment and Food has monitored sulphur pollution and the amount of harmful sulphur in the air over Denmark has more than halved.

Control measures

To stop ships from ignoring the rules and continuing to pollute using illicit fuels, the Ministry of the Environment and Food has intensified its ship pollution controls. An artificial nose – called a 'sniffer' – has been fitted on the Great Belt Bridge, which can detect when ships passing under the bridge are using the wrong type of fuel.

The first air measurements from the sniffer revealed that 98% of ships complied with the sulphur requirements. Further, according to a new report from the Centre for Environment and Energy at Aarhus University, the sulphur content in the air over Denmark has fallen by up to 60% since the start of 2015. On October 9 2015 Minister for the Environment and Food Eva Kjer Hansen stated:

"Sulphur and particles are harmful to humans, so it is good news that the new environmental requirements are having an effect. Denmark is the first country in the world to apply new technology in efforts to monitor pollution from ships and to make sure that everyone is meeting the requirements. The financial benefits of non-compliance with the rules are huge, and control and enforcement are therefore vital elements in preventing harmful pollution from ships and unfair competition for law-abiding ship owners."

Monitoring is not only being conducted from the Great Belt Bridge. A small aircraft has also been fitted with a sniffer to monitor ships sailing through the major shipping lanes in Danish waters. If sniffer measurements show that a ship is using illicit fuels, the authorities in the nearest port will be notified so that they can stop the breach.

Most air pollution in Denmark comes from abroad and international collaboration therefore has great significance. Common international efforts to ensure that ships comply with the environmental requirements are important. This is why Denmark is working with the European Union and the IMO to ensure efficient and uniform control and enforcement.

Shipping industry view

Although the stricter rules have placed additional costs on ship operators, Danish shipowners support the measures. On October 9 2015 Director General of the Danish Shipowners' Association Anne H Steffensen stated:

"Danish ship owners are fully behind the new requirements, and I am very pleased to see that the Minister for the Environment and Food and the Danish Shipowners' Association are working closely together on control and enforcement in the Green Shipping Partnership. It is vital for the industry that we have efficient and effective enforcement internationally, so that we can secure fair competition for all. Remote monitoring from bridges and aircraft could become an important element in ensuring that regulations are complied with - not the least from 2025 at the latest, when tightened requirements will take effect for the rest of the world and international enforcement activities will become even more important."

Comment

The initial Danish results since stricter sulphur rules were introduced in the SECA illustrate the considerable environmental impact of establishing such an area. These results should encourage the EU legislature to extend the boundaries of the SECA to include all EU waters.

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Endnotes

(1) The revised standards were transposed into the EU Sulphur Directive (2012/33/EC), which

amended the EU Sulphur Content for Liquid Fuel Directive (1999/32/EC) as regards the sulphur content of marine fuels.

(2) The maximum level of sulphur allowed in shipping fuel within the SECA has been reduced from 1% to 0.1%, while outside this area the limit is 3.5% and should drop to 0.5% as of January 1 2020.

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