



ExxonMobil

IMO 2020: The last leg of the journey

The ExxonMobil & Bunkerspot roundtable at Nor-Shipping 2019

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With only a few months to go until the introduction of the 0.50% global sulphur cap, stakeholders in the shipping and marine fuel sectors are still engaged in some tough decision-making about their respective routes to compliance with the regulation.

Even at this relatively late stage in the countdown to IMO 2020, some in the industry continue to promulgate the view that the introduction of the new sulphur cap can still be deferred, despite repeated assertions from the International Maritime Organization (IMO) that there will be no turning back from the 1 January 2020 deadline. However, in the first half of 2019, some clarity has begun to emerge over the IMO 2020 compliance 'picture', with more owners disclosing their strategies (often a combination of the available compliance options across company fleets depending on vessel type and trades).

There has also been a flow of more detailed information about compliant fuel availability, in terms of refiners' and suppliers' product offerings and regional supply locations. Fuel testing agencies have been able to sample some of the new 0.50% sulphur fuels which are being trialled in the market and initial reports on the composition and performance of these fuels have been largely positive, albeit based on a very limited number of samples.

The commercial availability of 0.50% sulphur fuels is expected to begin from late Q3/early Q4 2019, and organisations such as the IMO, ISO, CIMAC and P&I Clubs are making concerted efforts to assist shipowners and operators in preparing for the commercial, technical and operational challenges involved in the IMO 2020 transitional phase.

IMO 2020 will fundamentally and irrevocably change the global marine fuels sector. Estimates for total

global marine fuel consumption range from 255 million metric tonnes (mt) to 300 million mt per year and, at present, high sulphur fuel oil (HSFO) accounts for around 75% of total fuel consumption, with marine gasoil (MGO) and marine diesel oil (MDO) together accounting for some 23% and the remaining 2% made up of alternative fuels, such as LNG, hybrid and battery propulsion. On the demand side, the largest tonnage in the global fleet – around 20% of vessels – consumes 80% of total global bunker volumes.

As a major global purchaser of HSFO, the shipping industry is used to this product being widely available to it. However, after 2020, the sector will not be at the 'top table' for middle distillate product and will have to compete with other industry sectors for volumes. Furthermore, for those owners and operators who choose to comply with IMO 2020 through the use of exhaust gas abatement technology, there are also concerns over the continued – and widespread – availability of HSFO.

There are still more questions than answers over IMO 2020, and much of the 'information' in relation to the introduction of the 0.50% sulphur cap which is currently circulating in the industry is often anecdotal and only offers a broad-brush approach to the issues at play.

At this year's Nor-Shipping in Oslo, ExxonMobil and *Bunkerspot* brought industry experts together for a closed roundtable which provided a forum for a much more granular examination of IMO 2020 compliance options. As this report highlights, the insights and perspectives offered by the stakeholders who took part in the roundtable collectively provided a pragmatic and very useful 'state of the nation' account of how ready the shipping and the marine fuel industries really are for 1 January 2020.

Buying compliant bunkers – 0.50% sulphur fuel and distillate availability

When the 0.10% sulphur limit was introduced in emission control areas (ECA) in 2015, new 0.10% products were introduced into the market some 3-6 months before the regulation came into effect. At the time, some industry stakeholders suggested that refiners and suppliers had made their products commercially available too close to the date of the regulation and could perhaps have provided owners and operators with a longer lead time to understand the characteristics of the new 0.10% sulphur fuels.

This question was put to Luca Volta of ExxonMobil at the roundtable in relation to the timing of the introduction of commercially available 0.50% sulphur fuels.

‘From a refiner’s standpoint, could we have produced a fuel a year ago?’ he responded. ‘Technically, everything is possible, but remember, a refinery is a complex animal – there are sister ships but there are no sister refineries!’

‘The second thing to say is that, technically, we could have had a fuel a year ago – but for whom at that stage?’

Volta noted that R&D efforts began in relation to the 0.50% sulphur fuels immediately after the 2015 ECA regulation came in to play.

‘To be ready and to put the specifications in the market in front of owners – as we are doing today – also required additional tests, such as combustion, CCAI and FIA, and all the technologies and patents that we have deployed to increase compatibility.’

‘Without starting this process years ago, we wouldn’t be in the position we are today.’

ExxonMobil has made it very clear that its proprietary 0.50% sulphur fuels will be available at the time that owners and operators are ready to make the switch to IMO 2020-compliant fuels, said Volta. As such, the product will be commercially available from the end of September/early October for those vessels deployed on long voyages, with a 90-day round trip.

Volta also highlighted the importance of understanding the marine sector’s requirement for compliant product

in the context of the total refining demand/supply equation.

‘While the marine segment is an important segment for refining, it is only about 8% of the total transportation fuel energy mix.’

‘Some 10% is for aviation and the rest is for heavy duty and light duty vehicles; so no refinery is run with the single purpose of producing marine fuels, and this sometimes is still a bit daunting for some of the customers that we talk to.’

IMO 2020 will require the refining sector to switch around 3 million barrels per day (b/d) out of HSFO to compliant fuels, and refiners have been making significant investments over the past 18-24 months to change product slates at refineries on a global basis in order to deliver sufficient availability of IMO 2020-compliant fuels. For its part, ExxonMobil has committed to multi-million-dollar equipment and technology upgrades across its refineries in the ARA region, the US East coast, the UK and Singapore.

‘For ExxonMobil, it has required a big investment from a product development standpoint as well as refinery configuration,’ said Volta.

‘But will there be enough product around the world? I don’t think we will ever go back to the situation we are in today, where marine gasoil and fuel oil are available at every port around the world in whatever quantity you want.’

According to Volta, compliance with IMO 2020 will require a major change in the ‘mindset’ of those involved with purchasing bunker fuel.

‘We are going from a mentality of procuring fuel to a mentality of managing fuel,’ he explained. ‘The two things are very different, and the fuel management approach starts at the vessel’s trade route and looks at where you can buy the fuel that you need.’

‘From ExxonMobil’s standpoint, we have moved away from just manufacturing of the fuel – what comes out of the bottom of the vacuum tower or some of the processes – into formulating the fuel, and the difference between manufacturing and formulation is science and technology.’

ExxonMobil has made a commitment that its 0.50% sulphur fuels (which are currently residual in formulation) will conform with the ISO 8217:2017 specification. While acknowledging that international and regional oil companies are beginning to provide more information on the types of fuel they will be producing in compliance with the 2020 regulation, Volta noted that: 'All the announcements have talked about ISO 8217, without specifying to which year of the specification their fuels will conform; we are the only company that has said very clearly that our fuel will meet the ISO 8217: 2017 spec.'

He continued: 'I would love to see that level of clarity from other suppliers in the market because it is in the interest of the marine industry; such a level of clarity raises the bar for everyone to produce the highest quality fuel.'

'The 2017 specification of ISO 8217 provides more protection and I hope other fuel producers follow suit.'

At the roundtable, Jonas Larsen of Western Bulk and Jakob Fabricius of Torvald Klaveness expressed confidence that 0.50% sulphur fuels would be broadly available in the main bunkering hubs, but they were not so convinced over initial availability in smaller ports.

'I think the infrastructure in a lot of the smaller ports is going to be the main challenge,' said Fabricius.

'They are going to have to put their eggs in just two baskets: distillates and high or low sulphur fuel oil, and there will not be all the options that we have today.'

Roger Strevens of Wallenius Wilhelmsen, and also representing Trident Alliance, suggested that the issue of compliant fuel availability required closer and more vessel-specific consideration.

'The first question is whether there is enough fuel for us as a company – and that's a selfish perspective!

'But then the question is whether there is enough for our segment – the people we compete against – and I think the answer will be different for different segments because of the way that vessels are operated.'

'If you are in the liner business, you know where your vessels will be months in advance, and this helps you to plan in advance and consolidate where you do your bunkering.'

He continued: 'This doesn't mean that it's going to be easy, but perhaps it's not quite as much of a challenge as if you are a small operator on spot or tramp business, and you don't know where your vessel is going to be next.'



Christos Chryssakis concurred with Strevens' viewpoint, noting that this has also been the feedback from DNV GL's clients. He also said that a key question is not only if compliant fuel is available but what type of fuel it is.

'There are concerns for small vessels with few fuel tanks; maybe some of them will be pushed to use distillate, for example, and they are not really excited about this option.'

As the maritime industry focuses on the formulation, stability and compatibility of the new raft of 0.50% sulphur fuels, the general perception has been that marine gasoil will be the default position should there initially be regional variations in the availability of 0.50% sulphur marine fuels. However, in response to Chryssakis' comments, Luca Volta cautioned: 'Don't you think that your clients' assumption that marine gasoil will be available in the quantities they need is a flawed assumption?'

He explained the basis for this premise: 'From a simple blending standpoint, a lot of those molecules have been taken from the distillate pool – not just from marine gasoil but from ground transportation fuel and even up to jet fuel – and used in order to formulate 0.50% sulphur compliant fuel.'

'I think that when someone says I am not going to find 0.50% but I can always rely on marine gasoil, I would be cautious over the underlying assumption that gasoil

will be available on the day I need to bunker, and in the volumes needed.'

Jonas Larsen, confirming that Western Bulk would be seeking to use gasoil in some scenarios, pointed out that the use of MGO was not just predicated on availability but also on the restrictions posed by particular vessels.

'It depends on the restrictions of tanks and capacity,' he said. 'Without doubt, for certain trades with long hauls and deploying smaller ships, we are going to have to burn some gasoil.'

Jakob Fabricius said that there was increasing market certainty that the key global ports would have compliant product availability. While refineries are already providing some information about their 0.50% sulphur proprietary products, he also highlighted that other suppliers would be blending product to meet regional demand.

'I am sure that blenders are going to have a fantastic time,' he said. 'All the big trading houses that have the capability of blending in certain areas are going to start sending the product out to where it is needed.'

'The product will not be made in every little port in the world; there is going to be much more transportation of the various types of fuels and gasoil,' he said.

While there may be an arbitrage from a trader's standpoint in covering shorts, Luca Volta asked whether there may be an arbitrage from a shipowner's perspective.

'As a shipowner or operator, I am going to have to think about the possibility that I can only bunker in Port A, rather than in Port A, B or C, as in the past,' he noted. 'And will I lift more product in Port A because I don't know what kind of products I can get at other ports?'

'I think we have to think that way,' agreed Fabricius. 'The worst thing that can happen is that we are in an area where we can't get what we need – and distillate as a back-up plan is not always the right answer, so having a much higher focus on whole voyage planning is crucial.'

While fuel suppliers may be offering fuel buyers reassurance that compliant fuel will be available to them when they begin to embark on fuel switching in the final run-up to 2020, Michael Green of Intertek ShipCare said that, at present, there are limited quantities of 0.50% fuels available in the market. In China, where there are nationally-designated domestic 0.50% sulphur ECAs, compliance has, to date, largely been achieved through the use of distillate.

'There is beginning to be a little more [0.50% product] in China, but the vast majority of this type of fuel that we are seeing on a global basis is for trial purposes, through specific agreements with owners and suppliers – and not in huge quantities either.'

'There is a specific focus on western Europe, but any wider spread is very limited,' he said. 'You could probably count on one hand the number of samples we have seen coming from different areas.'

'If you go back to where we were at this point in 2014, then we had seen a lot more samples in relation to the 0.10% sulphur fuels that were coming through than the 0.50 [% sulphur fuels] that we are seeing now.'

EXPERT INSIGHTS

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HSFO and scrubbers – the debate continues

The use of scrubbers in combination with HSFO as an IMO compliance choice is an issue that continues to polarise industry opinion. Whether it be concerns over the reliability of the technology, doubts over the continued use of open loop systems, the environmental impact of wash water, and the future – and global – availability of HSFO, the installation of exhaust gas abatement systems elicits the expression of strong views, from proponents and critics of the technology alike. The use of scrubbers also proved to be the catalyst for some very lively and engaged discussion at the Nor-Shipping roundtable.

Participants were somewhat divided in their view of the longer-term availability of HSFO in the marine fuel pool.

‘This is probably not a 2020s’ issue so much, but at some point in the future there is going to be a drying up or a constriction on the number of places where you can get HSFO if you are operating with a scrubber,’ said Roger Strevens.

Current estimates for the use of scrubbers in 2020 range from 2,000-4,000 vessels, but Kjeld Aabo of MAN Energy pointed to increased interest in scrubbers from the container segment – very large bunker fuel consumers.

‘We will see much more of this,’ he said.

John Kerr of shipmanager V.Group said the company had undertaken analysis of certain trigger points which could potentially provide the impetus for scrubber uptake. These include delivery times, vessel fuel consumption of over 46 metric tonnes (mt) a day, and potential payback periods of 15-18 months.

‘The big question is if there is an indefinite supply of HSFO then other people may follow, but at the moment its availability is seen as quite short term,’ he said.

DNV GL collects and collates information on scrubber numbers directly from the manufacturers, and, according to Christos Chryssakis, there appears to have been a recent slowdown in scrubber orders.

‘I think this may be related to the long waiting times for

scrubber installation; you can’t order a scrubber now and secure it for next January so people are waiting a little to see what will happen.

‘Furthermore, the price spread between HSFO and low sulphur fuels is not as wide as anticipated a year ago, and people are also looking to see what will happen with ports not allowing the use of open loop scrubbers.’

Roger Strevens also suggested that one limiting factor in the uptake of scrubbers could be a lack of available finance for some companies that would like to install scrubbers – a view that was shared by others at the roundtable.

Chryssakis said that if the price spread between HSFO and low sulphur fuels proved to be \$200 or below after 2020, then this could also act as a brake on scrubber adoption.

He noted that according to DNV GL estimates, some 15%-20% of marine fuel consumption may be associated with scrubber use after 2020. He also highlighted that scrubber installation could be considered as a means of extending vessel life.

‘About 80% of projects today are retrofits,’ he said. ‘Some owners are retrofitting scrubbers on older vessels because they are not fuel efficient – and scrubbers make them a little more competitive.

‘The question is how long will such vessels be operating?’

With bunker fuel accounting for between 30%-60% of vessel operating expenditure (depending on vessel type and the cost of the fuel), Kjeld Aabo said that, in terms of IMO 2020 compliance, cost will be the fundamental driver in shipowners’ strategies.

‘We have seen the big container vessel operators waiting until the last minute to order a scrubber.

‘We have seen some say we don’t like scrubbers and will take LNG instead, but then we see them suddenly converting old and new vessels to scrubbers.

‘I have been in the industry for a long time, and it may sound a little cynical, but everybody wants to be green and nobody wants to pay for it.’

Roger Strevens clarified Wallenius Wilhelmsen's approach to the issue of scrubber installation.

'Some take a binary view that scrubbers are the cheapest option, but if that was true there wouldn't be any 0.50% fuel – but, of course, it's much more complex than that.

'We are not a scrubber advocate; we are an advocate of the lowest cost risk on a per vessel basis. About a third of our owned fleet will have scrubbers and the rest will be using compliant fuels.'

Strevens also addressed the current debate over the continued use of open loop scrubbers in the light of recent decisions by some ports – including the bunkering hubs of Fujairah and Singapore – to ban their use in port waters.

'We have only installed hybrid systems – which is probably not a bad idea at this point – but it would be interesting to ask on what scientific basis those local restrictions have been applied?

'If there isn't a robust and widely accepted scientific basis, then the restrictions must be based on suspicion, feeling and scaremongering, which is not a good approach for building policy.'

According to Strevens, a pragmatic and sensible way forward on the scrubber issue would be to undertake 'a comprehensive assessment of the health and environmental impact of scrubbers as well as fuel solutions.'

Luca Volta noted that there are currently many mixed messages about the use of open loop scrubbers, with

some NGOs putting forward their arguments against them and a number of industry reports in circulation that have come to different conclusions.

'One of the things that is important for me is a consistency in approach, and if the IMO is not able to provide [its own standpoint] quickly enough, then port authorities will take unilateral action, and this creates an issue for everyone across the value chain,' he said.

For Rolf Stiefel of WinGD, how the discussion over regulation compliance options has played out could not have been foreseen when the decision was first taken to introduce a sulphur cap well over a decade ago.

'Did the politicians foresee that there would be 0.50% sulphur fuels? Was it foreseeable that the scrubber story would become as big as it has?

'I believe that the IMO and the whole shipping industry will face many more heavy winds from public opinion going forward.'

Roger Strevens picked up and expanded on Stiefel's comments: 'I agree, and I think you make a very interesting point about what the regulators were actually trying to achieve.

'What has been the driver of sulphur regulation over the past few years? Was it environmental concern? Yes, to an extent, but the bigger driver was health.

At MEPC 74 in May this year, a proposal by EU countries to undertake a comprehensive environmental impact assessment of scrubber wash water was accepted. This is a good start, said Strevens, but to establish



a proper basis for policy development the scope of an environmental and health assessment should be extended to the entire performance of scrubbers and, separately, to the different IMO 2020 compliant fuel options.

However, he said, 'Is there a case to be made on the scientific literature that is currently out there that one is conclusively better than the other?'

'We commissioned an independent academic to find the answer – and we stayed neutral – but the finding was that there is not enough scientific literature out there one way or the other, and this is an unsatisfactory position. It's not a "yes", it's a "we don't know".'

With the abolition of the 3.50% sulphur cap, there have been suggestions that the sulphur level in HSFO could rise (the current global average is around 2.7% sulphur). However, while roundtable participants acknowledged there might be a slight uptick in the sulphur content of HSFO in the very short term, this would not be a permanent situation.

John Kerr of V.Group also looked at the onboard operation of scrubber technology, noting that: 'Some of the designs are already on the 3.50% level with the volume of water they are using to scrub, so if you put the sulphur content up, you are not going to meet the criteria.'

'Fuel consumption increases, and some ships are having to run two generators at the same time now, so you are adding 4-5 mt of fuel consumption, which increase CO₂ emissions as well.'

Kerr also said that one of the difficult discussions that V.Group, as a ship manager, has been having with its clients is how can they be reassured that they will get a return on their investment in scrubbers.

As Kerr explained: 'Some of them are in big pool agreements, so how does the pool differentiate between those who have invested in a scrubber and those who have said no – do the scrubber adopters get the full \$40,000 a day reward?'

'And the charterers, are they really going to pass on the differential? They may take the scrubber-equipped ship before they take the other ship, but are they really going to pass on that reward?'

EXPERT INSIGHTS

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Counting the cost of compliance

The cost of IMO 2020 compliance was a thread that ran throughout the roundtable discussion. While there have been some forward trades in 0.50% sulphur fuels, any clarity on the price per metric tonne of these new fuels is only going to emerge when they become commercially available. Participants were keen, however, to consider how owners and operators are looking at projected capex and opex when weighing up their 2020 strategies, and how the fuel cost versus fuel quality equation is being calculated.

Michael Green noted that: 'We have certainly spoken to vessel owners and operators who are either going to distillate as their primary compliance option or who have said that they will use it on a very short-term basis – they are going to use it to get over the 2020 hurdle.'

Kjeld Aabo said that what is seen as the lowest cost option will be the driver behind many decisions. 'Looking it from an engine designer's point of view, it seems to be mostly about money – what the cost of the different products will be and, of course, the belief in the prices of the new fuels.'

However, Luca Volta stepped in to challenge this viewpoint. 'The cost of fuel is one of the dimensions of the total cost of operation – it is not the only dimension.

'If you use a bad fuel, then you could have an extreme dimension where you have engine starvation and this will affect the quality of your service.

'If your fuel is full of cat fines, if it is unstable and if it hasn't got the right combustion properties, then you are not getting your money's worth.'

Roger Strevens suggested that it was important to be aware of which party is paying for the bunker fuel. 'Is it the owner/operator of the ship or is it the charterer – this can have an impact too.'

John Kerr was in full agreement with this viewpoint, adding that: 'For a lot of charterers it is a debate on which version of ISO 8217 is used – some are still using the cat fines spec of 80 ppm.

'It does come down to cost,' he emphasised. 'It is the owner's budget against the charterer's, and if

the engine breaks down then the charterer takes the owner for the off-hire.'

Steve Walker also highlighted that while the 2017 version of ISO 8217 offers the owner a higher degree of protection in terms of engine operation, 'there is still an industry issue where we default to low costs and we accept all the problems that are there – the ones we can foresee and also the ones that we do not know about.'

He also suggested that rather than the ISO 8217:2017 specification being the first item 'to have a red line put through it' in a charter party negotiation, in future 'there is probably a place to have a conversation with the charterer which points out his actions are potentially going to have an impact on the level and quality of service he is given – and this is why.'

'It's a difficult situation,' countered Kerr. 'As managers we are trying to give owners that information and those recommendations, but it is ultimately back to cost: if ISO 8217:2017 is specified, then the charter rate will come down because it is going to cost more for the bunkers.'

Some estimates suggest that the global marine fuel bill could escalate by as much as \$50 billion as a result of higher bunker prices after 2020, and the roundtable participants also provided their perspectives on how these additional costs could be passed on.

Luca Volta posed the question: 'if a vessel goes from China to northwest Europe, and each container it carries contains 10,000 pairs of trainers, then the IMO 2020 cost could be 10 cents per pair – are we each prepared to pay an extra 10 cents?'

'This is looking through the wrong end of the telescope,' said Strevens. 'It's not the \$10 more per car or the 10 cents for trainers; that's not how the customer looks at it.

'They look at \$10 on [each of] 300,000 cars and so then you have got a big number, and that's a huge target for the procurement guys that you are up against.'

Assuming that additional fuel costs can be fully passed on is a false premise, suggested Strevens. 'The initial



position from almost every customer that I have met is that “yes, we support the implementation of this change, but we are not paying for it”.

‘It’s just part of the commercial battle. You don’t get one bag of money for fulfilling the service and a different bag for the extra cost of IMO 2020 – you just get one. You can split it up as many ways as you like but that is how it is.’

Stevens also highlighted that previous environmental legislation enacted within the maritime sector had largely been achieved through operational and

technical solutions, but the level of cost associated with IMO 2020 compliance meant that the regulation had a very significant commercial dimension.

Luca Volta pointed out that in the ground transportation sector, fuel consumers (car owners) had long ago accepted that they would be liable for taking on additional costs when prices went up. While he acknowledged that there is currently a lot of discussion over which stakeholders are prepared to invest in a green fuel or supply chain, ultimately the higher bill is ‘a societal cost,’ he said, ‘and we – the retail customers in our day to day life – will all pay for that in some shape or form.’

Jonas Larsen of Western Bulk said he is already seeing the potential fuel price hike being passed on in freight rates – even from Q4 this year. ‘So, to my mind, the end consumers are already going to be paying the bill – and I am assuming this goes for tankers and container lines as well.’

DNV GL’s Chryssakis said that he also envisaged that IMO 2020 costs would eventually be passed on to the consumer, but he did not see that this would be realised in the short term (by 2020). He also suggested that some companies in the maritime sector may not have the financial strength and resources to withstand higher fuel costs.

‘Some of these companies may go out of business – it will be a matter of cashflow. At the end of the day this might be good for the industry: we might have a more efficient industry and more efficient vessels – but it is going to be a difficult time,’ he cautioned.

EXPERT INSIGHTS

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Product profile – the new 0.50% sulphur fuels

Discussion then turned to the formulation and characteristics of the new raft of 0.50% VLSFO fuels which are expected to become commercially available in Q3/Q4 this year as shipowners implement their fuel switchover plans.

ExxonMobil has already announced the initial supply locations and specification of its 0.50% sulphur bunker fuels, to be commercially branded as EMF.5™ fuels. Residual in nature, these fuels conform to the 16 parameters of ISO 8217: 2017, are compatible with each other – subject to best practice in storage and handling – and ExxonMobil has also given assurances over their stability, combustion and waxing properties.

In the bunker market in general, there will be some straight run 0.50% sulphur fuels, but the majority of the fuels on offer will be blended products. With the 0.50% VLSFOs, the focus is now on hitting the compliant sulphur content, rather than viscosity, and some of the fuels already being trialled in the market are showing a wide range of viscosities.

‘I think that some of the issues that we have seen in 2018 and 2019 in terms of contamination will resurface,’ said Volta. ‘This is because if the industry is trying to tackle the issue of availability, you will need to go deeper into the refinery processing, and you will need to start blending in a more extreme fashion than happens today.’

‘We may see some less scrupulous suppliers; I see the market potentially stratifying between quality, reputable suppliers, and those that are less so.’

Reporting back on the 0.50% sulphur fuel samples analysed by Intertek ShipCare, Michael Green said that, to date, they have been largely residual in nature, with viscosities ranging from 80 centiStoke (cSt) up to 240 cSt. Metal content is proving to be relatively low, and pour point is toward the higher end of the scale.

‘The fuels have generally been quite good quality,’ he said. ‘We have done a lot of combustion testing, looking at the estimated cetane number, and, on the whole, they have been good.’

‘Once we start to see these fuels supplied in much greater volumes, there will be a very clear two-tier system where there are fuels that are cheaper – and

price is often an indication of quality.’

Referencing experience with the 1.00% sulphur fuels mandated in ECAs from 2010, Green said that problems encountered with these products could manifest themselves with the new VLSFOs.

‘Where availability is tight, the blending processes will come back to the fore, and that will potentially introduce additional hurdles that we have to overcome,’ he added.

In terms of the blend stocks that could come into play after 2020, Volta said that ‘anything that has a low sulphur content is a likely candidate to try to find its way into a marine stream.’

He continued: ‘Blending is chemistry – it’s not about cocktail-making. There is nothing wrong with blending if it is done in the proper way, with the right science and the right chemistry.’

‘My concern is that there are going to be people that are going to try just to hit the sulphur – and that is a danger from both a fuel performance and a compliance standpoint.’

‘So, how can owners and operators fully distinguish between good and bad quality fuel?’ asked Christos Chryssakis.

‘Ask questions of your suppliers,’ said Volta. ‘Ask them what their product looks like, and what additional testing they have done. Ask them how their products perform above the ISO 8217:2017 16 characteristics set out in Table 2, ask them about the solvency residual quality of their fuel – there are a number of relationships that some of these fuels have in terms of their properties and the toluene content.’

He also pointed to the imperative of testing fuel over time; keep checking the typical characteristics of the product, he advised.

‘More reputable suppliers will have close control over these characteristics and there won’t be a huge amount of variability,’ he said.

‘If you do see variability it may be that different streams may be getting into that pool; the “typical characteristics” are going to be an interesting

discussion, and that comes from my experience of the ultra-low sulphur fuel characteristics.'

Kjeld Aabo also said that it would be useful for ISO and CIMAC to provide guidelines about the questions that should be posed about fuel characteristics and quality.

'It would be useful if there could be on-board stability and compatibility tests,' he said. 'We are working to see what is in the market, but the best proposition would be if the operator had one onboard.'

The ISO 8217 Working Group (WG) will publish a Publicly Available Specification (PAS) that will address 'specific considerations that may apply to some of the 0.50% sulphur fuels'. CIMAC WG 7 is preparing some guidance on fuel stability and compatibility that will be relevant to all fuel grades, and this will be published in Q3 this year.

'We have knowledge of the fuels that are out there,' said Aabo, 'but the unknowns are the critical issue – I am sure that the first six months will be a steep learning curve.'

Picking up this comment, Luca Volta took the issue of 'unknowns' in the future bunker market further, asking: 'What guarantee is there that some of the non-proprietary fuels that are being marketed today will be the same fuels somebody is going to buy on 1 January 2020?'

Michael Green agreed with this viewpoint: 'This is exactly the discussion we are having with people at the moment,' he said.

'The short answer is that we are seeing these specifically manufactured products which are being put out for trial; but will they look like what we are seeing when they become widely available in, perhaps, Q2 of 2020? The short answer is no.'

Green also referenced the global scope of the new 0.50% regulation. While the bunker supply infrastructure of northwest Europe and North America has already been subject to – and responded to – tightening regulatory strictures in terms of marine fuel sulphur content, other parts of the world have no experience of this. As a consequence, Green cautioned that there will be a 'huge variation' of products from a global perspective.

While the upcoming PAS on 0.50% VLSFOs will provide advice on fuel compatibility and stability, there has, however, been a call from some quarters of the industry for a new ISO 8217 specification to be issued in the light of the new VLSFOs.

In answer to this, Green explained: 'For those who are saying we need a new ISO standard now, I would say we need justification and certainty about the products we are going to get.'

'The ISO standard is based on the fuels that are out there at the moment; if you rewrite an ISO standard now, this is not going to reflect what we are going to see next year – we have got to get that experience under our belts.'

EXPERT INSIGHTS

Once we start to see these fuels supplied in much greater volumes, there will be a very clear two-tier system where there are fuels that are cheaper – and price is often an indication of quality.'

Michael Green

Blending is chemistry – it's not about cocktail-making. There is nothing wrong with blending if it is done in the proper way, with the right science and the right chemistry.'

Luca Volta

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Michael Green

Taking the alternative view

Come 2020, a small part of the marine fuel mix – perhaps 1%-2% – will be alternative fuels, principally, at this stage of the journey, LNG.

Kjeld Aabo told the roundtable that more than 280 MAN MEGI engines have been ordered, and operation on methane now adds up to some 500,000 service hours.

‘We have also sold engines to run on LPG, methanol and ethane, and, of course, we are now talking about ammonia.’

‘In my view, the question is how these fuels are produced; they should be from sustainable energy sources, otherwise it doesn’t make sense.’

From a technical point of view, there is not a problem with burning such fuels, but the complication is availability, said Aabo.

According to Christos Chryssakis, DNV GL statistics show that, excluding LNG carriers, there are 300 LNG-fuelled vessels on order or in operation.

‘The increase is not as impressive as we were predicting a few years ago,’ he said. ‘However, in the last 2-3 years, we have seen orders for large cruise ships, tankers and containerships.’

‘I think it is a good sign that we have seen these big players taking the fuel and I think we will see a much faster development in the bunker delivery infrastructure.’

‘I don’t think LNG is going to be *the* fuel, but it may be one of the fuels for the medium term,’ said Roger Strevens.

He suggested that the publication of the IMO’s initial greenhouse gas strategy in 2018, calling for a 50% reduction in shipping’s GHG emissions by 2050, compared to 2008 levels, had raised doubts about the long-term viability of LNG fuel in terms of decarbonisation targets.

Furthermore, 2050 is an absolute reduction target, Strevens highlighted, and it is not affected by growth in the global fleet. If fleet growth is factored in, then

an average reduction of 70%-85% per vessel must be achieved. This, in turn, suggests that GHG-free shipping must be a reality by 2050 and, he noted, underscores why LNG seems unlikely to have bright prospects in the longer term

Also, the IMO is calling for a reduction of ‘at least’ 50% in vessels’ GHG emissions by 2050, said Strevens, ‘and this is regulatory speak for an open door – they can come back through this at any point and they are not going to make it any easier.’

While it is difficult to predict the precise direction of the energy transition in relation to the IMO’s 2050 GHG targets, Volta said that LNG certainly had a role to play.

‘It’s a scalability issue,’ he said. ‘By 2040, the industry will need more than 8 million barrels a day of oil equivalent to move around.’

‘There isn’t going to be one solution but if you are looking at something that is viable, then LNG is what we have in front of us today.’

Roger Stiefel also added his voice to the marine LNG cohort.

‘Let me know how scrubbers help on GHG emissions,’ he said. ‘After the 2020 cloud has cleared up, I think LNG is going to become the option, especially for the bigger ships.’

He acknowledged that LNG is a fossil fuel, but he noted that bioLNG is becoming available. ‘It’s a drop-in fuel, and the engines don’t mind – it works,’ he said.

He also pointed to hydrogen as a drop-in fuel. ‘Tests have shown that you can drop 20%-30% of hydrogen into LNG and this decreases the carbon footprint.’

Stiefel acknowledged that methane slip remains an issue in terms of using LNG as a bunker fuel, but this is a solvable problem, he emphasised.

‘It will take another 3-5 years, and this problem will be reduced,’ he said, ‘but LNG is the most visible path I can see for deep sea shipping – I can’t see anywhere else to go.’

Going onboard – managing the 2020 fuel switchover

While the quality and formulation of the new VLSFOs was closely examined by roundtable participants, there was also consensus that best practice in onboard tank preparation and fuel management will be required, both in the 2020 transition, fuel switchover phase and beyond, as vessel owners and operators adjust to running their fleets continuously on low sulphur fuels.

‘Fuel management will be critical for the onboard management team,’ said John Kerr, and he also suggested that as vessel operators countdown to switching fuels, smaller parcels of fuel will be bunkered on a more regular basis to avoid commingling – and this could bring its own challenges.

Christos Chryssakis suggested that more frequent bunkering could occur in Q4 and that there could be some disruption in refuelling patterns for a period of 3-4 months.

There was broad agreement that the training of onboard crew in managing low sulphur fuels is essential.

‘At the end of the day it will come down to the human factor to make this a smooth transition,’ noted Roger Strevens. Rolf Stiefel concurred: ‘It’s up to the chief engineer and the superintendent to work together – not taking shortcuts but really closely analysing the situation.’

John Kerr also emphasised the importance of educating crews to handle the new fuels. ‘As a manager, a lot of resources are going into training and development,’ he said.

‘We are highlighting concerns and working with CBT training modules to get our crew as ready as we can, with strong risk assessment and management of change processes. Everyone talks about ECAs in relation to 2020 – it’s just seen as another step but there’s actually a lot more to it.’

Ensuring that there is sufficient onboard tank capacity to reduce the risk of mixing fuels will also be a challenge, particularly for small vessels which may only have a couple of tanks. Kerr told participants that V.Group has seen instances of bunker tanks being divided in

order to provide more flexibility in fuel storage.

Kjeld Aabo suggested that there may be an information ‘gap’ within some shipping companies, where knowledge about new fuels and onboard management is not disseminated from a group HQ to vessels’ crewmembers.

Steve Walker agreed, noting that: ‘How much of this information actually makes it to the coal face on the ship – to the young engineer that is operating the purifier or the chief engineer who is managing the overall vessel?’

Onboard preparations for 2020 will be detailed in individual ship implementation plans, but Luca Volta also highlighted the importance of supplier implementation plans.

‘As a supplier, I need to make sure that tanks are clean, fuel lines are properly flushed, and barges are cleaned.’

‘I always tell shipowners to ask the companies they are thinking of buying fuel from about their implementation plan. If you want to mitigate and manage risk, you need to ask questions about the fuel and the logistics.’

The issue of fuel compatibility, particularly in relation to blended VLSFOs, is one of the key concerns of the shipping sector in the run-up to 2020. However, participants agreed that in order to address another major concern – compliant fuel availability – vessel operators may have to draw fuel from many different sources.

If fuel mixing has to take place, Luca Volta warned against combining in equal quantities. With reference to ExxonMobil’s EMF.5™ fuels, he advised a mix ratio of 20:80/80:20. ‘We can achieve this through proprietary technology that enhances the compatibility characteristics of our fuels,’ he said.

He also highlighted that switching to MGO will bring its own challenges.

‘It’s not going to be a slam dunk with MGO because the cold flow properties of different gasoils can be very different – when you start commingling, that is the first thing that you should check.’

Michael Green provided some amplification to this observation: ‘This is a very important consideration because looking at the test data we have accumulated over the last five years, the fingerprint analysis that you see for distillate has changed significantly, particularly in relation to cold flow properties.

‘Obviously the step change in 2015 played a big part in that, and we are seeing a lot more distillate coming through that has a higher pour point and higher cloud point – and the interaction of those fuels can be very different.’

According to participants, onboard tank cleaning ahead of stemming low sulphur fuels may run the gamut from a full clean, to using additives, and to taking no action at all. While cleaning may mitigate the risk of fuel commingling, John Kerr also highlighted that the presence of iron in tanks could cause a problem: it remains in suspension in fuel and could cause significant damage to injectors and fuel pumps.

Christos Chryssakis said that more than 1,000 vessels are using DNV GL’s Ship Implementation Plan online tool and are putting tank cleaning strategies in place.

‘About 20% are going to blast the tanks with MGO, he said. ‘Very few are going to dry dock – about 80% are going to do cleaning during service (using or not using additives), and quite a few want to do it using their own crew, which will take some time.

‘You need to plan for this work,’ he emphasised. ‘Work out when you are going to do it and who is going to pay for it as part of charter party agreements.’

Timing the fuel switch correctly is also a commercial imperative for owners and operators. As Jonas Larsen explained: ‘At Western Bulk, we are spending a lot of time on this – if we get the timing wrong we could potentially lose half the daily earnings on a ship just through the additional cost of 0.50% fuel.

‘We are looking to establish a relationship with the owners to work out when it makes sense to switch fuels – for them and for us.

‘We would like it be in the last quarter up to the end of the year so that we can avoid burning 0.50% fuel before it is actually needed.’



EXPERT INSIGHTS

‘ We are highlighting concerns and working with CBT training modules to get our crew as ready as we can, with strong risk assessment and management of change processes. Everyone talks about ECAs in relation to 2020 – it’s just seen as another step but there’s actually a lot more to it.’

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Lubricants and the 2020 transition

A switch to low sulphur fuels will also require the use of lubricants with lower base numbers. ExxonMobil has expanded its Mobilgard™ M Series range of oils to support vessel operators, using four-stroke engines, to transition to low sulphur fuels.

Steve Walker told the roundtable that 'It has been a four-year journey to arrive at the sort of products for four- and two-stroke engines that we are going to be putting into the market very shortly.'

Lubes will need to be changed for both two- and four-stroke engines, and Walker explained that it is not as simple as downtreating the additisation in the product to deal with the reduced acid neutralisation.

'Regarding four-stroke engines it is necessary to make sure that the crank case cleanliness performance is there, making sure the piston crown galleries stay clean, and keeping the asphaltenes suspended in the oil rather than having them plating out onto hot

areas – which can lead to maintenance and cost,' he said.

Walker noted that, at present, around 60%-70% of ExxonMobil's cylinder oil offering is 70 BN, 25% is 100 BN, and the remainder is low BN oils for two-stroke engines. However, from January, the 100 and 70 volumes will move down to 40 BN cylinder oil.

'But when will that switchover start, and when will be the supply demand peaks?' he said. 'We need owners to tell us when they need the products.'

'We have worked out that we could do it all in a month, but if you want us to do it in two weeks then there could be some supply restrictions!'

The Mobilgard™ M series will be available from the end of August, said Walker, starting with the hub ports and then spreading to smaller ports. 'But the unknown is when vessels will start buying it – it is important to include lubes in voyage implementation plans.'



EXPERT INSIGHTS

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Precautionary measures – commercial and operational risk mitigation

In all the areas covered by the roundtable discussion in relation to IMO 2020 preparations, risk mitigation – whether commercial or operational – was a strong underlying theme, and James Kennedy of Clyde & Co provided some very useful legal perspectives.

In relation to the use of scrubbers as a 2020 compliance option, there have been concerns that owners have to bear the cost burden of installation, but charterers enjoy the ‘benefit’ of being able to purchase lower cost HSFO.

To address this situation, Kennedy pointed to the possibility of fuel profit-sharing.

‘Including fuel profit-sharing in counterparties is quite rare in the market at the moment,’ he said. ‘They are very difficult to negotiate, but we talk about the division of responsibility in charter parties, and this is division of benefit – it’s the two sides of the same coin.’

Fuel profit-sharing clauses require working out the capital expenditure that has already been committed and also assessing operational expenditure, including potential contingencies for breakdown. The issues can be complicated, said Kennedy, and, as such, each clause will be bespoke.

The fuel contamination issues in Houston and other ports in 2018 have led many in the industry to suggest that this problem could be a precursor of fuel quality issues to come after 2020. While roundtable participants did not necessarily see a correlation between the Houston situation and any future fuel quality problems, they did agree that it was important to consider how the division of responsibilities in such situations could be delineated in charter party agreements and supplier/buyer terms and conditions.

In respect of charter party agreements, Kennedy said there is increasing focus on the provisions that are being taken into these contractual terms, including which iteration of ISO 8217 is referenced.

He also highlighted the recent revision of the BIMCO Bunker Terms, and this can also be used as a legal protection against potential liability in terms of fuel quality and counterparty risk.

‘This is something I have been pushing since my

involvement in drafting the Terms a couple of years ago; one of the key messages we are trying to promote into the market is that these terms and conditions may be boring, but they are really important and well worth paying attention to.’

The discussion at the roundtable generated a number of questions that it may be useful to ask of parties to a charter contact, but Kennedy acknowledged that it will be difficult to address all these issues in such an agreement.

‘The owner could ask the charterer to provide answers to a set of questions each time the vessel is stemmed,’ he said, ‘but there may be no obligation on the charterer to answer those questions.’

Kennedy also raised the issue of the legal implications of the degradation of fuel onboard a vessel.

‘For vessels equipped with scrubbers that have “emergency” gasoil onboard, potentially for a very long time, the question of fuel degradation is an interesting one.’

Luca Volta also emphasised that buying fuel which conforms to ISO 8217: 2017 also provides assurance over the quality of purchased fuel. Michael Green also told participants that: ‘Around 60% of the samples we receive are still bought to the 2005 specification.’

‘When we sit in front of owners, we tell them to buy against the latest version of the standard because it offers the greatest protection.’

Jonas Larsen suggested that buying against the latest spec did not take account of the reality of fuel availability in some global ports.

‘When we take a ship, we mainly buy against the 2010 specs, but we still need the option for the 2005 specs because this is all that is available in certain ports.’

As the roundtable came to a close, participants considered what might happen if non-compliant fuel remained onboard a vessel, particularly after the fuel oil carriage ban comes into effect in March 2020. Would non-compliant fuel have to be sold as slops, what would be the situation if there were to be no de-bunkering option at a port, and how would this situation sit with charter party agreements?



James Kennedy also raised the question that the onboard fuel might be deemed to be still owned by the supplier. ‘Be alert to whether the title to the fuel has passed,’ he noted.

In terms of policing and enforcing the 0.50% sulphur cap after 2020, John Kerr said that ‘my concern is that in certain parts of the world it may be seen as a revenue stream,’ James Kennedy suggested that ‘there may be lots of different approaches from different jurisdictions,’ while Luca Volta pointed to the ‘threat’ of reputational risk if a company/vessel did not comply with the regulation.

‘You may want to play the statistical game, but if you have a bad reputation, then people are not going to put their cargo on your ships,’ he said.

While the scope of the roundtable was the preparedness of shipping and marine fuel companies for 2020, all the participants were alert to the next challenge: driving down shipping’s carbon emissions in line with IMO targets.

As Roger Strevens commented, the extended maritime supply chain is going to become much more involved with this proposition.

‘It’s important to think about where the drivers for this change are going to come from.

‘It’s not just going to be the IMO; the level of engagement from shippers and the scale of their ambitions on making their supply and value chains more sustainable could actually manifest themselves as objectives and requirements that outstrip the progress that might happen at IMO – don’t count against that.’

EXPERT INSIGHTS

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Luca Volta

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