EMISSIONS: IS THE WAY FORWARD ANY CLEARER?

April saw IMO set a milestone framework to reduce total annual global shipping emissions. But how best to achieve this, asks Ed Martin?

"Can I get charters if I cost an extra US$3.5M to US$7M a year for fuel?"

O
f the 173 member states, 171 supported the adoption of an initial strategy on greenhouse gas (GHG) emissions reductions from shipping on the final day of IMO’s Marine Environment Protection Committee’s (MEPC) 72nd session in London on 13 April.

With much public attention focused on IMO and the potential for an emissions cap, more than 70 delegations took the opportunity to convey their official views on the agreement.

Brazil, Russia, India and Iran were among those countries that expressed concerns or reserved their positions on the section of the document that sets out GHG emissions caps.

But several other voices thought the document could and should do more. Among those calling for higher levels of reduction included some EU member states as well as Pacific Island nations, which are especially at risk from rising sea levels.

International shipping bodies with consultative status at IMO, including BIMCO and International Chamber of Shipping, reacted positively to the decision, with BIMCO deputy secretary general Lars Robert Pedersen saying “IMO has done something no one has done before: set an absolute target for emissions reductions for an entire industry.

“It is a landmark achievement in the effort to reduce emissions, and something that every other industry should look to for inspiration.”

In his prepared remarks, ICS secretary general Peter Hinchliffe referenced the landmark 2015 Paris Agreement to which the IMO GHG framework is tied.

“This is a ground-breaking agreement – a Paris Agreement for shipping – that sets a very high level of ambition for the future reduction of CO₂ emissions,” he said.

He added: “We are confident this will give the shipping industry the clear signal it needs to get on with the job of developing zero CO₂ fuels, so that the entire sector will be in a position to decarbonise completely, consistent with the 1.5°C climate change goal.”

The strategy, as adopted, includes the guiding principle of “common but differentiated responsibilities and respective capabilities” (CBDR—RC), a UN principle contained within the Paris Agreement that mitigates the responsibilities of developing countries of fighting climate change, placing more responsibility on developed countries.

Several states, notably Canada, have expressed concern over the inclusion of the CBDR—RC principle, while others lauded its inclusion and that of related instruments to promote increased financial flows, technology transfer and capacity building between developed countries and the UN-termed Least Developed Countries (LDC) and Small Island Developing States (SIDS), notably the Philippines and Indonesia.

The agreement also includes IMO’s “no more favourable treatment” principle, to ensure regulation is applied equally to all vessels.

The MEPC will continue to convene and review the terms of the agreement over the next five years, before a long-term strategy is developed in 2023. IMO will undertake a data collection project on GHG emissions from vessels between 2019 and 2021 to provide a statistical foundation for reaching consensus on decarbonisation goals.

In the meantime, Tanker Shipping and Trade will take a closer look at two approaches shipowners may take to reduce emissions to meet the 2050 goals and determine if there is a clearer path to a low-emission future.

Slow steaming
Slow steaming, the practice of deliberately limiting the speed of a vessel to reduce fuel consumption, is perhaps most commonly known as a means of cutting costs during the days of high oil prices. But some argue it has its place as a method of reducing emissions and thereby meeting the requirements of the 2020 sulphur cap, as well.

It may seem particularly appealing since it requires little or no capital investment, compared to the costs incurred by fitting and running scrubbers.

The logic behind slow steaming is that the faster a vessel moves through water, the more drag it encounters and therefore more energy is required to make progress; conversely, at lower speeds less energy is required.

“Speed control or slow steaming is a way
to reduce our environmental footprint and we should look into it," said Intertanko chairman Nikolas Tsakos at the 9th Annual Greek Shipping Forum in February, where European Communities' Shipowners' associations chairman Panos Laskaridis also called for consideration of slow steaming.

Mr Tsakos expanded on this at the 12th Annual Capital link International Shipping Forum in New York in March, when he said “by reducing by 20% our top speed, we can meet the level.”

There is perceived to be a cubic relationship between a ship’s speed and power. According to consultancy Delft CE, a vessel reducing speed by 10% reduces its power demand by 27%. As a slower vessel travels less distance in the same amount of time, energy per unit of distance is reduced by 19%, the consultancy said.

Delft CE released a report in October 2017 titled Regulating speed: a short-term measure to reduce maritime GHG emissions, which highlighted the benefits of slow steaming, at least as a short-term measure for emissions reduction in anticipation of IMO’s decision this year, focusing on three potential speed-reduction regimes, of 10%, 20% and 30%.

The report looks at container vessels, dry bulkers and crude and product tankers, noting that of the three types, crude and product tankers have the lowest emission-reduction potential, of 10% based on a 10% speed reduction, 19% based on a 20% speed reduction, and 25% based on a 30% speed reduction.

“This can be explained by the combination of a relative high auxiliary/boiler consumption and a relatively high number of days in port,” the report notes.

To achieve these reductions while meeting demand, CE Delft said the tanker fleet would need to grow by 5%-8% under the 10% regime, 11%-17% under 20%, and 18%-29% under 30%, though this does not factor in laid-up and idle vessels returning to service.

According to CE Delft’s report, for some oil tanker size categories the return to service of laid-up and idle vessels could enable a 10% or even 20% speed reduction regime without any new vessels required.

Slow steaming may also be a good option where space is limited. Speaking to sister publication Marine Propulsion in May, Pyxis Tankers chief executive Valentios “Eddie” Valentis said the engineroom on an MR2 tanker, which comprise his company’s fleet, would be too small for a scrubber to be fitted and that most owners and charterers would switch to slow steaming to lower consumption until refineries are able to provide a low-cost, 2020-compliant fuel. However, it is worth noting that Mr Valentis’ view is not shared by all – in the same article AG Shipping & Energy head Mangish Kakodkar said his company was looking to retrofit scrubbers on an existing MR vessel.

Another benefit of slow steaming comes

Whether closed or open, the basic principle of a scrubber system is the same (Credit: EGCS)
from an economic, rather than environmental, standpoint; assuming widespread adoption of slow steaming, Marine Propulsion’s Paul Fanning noted in February that the reduction in shipping’s capacity could result in higher charter rates.

Scrubbers - initial outlay leads to long-term savings

While Intertanko’s leadership may be backing slow steaming, its members have not yet thrown their collective weight behind this solution, with members such as Almi, Maran and Neda Maritime all having opted to install scrubbers on VLCCs.

Scrubbers, also known as marine exhaust gas cleaning systems, remove sulphur oxides from engine and boiler exhaust gases and come in two main varieties.

In an ‘open’ scrubber, seawater is taken in and used in the scrubbing process – exhaust gas in the scrubber is sprayed with seawater and the SOx reacts to form sulphuric acid - before being treated and discharged, with its natural alkalinity removing the need for caustic soda to neutralise the acid.

A ‘closed’ scrubber works on the same principle of the exhaust gas being converted to sulphuric acid and neutralised, but in this case freshwater with added caustic soda is used that is continuously circulated. A small amount is bled off and treated before either being discharged directly to the sea, or to a holding tank if zero-discharge mode is required.

There is a third variety, of ‘hybrid’ scrubbers, which can operate on either an ‘open’ or ‘closed’ basis, depending on the operator’s requirements; for example, a ‘closed’ system may be favoured in lower-alkalinity waters.

While slow-steaming does not require any initial capital expenditure, Exhaust Gas Cleaning Systems Association (EGCSA) director Don Gregory pointed out that if the alternative is using low-sulphur fuels, which cost more than heavy fuel oil, the cost of fitting a scrubber could be covered by the amount saved on fuel costs, even with slow steaming.

Taking the example of a 350,000 ton VLCC running at 10 knots, using 40 tons of fuel a day for 280 days of the year with a fuel price difference of US$300, Mr Gregory said the costs of installing a scrubber could be covered in a year to a year and a half, due to the extra costs incurred by low-sulphur fuel, which could range from US$3.3M at 10 knots to nearly US$7M at 14 knots.

He also noted that the money saved by installing a scrubber could also be used to cover carbon emissions taxes, rather than this being an additional cost as could be the case if low-sulphur fuel were used.

“It’s a business assessment, and the assessment has got to say ‘can I get charters if I cost an extra US$3.3M to US$7M a year for fuel?’ said Mr Gregory.

Some shipowners have already made their decision, with Trafigura telling Reuters in March that its 32 newbuild tankers, the bulk of which are to be delivered in 2019, will all be equipped with scrubbers in advance of the 2020 sulphur cap.

In May, Gunvor, Oceangold Tankers and Maas Capital announced a new joint venture, Clear Ocean Tankers, with six contracted newbuild vessels – four MR2 product tankers and two LR2 product tankers – to be delivered “scrubber-ready” in the first-half of 2019.

And in the chemicals sector, Inventor Chemical tankers AS recently opted to have seven of its vessels fitted with Clean Marine’s CleanSOx Compact scrubbers, which have an ‘All stream’ ability, allowing one scrubber to treat exhausts from all sources onboard vessels.

Concerns about the costs of fitting scrubbers may also be somewhat ameliorated by financing being made available. Goldman Sachs told S&P Global Platts in May that it will make available up to 25% of the initial capital outlay for tanker owners seeking to fit scrubbers, as well as providing assistance securing additional funding. The bank is also looking to work with a partner to ensure supply of high sulphur fuel oil (HSFO) at ports for customers taking advantage of this option. Goldman would seek to make its money back in one to two years from savings shipowners would make by sticking with HSFO, rather than more costly low-sulphur fuel.

A speed reduction of 30% could reduce the tanker fleet’s average emissions by 25 million tons