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Means to an end: Cleaning up emissions

It is a stormy passage ahead as the IMO tries to update global ship emissions regulations to satisfy growing environmental pressures. But while shipping wants a global IMO regime, stricter regional rules are probably here to stay. Krystallon believes scrubbers will play a part in meeting new emission standards, and told *Bunkerworld* London's Unni Einemo why.

There is no doubt about it: ships will have to make deeper cuts in their output of sulphur oxides (SOx) and nitrogen oxides (NOx) than what they are currently required to do. Cuts in particulate matter (PM) will also be ushered in, and controls of carbon dioxide (CO2) output may not be far behind.

The only real question is how much, when, and how?

A process is underway at the International Maritime Organization (IMO) to revise MARPOL Annex VI, 'Regulations for the Prevention of Air Pollution from Ships'. The IMO's Marine Environment Protection Committee (MEPC) is due to consider amendments to the Annex in July, based on proposals from the Bulk Liquids and Gases (BLG) Working Group on Air Pollution.

There has been lively debate at the BLG. An IMO official told *Bunkerworld* in March that while new NOx rules look likely to go ahead, as well as an introduction of limits to PM, there are very divergent views on how to address SOx emissions from ships.

At a November meeting last year, several possible SOx reduction strategies were identified. They ranged from a virtual status quo but with more Sulphur Emissions Control Areas (SECAs) being introduced, to calls for a global 1% sulphur cap, falling to 0.5% at some stage in the future.

One of the options is broadly based on the radical 'distillate proposal' put forward by tanker industry association INTERTANKO, while another option sets the same emission reduction goals, but without restricting the

fuel to distillates. It would allow ships to choose between using distillates, low sulphur fuel oil (LSFO), or abatement technologies to achieve SOx reductions.

heavy fuel oil (HFO) by ships to stay in business, such as bunker suppliers.

Several bunker suppliers have already made significant invest-

ments to ships.

Don Gregory, Environment and Sustainability Director at BP Marine, has been a critic of the distillate proposal. He claims that it fails to take into account that projected growth in global shipping would cause SOx emissions to eventually rise even if a global cap was reduced from 1% to 0.5%.

He has also argued that by prescribing the fuel, INTERTANKO's proposal would strangle positive developments such as abatement technologies for ships.

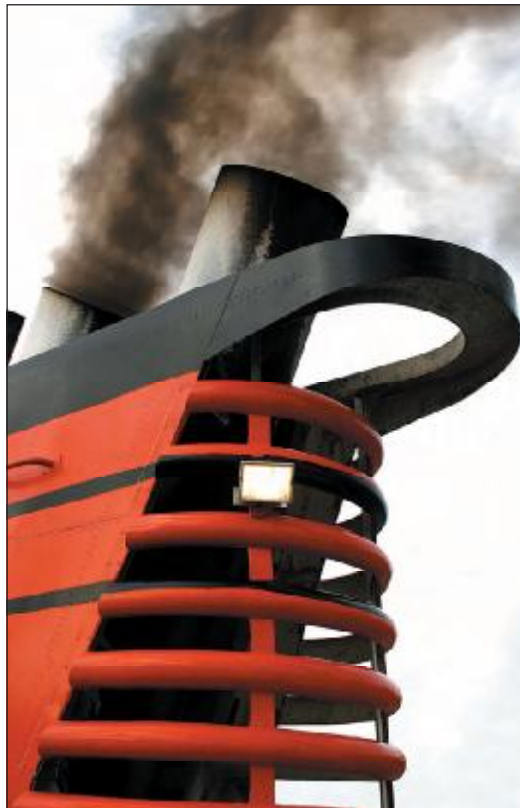
BP Marine is one of the partners in scrubber manufacturer Krystallon, which has a product it claims would allow the continued use of regular high sulphur fuel oil (HSFO) on ships, while meeting even the most stringent emissions requirements.

Many shipowners have yet to be convinced that exhaust scrubbing is a cost-effective and relatively simple way to comply with emissions regulations, but Krystallon's Business Development Manager, Andy Osbourne, is confident that its technology has what it takes.

Currently, Krystallon calculates that it would take three years for a scrubber retrofit to pay for itself if the LSFO premium over regular fuel was \$40 per metric tonne. Payback time for incorporating scrubbers on new-builds would be less.

If ships were made to choose between burning distillates, or use HSFO and scrubbers, the payback time would be much shorter due to the significantly higher cost of distillates compared to HSFO.

The arguments in favour of scrubbers go beyond just cost



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The INTERTANKO proposal has proved divisive among shipping organisations and alarmed industries which are built around the continued use of

ments to bring LSFO to the market, not to mention huge expenses on upgrading their bunker supply vessels to double-hull to be able to continue delivering heavy grade

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Osbourne said that while there was some rationale behind INTERTANKO's distillate proposal for reducing SOx emissions, it failed to take other emissions into account.

been classed as oily waste under MARPOL. He admitted that slops can be a problem due to extortionate disposal costs at some ports, but estimated that a scrubber would only add about

Osbourne said the monitoring equipment was sought-after by companies like BP Shipping, which is likely to become the first ever tanker owner to sign a deal for trialling Krystallon's scrub-

make the use of scrubbers or equivalent abatement technology mandatory.

Making abatement mandatory would also assist in the introduction of emission offsetting or trading schemes - as would the introduction of emission monitoring technologies on all vessels, Osbourne suggested.

The lobby group Shipping Emissions Abatement and Trading (SEAAI) would also like the IMO to make provisions for emissions trading under MARPOL Annex VI, but has made little headway so far.

At a roundtable debate in London in March organised by SEAAI, the UK's Minister of State for Transport, Dr Stephen Ladyman, said he was a "big fan" of emissions trading and called it an "elegant way of achieving emissions reductions". Despite that, he said he was not sure if including emissions trad-

... INTERTANKO has suggested a global low sulphur limit would do away with the need for various regional emission standards, and maybe even more stringent sulphur limits inside ports.

Although INTERTANKO has said that switching from HFO to distillates reduces not just SOx, but all types of emissions from ships, Osbourne believes distillates would fall short of upcoming PM reduction requirements.

On that basis, LSFO is also nothing but a temporary solution to reducing harmful shipping emissions, as this fuel addresses only the SOx issue, not PM. Scrubber trials, meanwhile, have proven the ability to remove more than 80% of PMs.

In arguing its case, INTERTANKO has suggested a global low sulphur limit would do away with the need for various regional emission standards, and maybe even more stringent sulphur limits inside ports.

That seems unlikely to happen, however, as regulations are in the making that will eventually require ships to burn fuels with a 0.1% sulphur limit while in port.

If anything, significant jurisdictions like California and the European Union may well continue on a path that will force the IMO's hand.

The California Air Resources Board (ARB) has implemented sulphur limits of 0.5% and 1.5% on fuel in ship auxiliary engines within 24 nautical miles of California ports and while at berth, and is looking at lower limits from 2010.

Osbourne told *Bunkerworld* that the regulation allows for an 'alternative compliance plan', which means a ship could combine a scrubber with burning HSFO in its auxiliary engine and still comply. Under these conditions, he said payback time for installing a scrubber could be as little as six months for a containership.

While scrubbers have been widely mooted as an ingenious solution to shipping's emissions problems, objections and concerns have been cited with regards to waste streams and wash water.

Osbourne explained that waste from scrubbers, although it is mainly carbon residues, has

15% to a ship's regular oily waste production.

He added that Krystallon is looking into ways of transforming the waste stream into solid form, or bricks, which could have commercial use.

Concerns about emissions to water is another factor that has stalled regulatory approval of scrubbers, especially in enclosed ports and estuaries.

According to Osbourne, the sticking point is to make sure that what comes out has a similar PH value as what goes in, be it seawater or freshwater.

Krystallon's water treatment plant is based on proven technology used by BP on oil rigs. "We're very confident that we will pass wash water criteria," Osbourne told *Bunkerworld*.

The company is also in the process of getting classification society type approval for the scrubber and its integrated emissions monitoring system.

It is going for 'Type B Approval', which means the scrubber system will be officially recognised as being able to prove a ship's compliance by continuously monitoring emissions to air and water. It means Krystallon will be able to develop and improve scrubber efficiency without having to go through the type approval process again.

The monitoring equipment incorporated into Krystallon's scrubbers is the result of a deal between BP Marine and Cascade Technologies, giving BP access to Cascade's pioneering quantum cascade laser (QCL) technology.

The combination of the QCL technology with Krystallon's seawater scrubbing technology will allow operators to measure SOx and NOx and CO2 emissions quickly, accurately and cost-effectively, according to Krystallon.

Although the QCL technology is currently only linked to Krystallon's scrubber, it may well be sold to the market on its own as a means for vessels to monitor their compliance with emissions.

bing technology.

Compared to Martek Marine's MariNOx system, the first ever Type Approved on-board NOx/CO2 and engine efficiency monitoring system, Osbourne said the laser technology monitoring system was like "an iPod to



Andy Osbourne: Scrubber technology has what it takes

the first ever transistor radios."

Krystallon is not the only company developing abatement technology, so it is not alone in wanting to ensure that technology solutions remain firmly on the agenda in the shipping emissions debate.

The possibility of a counter proposal to INTERTANKO's distillate submission has been discussed, and Osbourne indicated that they were working with a shipping industry group to submit a proposal which would

ing in MARPOL Annex VI regulations was the way forward and would not commit to push it at the July MEPC.

He did, however, say that the UK would push at the IMO for a reduction of the sulphur cap applicable in SECAs from the current 1.5% to 1% by 2010 and 0.5% by 2015, as well as actively promoting the use of scrubbing abatement technology.

That may reassure those who fear that the end of the bunker industry as we know it is nigh. ■