



**PORTUGAL**  
SHIPPING WEEK  
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Cockett Marine Oil & Bunkerspot  
roundtable report

## IMO 2020 – taking a proactive approach

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Portugal Shipping Week  
19 September 2018

Gare Maritima da Rocha Conde d'Obidos



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## The technical, operational and legal challenges and opportunities associated with the introduction of the global 0.50% sulphur cap

This white paper is based on the comments and perspectives offered by key industry stakeholders who participated in a Cockett Marine Oil and *Bunkerspot* roundtable discussion held at the Gare Maritima da Rocha Conde d'Obidos in Lisbon as part of the inaugural *Portugal Shipping Week* in September 2018.

### Keynote address: Cem Saral, Group CEO, Cockett Marine Oil

The 2020 debate has been going on for some two years, and as the deadline draws nearer the conversations about the issue are becoming more intense and, in some cases, more confusing.

The reason why Cockett Marine Oil wanted to host this roundtable event was that while we are not the biggest player in the market, we do represent a significant share of the marketplace. At any given time, we work with 1,500 clients and 800 vendors globally, and we facilitate bunker deliveries across 800 ports. Our client base ranges from a very small shipowner, with two to three vessels, to the largest shipping organisations in the world. Similarly, the vendors that we work with include small local suppliers and integrated large refiners.

What we have seen in the last two years of debate is that many of the discussions about IMO 2020 compliance, with regards to product availability and supply chain issues, reflect a very similar and closed world view that excludes the majority of the supply chain and of the consumers.

As a reseller, Cockett Marine Oil sees itself as one of the most neutral elements in this conversation, and we want to use that neutrality to bring stakeholders together to introduce as much clarity as we can to the discussions about IMO 2020.

The findings of the 2014 report from the Intergovernmental Panel on Climate Change, which fed in to the International Maritime Organization's (IMO) Third Greenhouse Gas Study, indicated that shipping's carbon dioxide (CO<sub>2</sub>) emissions totalled approximately 938 million tons, which represents around 3.1% of global CO<sub>2</sub> emissions.

The same report indicated that shipping's nitrogen oxide (NO<sub>x</sub>) emissions represent 15% of global emissions, whilst the industry's sulphur oxide (SO<sub>x</sub>) emissions equate to 12% of the global total.



The IMO has been addressing emissions controls for decades, and measures such as EEDI and SEEMP are examples of the organisation's work on this issue. IMO 2020 is yet another firm step forward in its emissions reduction strategy, and in April this year, we gained further clarity over the IMO's intended strategy on decarbonisation. It is already becoming clear, however, that the pathways to decarbonisation and desulphurisation are not necessarily in sync and the respective solutions may not always help each other, at least in the short term.

Any decision on how to comply with the 2020 regulation is an extremely individual one, depending on factors such as fleet size and vessel operational profile. Attempting to come up with a 'one size fits all' solution will not work.

From the time of the IMO's announcement of the date of the global sulphur cap at MEPC 70 in 2016, Cockett Marine Oil has never felt uncomfortable about compliant fuel availability. To break this down a little further, we do not see a lack of fuel availability as a sub-set of production, but it could, in the transitional period at least, be a sub-set of logistical availability.

Since June this year, there has also been increased focus on the use of scrubbers as a route to compliance, and we are still seeing a degree of misinformation in the market about the pros and cons of adopting this technology.

The aim of the roundtable discussion during *Portugal Shipping Week* was to bring stakeholders together from as many areas of the industry as possible to engage in a conversation about IMO 2020. The discussion was not intended to arrive at a conclusion, *per se*, but to create an opportunity for everyone's views to be heard.

## Fuel availability – the refining perspective

The conclusions of the CE Delft-led report on compliant fuel availability in 2020, submitted to MEPC 70 in 2016, underpinned the IMO's decision on the implementation date of the 0.50% global sulphur cap. This study indicated there would be sufficient compliant fuel available to effect the transition to tighter sulphur emission controls on 1 January 2020. A supplementary study undertaken by EnSys Energy and Navigistics Consulting was also considered at MEPC; this agreed broadly with most of the CE Delft report's findings but highlighted that the IMO guidelines for the fuel availability study had not given weight to a consideration of the impact of the sulphur cap on refining economics.

In May this year, EnSys and Navigistics provided an update on their 2016 supplemental study. One of the factors that has impacted on 2020 forecasts since the initial availability reports is, to date, a lower than anticipated uptake of scrubbers. However, the earlier EnSys assessment that there would be a need to switch around 4 million barrels per day of high sulphur fuel to 0.50% sulphur fuel in 2020 (assuming full compliance with the regulation) is still held as a projection.

The most recent EnSys study, however, did highlight a change in anticipated global liquids demand from the 2016 standpoint, increasing from 99.2 million b/d to 101.5 million b/d. The increase in this demand is largely accounted for by light clean products, predominantly diesel, gasoil and jet fuel.

A presentation given in London by the International Energy Agency (IEA) looked at the implications of the 2020 regulation from the standpoint of mid-2018. The agency noted that almost one-third of oil coming from US Gulf Coast export terminals is tight oil, and new markets are building for US shale oil as Asian and

European markets look for suitable crude oil to produce chemical feedstocks and low sulphur fuels.

The IEA noted that almost all fuel oil will need to be hydrofined to meet the 0.50% sulphur specification; the agency estimates that available straight run fuel oil with 0.50% sulphur content is around 0.6 million barrels per day.

From the vantage point of 2018, the IEA suggested that scrubbing heavy fuel oil as a 2020 compliance strategy is a more cost-effective option than refining. Of specific interest, when looking at the supply options for 0.50% sulphur marine fuel, the agency flagged up the risk of a low sulphur bunker fuel deficit of around 1 million b/d.

A widespread concern expressed by shipowners and bunker industry stakeholders is that refineries have been reluctant to share their perspectives on compliant fuel availability and to reveal their plans for the production of new, blended 0.50% sulphur fuels.

Some analysts have indicated that refiners have now initiated a response to the 2020 rule by lifting capacity – notably secondary capacity – through the upgrading of desulphurisation units.

In the ARA region, for example, ExxonMobil has commissioned a delayed coker at its 320,000 b/d Antwerp refinery. The \$2 billion project will help the refiner to convert heavy material into distillates and cease production of fuel oil. Conversely, the upgrade will see the removal of around 2.4 million metric tonnes of fuel oil every year from the ARA market.



Refiners are not charities, they are not going to make 0.50% compliant fuel for nothing. It is going to cost them money and they are going to make a margin out of it!

*Charles Daly, Channoil Consulting Ltd*



Shell has also recently brought a new solvent deasphalter on line at its Pernis, Rotterdam refinery which will facilitate the production of cleaner transportation fuels, including IMO 2020-compliant marine gasoil.

Refiners such as ExxonMobil, Shell, BP, Total and Galp have also begun to reveal details about the formulation and regional availability of their proprietary new 0.50% sulphur fuels. While trials of the products are said to be underway, a full commercial launch is not expected until late in 2019.

Charles Daly of Channoil Consulting opened up the roundtable discussion at *Portugal Shipping Week* with some pragmatic perspectives on compliant fuel options, refining output, and supply and demand scenarios.

‘Refiners are not charities,’ he emphasised. ‘They are not going to make 0.50% compliant fuel for nothing. It is going to cost them money and they are going to make a margin out of it.’

Whereas the shipping sector has long held a key position as a major ‘consumer’ of heavy fuel oil, after 2020 it will join other industry sectors in fighting for a share of refiners’ low sulphur product.

‘If you look at straight run fuel today, or its derivative, straight run vacuum gasoil, this is used in the refineries to make jet fuel, gasoline and naphtha, and so bunker fuel is now going to have to compete with those grades for its availability,’ said Daly.

In terms of choosing a 2020 compliant fuel, Daly is a strong advocate for marine diesel/gasoil. With diesel demand plummeting in the automotive sector, he suggested that there will be a surplus of the product, with an attendant downward pressure on price.

‘There is massive availability of diesel east of Suez and in the United States,’ he explained. ‘The United States is a

non-diesel country – it uses gasoline – so it is exporting diesel; it is even now attacking European refiners in the West African diesel market.’

In support of his argument in favour of gasoil post 2020, Daly referenced his calculations on price per metric tonne versus the calorific value of bunker fuels.

‘I reduced everything down to dollars per MMBtu of energy, because, obviously, a ship’s engine uses energy and the efficiency of that energy is the most important element of a ship’s costs.

‘If you take my argument that the very low sulphur fuels are going to be marginally below Brent and then do an energy calculation on the calorific value versus gasoil, you will see that the difference between the two is marginal,’ he said.

There is a question mark over the global availability of very low sulphur fuels in 2020, he suggested, and for tramp shipping or vessels operating on routes which are not plannable, this will be a problem.

According to Daly, the argument for gasoil/diesel is compelling: ‘You don’t have to pre-heat it – that’s a saving; engine life is extended by 50%; and you don’t have to change the filters every six months – maybe every year.’

Daly also referenced his own research into blending a 0.50% product. Almost all levels of viscosity – ranging from 500 cSt down to 180 cSt – when blended down to 0.50% sulphur will result in a product with a viscosity which is close to that of gasoil, he indicated.

‘So if I were a shipowner, why would I dirty my tanks and engines when I can get the same viscosity with gasoil?’

For refiners, he predicted an inevitable shift to coking. ‘Every new refinery that is being built today is a complex

coking refinery; those European refineries that don't have coking are going to struggle if they can't sell their heavy fuel oil.'

The bottom line, he said, is that 'those refineries that don't do coking will die or will be closed and ultimately there won't be any fuel oil.'

Earlier this year, Portugal's Galp signalled its intention to bring its own 0.50% sulphur to market in 2019 and it also reiterated its commitment to continue heavy fuel oil (HFO) production for the shipping sector. Cristina Cachola of Galp said that the company has taken steps to optimise output at its two refineries and it has taken the decision to offer all fuel grades – high sulphur and very low sulphur bunkers – to its clients. Over a two-year period, Galp has tested over 100 fuel blends in the process of developing a proprietary very low sulphur fuel.

Cachola emphasised that margins and product demand/availability are the major drivers in refining economics and her assessment of the availability of gasoil in 2020 ran counter to that of Charles Daly.

'In the last two to three years, we have had good margins in the oil refining business and almost all refineries have been able to run on high capacity.

'If you take into account shipping's consumption today, I think one of the things that the market would say is that demand for gasoil in 2020 will support refining margins and the shortage of gasoil will have an impact on price,' she noted.

'Part of the product will be middle distillate components and we will handle this in the blending – so our view is that very low sulphur fuel oil will work.'

In summary, she said, 'There will be a price for this new product that will be in the right place; diesel in our opinion will be very expensive in 2020.'

Opinion was divided on the availability of gasoil in 2020 to meet all bunker fuel demand and also on the factors which will influence shipowners' decision-making on compliant fuel options.

Jorge Antunes of TecnoVeritas, while concurring with Charles Daly's view on the availability of gasoil, also

“No refinery is going to produce 0.50% fuel oil because shipping needs it; they are going to maximise their own margin, which is on diesel production, not on 0.50%.”

*Siavash Alishahpour, VTTI Fujairah Terminals Ltd*

reviewed the outlook for HFO after 2020. He suggested that around 1 million barrels of HFO will remain in the marine fuel 'pool' as a result of scrubber uptake and also through non-compliance with the new sulphur regulation, but some 2.5 million barrels of HFO will still be removed from the equation in 2020.

Residual fuel will be used in the new 0.50% sulphur blended fuels, and Antunes pointed to the current availability of 500,000 b/d of residual fuel below 0.50% sulphur and 1.5 million b/d below 1.00%, which could be used for blending.

For a shipowner, how competitively priced a fuel is will always be the determining factor in deciding on fuel options, he said.

'Shipowners will go and find the fuel that is \$1.00 cheaper – that's it. [Their decisions] are not based on an energy value basis, and blenders are going to take that advantage. They will not sell the fuel by their own margins, they will sell it on the market opportunity – this is reality of the market.'

Siavash Alishahpour of VTTI brought the discussion back to refining economics: refiners will always focus on optimising production to deliver the greatest margin rather than catering to the demands of particular industry sectors, he emphasised.

'As a refiner, we are not looking at what shipping needs or car manufacturers need – we are looking to our margins and maximising our margin.

'No refinery is going to produce 0.50% fuel oil because shipping needs it; they are going to maximise their own margin, which is on diesel production, not on 0.50%. Refineries are not going to invest billions of dollars because in two years 0.50% is needed in the market – those billions of dollars will be allocated for projects over the next 20-25 years.'

Cristina Cachola also highlighted that the production of very low sulphur fuels is not just predicated on the blending process, it is also dependent on the source

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*Dr Jorge Antunes, TecnoVeritas*

of the crude oil. She pointed to the example of Brazilian crude oil as a ‘very good heavy sweet crude oil – a perfect crude to produce low sulphur fuel oil at a much lower price than gasoil.’

She also noted that the US shale oil that is taking an increasing share of global crude volumes is also a low sulphur oil.

Siavash Alishahpour sounded a note of caution, saying that shale oils are bringing challenges for refiners and the full conversion processing of these crudes is changing the balance of refiners’ product slates. ‘They are certainly not trouble-free,’ he said.

Charles Daly also questioned the economic argument of using very light crude oils to make low sulphur fuels oils. He said that the large coking refineries use heavy oils as feedstocks and are unlikely to switch to light sweet crude oils to meet 0.50% sulphur demand as this will reduce throughput, unless it is compensated for by a very high price for the fuel oil.

Siavash Alishahpour also suggested that refiners may seek to turn the prospect of a dramatic fall in the price of high sulphur fuel oil post-2020 to their advantage.

‘High sulphur fuel oil will crash in the market – maybe to \$200 or even lower – and refiners will go and get it and add the value to it.

‘It will provide fantastic VGO for the refiners and they can decide where the bottom goes – into bitumen or elsewhere.’

## IMO 2020 – the compliance options

The discussion then turned to address the challenges facing shipowners in deciding on their pathways to compliance. The concerns of owners and operators centre on the global and regional availability of compliant fuels, the OPEX and CAPEX implications of the respective compliance options available to them, and uncertainties over the quality, compatibility and stability characteristics of the as yet unseen 0.50% sulphur fuels.

Heidmar operates around 90 tankers across five pools: Seawolf (VLCC), Blue Fin (Suezmax), Sigma (Aframax/LR2), Star (Panamax/LR1) and Marlin (Handy). As Duncan Ross of Heidmar UK Ltd explained, each owner in the pools has its own perspectives on IMO 2020 which creates an additional complexity.

He pointed to Heidmar’s experience with the introduction of the 2015 0.10% sulphur limit in emission control areas (ECA) where owners had proved to be cautious in using



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the 0.10% fuels which came onto the market and had also found the prospect of having to change bunker tank configurations to be a challenge.

Duncan Ross told the discussion participants that, by and large, owners in the Heidmar pool have yet to make decisions on scrubber adoption or the use of 0.50% sulphur fuels; at present, the default position would seem to be a switch to distillate, he said.

Cem Saral said that Cockett Marine Oil’s recent soundings in the market indicate that the price of the 0.50% sulphur will have to be ‘significantly convincing’ to persuade shipowners to opt for anything other than gasoil.

While the production/refining stakeholders in the marine fuel supply and value chain are looking at 2020 as an engineering exercise in maximising yield and ensuring margin, Saral suggested that they are not necessarily taking account of shipowners’ commercial and operational considerations.

‘What we are probably not looking at from the producers’ side...is that a typical shipowner would probably opt for the easiest option operationally, unless it is priced to change his mindset.’

The price differential between gasoil and 0.50% sulphur fuels will be crucial in persuading owners and operators to take the plunge and move away from distillate, said Saral.

Taking a theoretical, simple 0.50% sulphur product (60 units of 0.10% gasoil blended with 40 units of 3.50% sulphur fuel), this, he suggested, would realise a discount of \$102 a tonne to gasoil, as per the forward curve for 2020. Looking out to January 2022, then the discount narrows to around \$90 per tonne.

'I can guarantee that if the 0.50% fuel is not priced to create an incentive to go to action in the early transition, then this will probably push more distillate demand in the early 2020s (for those that have not already bought scrubbers).'

**“**We are seeing that the bunker suppliers at the ground level are taking the same approach as the fuel buyers – they are waiting to see what the demand will be.’

*John Ghio, Port of Gibraltar*

While relatively small-scale trials of 0.50% sulphur fuels are now underway, the shipping and marine fuel sectors have very little concrete information about the quality of these products or of their likely price points. As Saral explained, ‘pricing will not come any time soon because it is a competitive advantage for the producers.’

'I think we will be running into a period in the second half of next year where a lot of fuel will appear, as well as indicative pricing.

'If a shipowner with capacity sees a regional advantage to own 0.50% sulphur fuel immediately, then he may move to do so, but I think the rest of the market will still be consuming gasoil,' he said.

Offering a port's perspective on IMO 2020, John Ghio of the Port of Gibraltar said local suppliers are indicating that there will be a transitional period as bunker barges adapt to supplying three rather than two products.

'It is a question of predicting where demand will materialise,' he said. 'Gibraltar is an in-demand bunkering location, but we depend on regional operators for product storage. This gives us a level of flexibility and we are seeing that the bunker suppliers at the ground level are taking the same approach as the fuel buyers – they are waiting to see what the demand will be.'

## Exhaust gas cleaning systems – the pros and cons

The use of exhaust gas cleaning systems, or scrubbers, is another option for compliance with the 2020 regulations. Uptake in the first half of 2018 has lagged behind initial forecasts, prompting some revision of high sulphur fuel demand predictions for 2020. However, mid-2018 would seem to have been a tipping point in terms of scrubber uptake and owners are now revealing their plans to retrofit scrubbers on their fleets or order scrubber-equipped newbuilds. Anecdotal evidence would also suggest that charterers are also willing to pay a premium for scrubber-equipped vessels.

The economic argument for installing scrubbers is perceived to be strongest for larger tonnage. Shipbroker Gibson has stated that the cost of a scrubber on a very large crude carrier (VLCC) could be recouped in under 18 months, given a spread of \$200 a tonne between high sulphur fuel and 0.50% sulphur.

In a recent report, DNB Markets was bullish on the outlook for scrubbers. According to the bank's estimates, a total of 2,300 scrubber units would represent just 2.5% of the 2020 fleet, but around 13% of total shipping fuel consumption, or some 15% of shipping's heavy fuel oil demand. This is based on the fuel consumption of an average scrubber-equipped vessel of 46 metric tonnes per day.

With a global shipping fleet of around 95,000 vessels DNB has calculated that the most fuel-hungry 5% of vessels consume around 38% of all marine fuels, and the top 2.5% account for 24%.

The roundtable discussion on scrubbers was vigorous and searching, and addressed many of the questions which have circulated about the technology, including system reliability and concerns that future environmental regulations may restrict or ban the use of open loop scrubbers.

Duncan Ross of Heidmar outlined the reasons for shipowner reticence over scrubber adoption. 'There is an awful lot of uncertainty with the technology itself, but shipowners' costs are very significant at present – market rates are horrific.

**“**Shipowners simply cannot afford to install scrubber technology at this level of uncertainty – it is just not worth the risk.’

*Duncan Ross, Heidmar UK Ltd*





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*Cristina Cachola, Galp*

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In 2016, Alfa Laval predicted that scrubbers would be installed on 5,000 vessels by 2025; in 2018, the company still held to this forecast and, after a recent flurry in scrubber orders, may be scaling up its predictions.

Hein Timmermans of Alfa Laval told the roundtable participants that the company had experienced a recent upswing in demand for scrubbers. And while it is not possible to provide empirical evidence, the fact that owners are committing to scrubbers could indicate that they are confident about heavy fuel oil availability after 2020, he said.

‘From the perspective of Alfa Laval, we are ramping up our production and our commissioning engineers – we are seeing a strong increase in demand.’

Timmermans was challenged over the reliability of scrubbers given that vessels will have to use the technology on a 24/7 basis rather than for just a few days, as when operating in ECAs. He countered this challenge by highlighting that many smaller vessels already operate continuously in ECAs – in the Baltic Sea,

for example. ‘These vessels are running scrubbers all day, otherwise it is not a worthwhile investment for the owners,’ he said.

All the scrubbers that Alfa Laval has installed to date are still working properly, he said. ‘We have over 1.5 million hours of operation – we don’t see any issue in running scrubbers.’

Cem Saral said that there had been a discernible increase in interest in scrubbers after the Posidonia event in Athens in June 2018, and he offered three reasons for this shift in shipowner opinion. The first is that, for whatever reason, many shipowners – even those with hundreds of ships – have clung to the belief that the sulphur regulation would be delayed or be implemented in incremental stages. The credibility of that viewpoint is now being severely tested, and many shipowners are having to accept the reality of the 2020 deadline and are therefore having to start making some hard decisions on compliance options.

Following through from this, the financing of scrubbers is becoming easier, with more entities stepping up to provide funding mechanisms and solutions, said Saral. Finally, owners are coming under increasing pressure from operators and shippers to install scrubbers, especially on larger vessels.

‘If you are a strong and powerful shipper, you can tell an owner “either you put scrubbers onboard, or I am moving to another owner.”’

‘What is influencing the mind of the shipowner?’ asked Jorge Antunes. ‘Is it the age of the ship or the freight rate? The rates are squeezing shipowners to the point where there is no margin to play with.’

Siavash Alishahpour suggested that while the scrubber option may not be suited to the MR segment, the solution does make economic sense for larger vessels.

‘I don’t think you have any issues with a vessel above Aframax size,’ he said. ‘Today, people are saying that high sulphur fuel will be \$200-\$250 a tonne and diesel \$600-\$700 a tonne in 2020, and that will be the crack for scrubbers – it is a no-brainer.’

Cem Saral suggested that a key issue in the scrubber debate is how many ships could realistically benefit from scrubbers, given that the sums stack up more convincingly for larger tonnage. Vessel operating profile and age are also influential factors in any scrubber cost-benefit analysis.

He also highlighted that the 95,000-strong global shipping fleet encompasses vessels of 100 gross tons

(GT) and above. Looking at vessels of 1,000 GT and above, then 45,000 ships are removed from the frame. Of the 50,000 ships remaining, there are only 14,500 ships, across all segments, above 25,000 GT – and under 15 years old. All this information must be considered when making an informed prediction about what the potential scrubber uptake may be, said Saral.

Some industry observers have speculated that legislators may, in future, prohibit the use of open loop scrubbers because of pressure from environmental organisations and pressure groups.

As Saral noted, owners who are contemplating scrubber installation have been facing some tough questions from shippers who are challenging the use of a technology that is processing high sulphur fuel and is discharging the waste into the sea.

‘If you are tied to the income of a shipper and he has a certain world view, then do you adapt to that world view or try to change it? It is a very conflicted outlook so far.’

Hein Timmermans emphasised that there is a difference in sulphur as a pure substance and sulphates. Scrubber discharge contains sulphates, which are naturally present in seawater.

‘In terms of the regulations that we have at the moment, relating to PAH and PH turbidity, for example, we are in full compliance. At present, people may be going for open loop scrubbers, and this is probably an issue to do with price.’

‘If [environmental legislation] rings the bell on open loop scrubber systems, then the scrubber systems that we deliver are changeable to closed loop.’

*Hein Timmermans, Alfa Laval*

Some ports, such as Hamburg and Antwerp in Europe, have already determined that open loop scrubber discharge is not permitted in port waters, and Leïla Esnard of Lewis & Co suggested that in future there could be issues with regard to discharge in territorial waters – not just ports – in relation to potential future regulation on the disposal of waste.

Hein Timmermans noted that MARPOL legislation already details how to deal with scrubber sludge. ‘There is no uncertainty or lack of clarity about that,’ he said.

‘But, of course, we want to offer our customers a safe investment as far as we can. If [environmental legislation] rings the bell on open loop scrubber systems, then the scrubber systems that we deliver are changeable to closed loop and this is something that we would speak to our customers about.’

Jorge Antunes of TecnoVeritas also pointed out that scrubber installation increases a vessel’s total energy consumption, as it can, in some cases, require the use of a second onboard generator. This, in turn, will increase the quantity of fuel consumed – and, by extension, the level of CO<sub>2</sub> emissions.

## Shipping and the carbon debate

The IMO 2020 regulation also allows for the use of other low sulphur fuels, such as LNG. While the roundtable discussion could only reflect the opinions of the participants, it was notable that LNG was not widely viewed as a long-term fuel option for the shipping sector – a viewpoint that was also reflected in other forums held during *Portugal Shipping Week*.

It was clear from the roundtable discussion that this shift in perception had largely been driven by the IMO’s move in April to press ahead on a timetable for the decarbonisation of shipping. The organisation has called on shipping to reduce its CO<sub>2</sub> emissions by 50% by 2050, taking emissions in 2008 as a baseline figure. While LNG advances the debate on cleaner fuels for shipping, with significant reductions in SO<sub>x</sub>, NO<sub>x</sub> and PM emissions, it remains a fossil-based fuel, although developments in bioLNG and synthetic LNG could potentially improve its carbon footprint.

Charles Daly suggested that LNG could well be the fuel of choice for barges, river boats, ferries and other point-to-point shipping. However, he commented, ‘If we are looking 30 years ahead, then we are talking about 2050, when we are supposed to have a zero emissions environment, so why don’t we move forward now to think how we can make the jump from hydrocarbons, such as liquid petroleum or LNG, to something that has zero emissions, such as hydrogen?’

Dirk Kronemeijer of GoodFuels said he believed that LNG may well be an interim solution as a bunker fuel, but definitely is not the only solution. He went on to outline the strong benefits of advanced marine biofuels – mainly due its ease of use (as a ‘drop-in fuel’), affordability and its very strong performance on one of the key metrics of the future: carbon.

On 7 September, under the auspices of the GoodShipping programme, the *Samskip Endeavour* was bunkered with a load of advanced marine biofuel made from used cooking oil, supplied by GoodFuels. The operation marked the first delivery (on behalf of a few pioneering cargo owners) of biofuels to a container vessel that otherwise would have entirely run on fossil fuels.

**I**n 2015, nobody in shipping was talking about CO<sub>2</sub>, but we are convinced it is going to be the big driver in the industry – far more than we are discussing today'

*Dirk Kronemeijer, GoodFuels Marine*

'Advanced biofuels are a great solution - especially for the next 10-20 years,' said Kronemeijer. 'They are easy, affordable, and truly low carbon and sustainable. But we would never scale production at any cost, especially as sustainability is an utmost priority for us – meaning we only want to make fuel from outright waste products such as used cooking oil, forest residues and urban waste streams.

'Even though we as a company alone expect to supply more than a million tonnes in five years – and we believe in scaling towards tens of millions of tonnes, we realise that we won't be the only industry solution out there. We will be especially present in those parts of the world where low carbon emissions are already valued – and this means Europe, the west coast of the United States and Canada, and perhaps Australia and New Zealand.'

Kronemeijer said that GoodFuels is attempting to innovate the marine fuel market from two sides: through engagement with shipowners and operators and also by introducing the concept of sustainable bunkers to cargo owners.

GoodFuels has developed a sustainable marine gasoil, which can achieve a 75%-90% reduction in CO<sub>2</sub> emissions, and a sustainable HFO replacement which cuts CO<sub>2</sub> emissions by 90%-95%. These bio-derived fuels are drop-in fuels that require no modification of a vessel's engine.

With a background in the aviation sector, Kronemeijer highlighted the differences in discussions going on the aviation and shipping industries: 'In aviation, it is all about CO<sub>2</sub>, and for me the step over to shipping was quite weird in that sense.

'In 2015, nobody in shipping was talking about CO<sub>2</sub>, but we are convinced it is going to be the big driver in the industry – far more than we are discussing today.'

As second-generation biofuel developers, the big breakthrough for GoodFuels was bio-HFO, said Kronemeijer. 'We needed to convince a lot of OEMs: we did a lot of intensive testing and we currently have two OEMs and a few major shipping companies going along with us. Watch this space.

'If the OEMs, the owners, and the insurers go with the fuel, then you can actually achieve something.'

According to Kronemeijer, the key drivers in gaining market traction for biofuels are scalability, technical compliance, sustainability and affordability. On the affordability question, he noted that many waste streams that might not be good enough for aviation or the land-based trucking sector could be used to produce sustainable marine biofuel.

Cem Saral noted that while biofuel might not yet be very commercially viable or scalable globally, it demonstrated that such technological breakthroughs will facilitate the transition to a zero-emissions shipping sector.

'If the rest of the world continues to comply with the 2 degrees pathway and if shipping reduces its CO<sub>2</sub> emissions by 50% [in line with the IMO's strategy out to 2050], then the percentage of shipping's CO<sub>2</sub> emissions will go up to 10% of the global total.

'There will be an increased pressure on shipping to fully decarbonise, not because of its contribution to CO<sub>2</sub> emissions today, but because the rest of the world is decarbonising with far greater intensity, and this debate may be being lost in discussion when there are so many short-term pressures on shipping.'

And, Saral highlighted, 'this will be a challenging conversation; the short-term desulphurisation solutions may not be helping decarbonisation.'

## IMO 2020 – the lubricants challenge

While the shipping industry mulls its fuel and technology options for compliance with the global sulphur cap, the discussion over which marine lubricants should be used with lower sulphur fuels has perhaps been more muted. It is, however, a discussion which is imperative and time-critical.

With the exception of those vessels operating in ECAs, a large percentage of the global fleet has operated on



In the case of older engines - before 2010 models - which will burn MGO or compliant fuels, a BN 15-25 cylinder oil is certainly suitable but a BN 40 top up maybe recommended in case of abnormal liner wear.'

*Raffaella Benvenuto, Cockett Marine Oil*

lubricants with a high base number (BN), but, come 2020, the choice of a correct lubricant will be a key consideration, said Raffaella Benvenuto of Cockett Marine Oil.

She noted that there are a number of variables in the selection of an appropriate cylinder lubricant, in relation to factors such as the marine fuel used, engine type, whether the vessel is equipped with a scrubber or not, and operational conditions (for example, slow steaming).

'There is no "perfect solution",' she said, 'because issues like deposits and cold corrosion need to be addressed via a combination of grade selection, trend monitoring analysis and feed rate adjustments on a case by case basis.

'For example, if we look at 2-stroke engines, those equipped with scrubbers should expect no change in present practice in the use of a BN 100 lubricant, in the case of newer models after 2010 subject to cold corrosion, or a BN 70 for older models when burning HFO, a BN 40 when burning LSHFO and a BN 15-25 when entering emission control areas.'

However, she highlighted that there may be some trouble with those engines on vessels which are not equipped with scrubbers.

'In the case of older engines – before 2010 models – which will burn MGO or compliant fuels, a BN 15-25 cylinder oil is certainly suitable but a BN 40 top up maybe recommended in case of abnormal liner wear.

'It is more complicated for modern engines models – those after 2010 with long and super long strokes and subject to cold corrosion – and upgraded ones, as they will have to use 2020-compliant LSFO that calls for a low BN cylinder oil, which, however, is not sufficient to neutralise the cold corrosion and major liner wear may occur.

'On the other hand, if those engines were to use a higher BN formulated to neutralise the cold corrosion, like a BN 100, the unused BN additive would create hard deposits on the piston crown. Cold corrosion will be avoided but the hard deposit could cause damage to rings and liners.'

She noted that, to date, 'there is not enough experience on the possible consequences of long term burning of ULSFO or MGO in 2-stroke engines designed for burning HFO at high pressure, high temperature and full load.'

Cem Saral noted that a number of oil majors have recently announced that lubes to be used with 0.50% sulphur fuels are under development. 'However, while some of shipping's concerns over the availability of a customised solution might be elevated, it would be short-sighted to think that this will not be a problem for some ships in certain areas.'

However, Muhammad Usman of FOBAS-Lloyd's Register told the roundtable participants that the issue of lube base number and the new 0.50% sulphur fuels should be one that can be effectively controlled.

For two-stroke engine cylinder lubrication, lubricant manufacturers are expected to produce a range of options with various BN levels, however ship operators are expected to take a condition monitoring route to establish the most suitable lubricant for their main engine, which could be 70, 50, 40 or even 25 BN oil.

Shipowners may well have concerns over engine warranties in relation to the use of 0.50% sulphur fuels and also the selection of the correct lubricant. And, as Jorge Antunes pointed out: 'The bigger problem that we will be facing is with dual fuel engines that work with 95% gas and 5% diesel – these engines may have problems of cold corrosion, especially for the larger bores.

'It is also very important to always test the fuel. It might say it is 0.50% sulphur on the bunker delivery note, but people tend to increase the lube oil rate to be on the

safe side.'

## 0.50% sulphur fuels and ISO 8217

There are beginning to be some early indications from the oil majors over the formulations of the new 0.50% sulphur fuels. ExxonMobil, for example, has disclosed that all its proprietary 0.50% sulphur fuels currently under development will be residual fuels and will confirm to the ISO 8217:2017 specification.

However, doubts persist where the new 0.50% fuels will sit in terms of ISO 8217 parameters. The ISO/TC28/SC4/Working Group (ISO) is working on a Publicly Available Specification (PAS) in relation to the quality of 0.50% sulphur fuel oil. In a notice issued in July, the working sought to allay industry concerns, noting that: 'Given that [these fuel oils] will be fully capable of being categorised within the existing ISO 8217 standard, the PAS will provide guidance as to the application of the existing ISO 8217 standard to such fuel oils...at this time no new characteristic is currently being considered for inclusion.'

The ISO working group sought to give reassurance that 'the general requirements of ISO 8217:2017, along with the characteristics included in Table 1 and 2 of ISO 8217: 2017, cover 2020 0.50% max. sulphur fuels in the same way as they cover today's fuels, including the 0.10% max. sulphur fuels.'

However, the working group did signal its intention to address the issues of stability, compatibility and flashpoint in relation to the new blended fuels.

It noted that: 'Regarding the stability of fuel oils, ISO 8217 working group has initiated a test program to investigate whether test methods currently not yet widely used for marine fuel stability testing, can provide further and consistent information on the stability and potential instability of a wide range of different fuel blend formulations (or mixtures thereof) that are anticipated to likely represent what will be available in the market from late 2019.

'Furthermore, the ISO 8217 working group is also working closely with CIMAC and will contribute to the initiative taken by OCIMF and IPIECA to develop a guidance document to bring awareness to, and to assist crew and ship operators in the safe onboard handling of future 0.50 % S max. fuel oil blends, considering their potential impact on operational aspects.'

Muhammad Usman, a member of the working group, provided an update on the introduction of 0.50%



Chinese [0.50%] fuels are looking to be 'around RME 180 in terms of their viscosity, with slightly high density, and aromaticity around the 50 or 60 mark – which is slightly higher than the other 0.50% sulphur fuels which are available on the market'

*Muhammad Usman, FOBAS, Lloyd's Register*

sulphur fuels to the market, as well as progress on the ISO working group's tasks.

He noted that a few 0.50% sulphur fuels are already being seen in the market, notably from Argentina, north and west Africa, and China. Looking ahead, it is useful to look at how China is developing these fuels, said Usman.

In terms of characteristics, the Chinese [0.50%] fuels are looking to be 'around RME 180 in terms of their viscosity, with slightly high density, and aromaticity around the 50 or 60 mark – which is slightly higher than the other 0.50% sulphur fuels which are available on the market,' he said.

He acknowledged that there is considerable concern over the present fuel stability test method; as such, the ISO working group is reviewing whether existing TSP and TSA test methods are applicable to 0.50% sulphur fuels.

ISO WG6, with industry partners, is currently undertaking a project collecting and analysing a range of 0.50% sulphur blend samples from around the world. More information on the outcome of this exercise will be available in next few months. However, early indications are that there will be huge variations in the various characteristics of the 0.50% fuels.

Some roundtable participants asked whether there would be new sub-sets to Table 1 and Table 2 in ISO 8217 to accommodate the new blended fuels, but Usman reminded them that the tables are not dependent on sulphur content.

‘The same question was asked when the 0.10% sulphur fuels came out, and tables don’t cover them,’ he said.

‘The problem is that different suppliers will come up with different fuels, and there will be different parameters and limits – if we start making new tables, they will be huge.’

However, he accepted that there was a requirement to have certainty over three operational parameters – density, viscosity and sulphur: ‘Viscosity to adjust the injection temperature; density to adjust the purifiers; and sulphur to adjust the lubrication.’

Usman also emphasised the importance of being aware of the cold flow properties of the 0.50% sulphur fuels, particularly if using non-heated tanks for storage onboard a vessel that may be operating in colder climates.

He was also asked about the usefulness of the calculated carbon aromaticity index (CCAI) in assessing the ignition quality of the new fuels. This index was principally intended for use with straight run fuels, he explained. ‘There will be still be some correlation with the new blended fuels, but it is more of an indication and to control the blends.

‘You would not want to have a very high CCAI/CII as this would disturb the balance of viscosity and density.’

## Fit for purpose – terms and conditions

The collapse of OW Bunker in November 2014 was a seismic and pivotal event for the shipping and marine fuel industries, and it impelled many industry stakeholders to revisit their terms and conditions as well as review their counterparty relationships.

In May 2018, BIMCO introduced its Bunker Terms 2018 which are intended to be a balanced and standardised set of terms and conditions to be fair for both buyers and sellers. The drafting committee also sought to address the difficult problem of double payment for delivered bunkers, highlighted by the OW situation and which has resulted in widespread, and still ongoing, litigation in many jurisdictions.

BIMCO’s documentary committee, which worked for two years on the draft terms, featured representation from across the maritime sphere, including shipowners, ship operators, P&I Clubs, shipping associations, bunker suppliers and traders, and legal experts.

James Kennedy of Clyde & Co was a member of the BIMCO drafting committee and at the roundtable discussion he outlined the challenges that had been



‘In the context of 2020, we are talking about protection against risk: what happens when things go wrong in terms of fuel availability, the cost of delays, price, counterparty risk, payment issues, quality issues and fuel testing.’

*James Kennedy, Clyde & Co*

encountered in formulating an equitable set of terms and conditions.

‘In the context of 2020, we are talking about protection against risk: what happens when things go wrong in terms of fuel availability, the cost of delays, price, counterparty risk, payment issues, quality issues and fuel testing,’ he said.

‘And it is through our terms and conditions that we can protect against these things.’

To date, there has been considerable disparity in terms and conditions. Suppliers have terms which are perceived as ‘supplier friendly’, the bigger pools have their own set of terms, and BIMCO has faced criticism over its earlier terms, in that that they were deemed to be biased in favour of the buyers’ side.

The BIMCO committee was tasked with finding the answer to two questions, said Kennedy.

‘First, on the back of OW, can you find a contractual solution that you can put into standard terms and conditions which will protect against counterparty risk?’

‘Second, can you come up with a set of harmonised terms that are fairer between buyer and seller?’

The answer to the first question was, ‘no’ – it is not possible to come up with a contractual solution that would be commercially acceptable to the whole market. Kennedy suggested that counterparty risk can best be addressed through diligent and robust ‘know your counterparty’ procedures.

One of the key changes to the new terms is the introduction of a limit of liability, set at \$500,000. This

can, however, be discussed by the counterparties and increased if appropriate.

The inclusion of an election sheet is another addition to the terms. This, said Kennedy, can draw attention to specific key elements within the commercial agreement.

‘It has increased awareness in the market of a range of issues, and it has also got people thinking about the terms they are trading on, the risks in 2020, and whether their terms are giving them protection.’

Cem Saral noted that there are ‘substantial changes’ to the new terms. He picked up on the fact that if a jurisdiction is not expressly mentioned in the new terms then the agreement will default to a jurisdiction, a situation which the parties involved may not be necessarily be aware of.’

Saral did, however, call for BIMCO-related contracts to become more visible in the market.

‘There are huge differences, for example, in how suppliers want to sell,’ he said. ‘In the past couple of years, we have also seen more purchase agreements dictated by the buyers.’

‘There is a clear need for a shift to fairer buying terms, but there are still huge differences in niche or challenging locations. We are highly in favour of BIMCO terms becoming more of a standard rather than the exception.’

James Kennedy advised care and preparation in the use of the election sheet, explaining that, ‘One of the key reasons why we included the sheet is that it brings to attention things that might have been hidden away, such as time bars.’

‘If there is a problem or a point of contention, deal with it in the election sheet.’

## 2018 – the Houston fuel contamination problem

Earlier this year, reports surfaced over problems with residual fuel bunkered at the Port of Houston and other US Gulf ports. Since then, the scope of the problem has widened to include the ports of Panama and Singapore and Caribbean ports. Up to 200 vessels are said to have experienced a range of operational problems, including the seizing of fuel pumps, blocked heaters, purifiers and filters and excessive sludge build up, and, in some cases, complete engine failure.

The residual fuel conformed to ISO 8217 parameters, and subsequent further analysis of fuel samples

by laboratories, including Multidimensional Gas Chromatography – Mass Spectrometry (GCMS) testing, has revealed the presence of a long list of ‘contaminants’, including phenol, styrene and tall oil.

Investigations continue into the point at which the contaminants may have entered the fuel supply chain, and also into whether each contaminant, and the concentration at which it is present in the fuel, can be said to have caused the operational problems onboard the vessel.

The contamination problems have caused widespread market nervousness over the potential for an increase in the number of fuel quality issues and claims in 2020, when a large number of 0.50% sulphur blended fuels will enter the marine fuel pool.

Muhammad Usman emphasised the extreme difficulty of identifying contaminants in bunker fuel and the extent of their deleterious effects on fuel quality. While all the problem Houston bunkers were in compliance with ISO 8217 Table 2 requirements, he noted that Clause 5 of the specification emphasises that fuel should not contain any component that jeopardises the safety of a vessel.

ISO 8217 only includes parameters, not the requirement for any investigative analysis, he noted, while GCMS analysis can be very lengthy and resource intensive.

He noted that more work is being undertaken on the





**C**harterparty agreements that span the 2020 tipping point should be scrutinised, and owners and operators should give consideration to the presence of heavy fuel oil onboard vessels that are not equipped with scrubbers on 1 January 2020.’

*Leila Esnard, Lewis & Co AARPI*

application of the ASTM 7845 test method which allows for the analysis of chemical components present at low levels in marine fuel oils and cutter stocks.

The recent cases of ‘bad bunkers’ have also focused attention on the inclusion of time bars on claims in suppliers’ contracts. Some shipowners have been impacted by fuel quality problems which have only come to light after 15-30-day time bar periods, and a number of cases are in train which are seeking to challenge the application of time bars.

As James Kennedy explained: ‘None of the cases are quite the same, but a lot of them have had time bar issues.

‘As a matter of English law, short time bars have been upheld in other forms of contract, but in terms of the bunker contract they have never been tested.’

He also reported that ‘some of the bigger suppliers have been very commercial and have said “don’t worry about the time bar, let’s sort this out”.

‘However, some of the others have just stuck to their terms and said, “No, you are out of time.”’

In recent court cases, there have been moves by some parties to indemnify themselves ahead of claims brought by shipowners. In terms of liability, Kennedy suggested

that: ‘The charterer is probably going to be exposed because they have bought on the supplier’s terms and under the charter party they don’t have the same protection; so even if it is down to bad bunkers, the charterers may be stuck with this liability.’

Leila Esnard of Lewis & Co also extended the scope of the discussion to look at the legal ramifications of IMO 2020, particularly across the transitional period in early 2020. Charterparty agreements that span the 2020 tipping point should be scrutinised, she suggested, and owners and operators should give consideration to the presence of heavy fuel oil onboard vessels that are not equipped with scrubbers on 1 January 2020.

## We need to talk about credit

The Cockett Marine Oil/Bunkerspot roundtable discussion came to an end with a focus on the key issue of credit. As shipowners contemplate the prospect of paying considerably more for compliant fuel in 2020, some industry observers have predicted that as much as \$30 billion additional credit will be required in the market. Traders and suppliers’ credit lines will come under pressure, credit terms may be reduced, and banks may be called upon to increase credit facilities.

Panos Panousis of Infospectrum gave a succinct appraisal of the credit conundrum in 2020.

‘In addition to counterparty and credit risk, we have operational risk, liquidity risk, market risk, compliance risk, recovery risk and concentration risk. There is a lot here, but the crucial part is to look at liquidity risk and concentration risk, and that is where I think some companies are not at all prepared.’

He observed that on the trader and physical supply side there are currently only a few players that are going out and setting up their own facilities and bank lines to ensure their liquidity requirements are properly addressed and met.

‘In addition to own capital, it is essential to set up competitively-priced lines with liquidity providers, such as banks and trade finance houses, and take steps to avoid concentration risk – if you deal with just one provider of capital, there is a huge risk that the only available facility could be pulled back,’ he stressed.

‘Get smarter with debtor book and inventory management, be bankable and insurable, and also investigate insurance-backed solutions’, he advised.

He identified that some traders are taking steps to



substantially increase their facilities in preparation for 2020, but, he warned, ‘the smaller players that don’t have that vision and capacity by way of having the right human resources or their own commercial capacity, will have a difficult time.

‘By failing to prepare you are preparing to fail’ he added.

Cem Saral then took up the discussion, explaining that: ‘What we are going to see is that discipline on cash efficiency is becoming key for any company in order to remain profitable in the market place.’

The notion that transacting directly with a physical supplier rather than a trader also needs careful consideration, he said.

**Get smarter with debtor book and inventory management, be bankable and insurable, and also investigate insurance-backed solutions’**

*Panos Panousis, Infospectrum*

‘If you take a step closer, what you find is that what a physical supplier is can change so much from place to place: in one place, a company has just to produce a BDN to be a physical supplier, but in another jurisdiction, to be a supplier it is necessary to own and operate a fleet and have shoreside assets.

‘So, who is the physical supplier?’ he asked.

‘Understanding your counterparty is more important than what you call that entity,’ Saral stated.

‘As Panos said, you also need to understand your liquidity risks; you are going to have to be able to manage your risk when prices go up by 30% to 40% in 2020.’

In conclusion, Panos Panousis emphasised that the shipping and bunkering industries are seeing a root and branch re-evaluation of risk. He noted that ‘there are changes needed even on the insurance side from a KYC mindset; and buyers should prove to insurance companies that they are insured as this will provide some headroom for the extra credit lines that we are looking for.

‘All the problems and challenges that we are facing today we have faced before. The shock to the system is that the jump required must happen so quickly.’

## PARTICIPANTS

### Keynote address:

**Cem Saral** – Group CEO, Cockett Marine Oil

**Siavash Alishahpour** – Managing Director, VTTI Fujairah Terminals Ltd

**Dr Jorge Antunes** – CEO, TecnoVeritas

**Raffaella Benvenuto** – Lubricants Business Development Manager – Europe, Cockett Marine Oil

**Cristina Cachola** – Head of Supply, Logistics & Refining Planning, Galp

**Charles Daly** – CEO, Channoil Consulting Ltd

**Leïla Esnard** – Avocat au Barreau de Paris, Lewis & Co AARPI

**John Ghio** – Deputy Captain of the Port (Acting), the Port of Gibraltar

**James Kennedy** – Senior Associate, Clyde & Co

**Dirk Kronemeijer** – CEO, GoodFuels Marine

**Panos Panousis** – Managing Director, Infospectrum

**Duncan Ross** – Commercial Products Manager, Heidmar UK Ltd

**Hein Timmermans** – Product Manager – Exhaust Gas Cleaning, Alfa Laval

**Muhammad Usman** – Product Manager, FOBAS, Lloyd’s Register

**Moderator: Lesley Bankes-Hughes**, Publishing Director – Petrosport/Editor – *Bunkerspot*

## Participant Bios



### Cem Saral

#### Group CEO, Cockett Marine Oil

A trader at heart, my professional career as a petroleum product and trading specialist in the oil & gas industry spans more than 20 years and four continents. Currently, I am Chief Executive of a world-renowned multinational organisation with annual revenues of more than US\$2.5 billion, as well as offices in 15 countries and over 800 service points around the globe.

While my early professional life covered physical and derivative petroleum products trading as a P&L owner and manager with a focus on the fuel oil and marine fuels industry, my career path evolved to include various management and leadership roles as a direct result of my successful track record, years of experience and well-rounded expertise.

Throughout my career, I have had the opportunity to live and work in the United States, Asia, Europe, and the Middle East, which has given me invaluable industry insights and an in-depth knowledge of managing businesses across different countries and cultures. In addition, my hands-on experience in commodity trading, customer service and logistics has given me a deep understanding of the full range of leadership and management tasks, and their relevance during challenging industry and business cycles.

I strongly believe that every organisation – irrespective of size, industry, geography or culture – is defined by its commitment towards human capital and a corporate culture that promotes loyalty, devotion, teamwork and proactivity. I also strongly believe that the success story of an organisation, and its sustained and profitable growth, is inevitably linked to an entrepreneurial mind-set and the flexibility to adapt to the needs of an ever-changing world.

#### Key areas of expertise

Fuel oil trader-physical, fuel oil trader-derivatives, fuel oil trader- arbitrage, hedging, price risk management, trade team/book lead, marine fuels trading, M&A and business development, executive management, general management, leadership, change and turnaround management.



### Siavash Alishahpour

#### Managing Director, VTTI Fujairah Terminals Ltd

Siavash Alishahpour is a chemical engineering graduate with a refining engineering major. He has over 30 years' experience in both the refining and oil terminal businesses and was appointed as Managing Director and Board member of VTTI Fujairah Terminal Ltd in October 2011.

He joined the Vitol/VTTI Group in May 2007 after the acquisition of the Fujairah Refinery Company Limited, where he was appointed as the General Manager of the VTTI Fujairah Terminal. He also manages Vitol's Fujairah Refining Limited (FRL) Fzc, an 80,000 barrels-per-day refining facility.

Since joining Vitol/VTTI, Mr Alishahpour has held several leadership positions and served as a board and steering committee member of several businesses and projects in the United Arab Emirates (UAE).

Prior to joining Vitol/VTTI, Mr Alishahpour worked for the Fujairah Refinery Company Limited in Fujairah and the National Iranian Oil Company (NIOC) in Iran.



## Dr Jorge Antunes

### CEO, TecnoVeritas

Dr Jorge Antunes is the technical manager and CEO of TecnoVeritas.

As technical manager of TecnoVeritas, he supervises the company's engineering activities and is also very involved in R&D projects.

He began his career as a maths teacher in Portugal but soon moved into the maritime sector, taking up an internship at Lisnave, a naval yard in Setubal, Portugal, in 1986.

In 1992, he took up a post at Lloyd's Register of Shipping as an engineer surveyor.

Dr Jorge Antunes graduated in 1991 with a degree in marine engineering (with a particular focus on offshore vessel design, drilling engineering and ship transport and operation) from the Department of Marine Technology at the University of Newcastle Upon Tyne in the UK. He continued his studies at this university, completing a Master's degree and a PhD in Marine Engineering.

Today, in addition to his role at TecnoVeritas, he continues to lecture at universities and institutes, in Portugal, Newcastle and Singapore.



## Raffaella Benvenuto

### Lubricants Business Development Manager – Europe, Cockett Marine Oil

With more than 25 years' experience in the maritime industry, Raffaella Benvenuto's expertise lies in business development, sales, customer service and logistics, with a specific emphasis on marine lubricants.

In her current role as Lubricants Business Development Manager at Cockett Marine Oil, and as the key point of contact for Europe's major shipping companies, her focus is on delivering smart, tailored and time effective customer service solutions.

Prior to joining Cockett Marine Oil, she worked with ExxonMobil. Her tenure with ExxonMobil covered various pivotal roles through to Marine Lubricants Territory Manager, where she was responsible for all key sales accounts from Italy and Monte Carlo to Croatia and Slovenia.

Raffaella Benvenuto also worked as a Dedicated Customer Professional (DCP) for ExxonMobil and successfully led the centralisation process for the company's Italian customer service desk in Breda, the Netherlands, while also overseeing the recruitment and training of new staff members to facilitate a smooth business transition and support the company's reputation for customer care excellence.

She notes that:

“Throughout my career I have learned how crucial industry know-how, experience, flexibility, organisational and social skills are, in order to meet and fulfil the clients' needs. In addition, I am fully cognisant of the value of being part of a comprehensive network of internationally acclaimed business partners as a prerequisite for delivering successful projects and reliable services.”

#### Key areas of expertise

Business development, sales and marketing, customer service, invoicing, claims and dispute handling, logistics, deliveries, risk assessment, team management and training.



## **Cristina Cachola**

### Head of Supply, Logistics & Refining Planning, Galp

Cristina Cachola has been the Head of Planning and Technology at Galp since 2014. She is responsible for supply and refining chain optimisation, in the short and medium term, and for Iberian supply and logistics business.

She joined Galp in 1989 and worked on oil risk management operations, before building up significant expertise in oil trading. In 2002, she moved to refining planning on a new project related to integrated margin management, subsequently taking on responsibility for logistics.

Cristina Cachola has a degree in Chemical Engineering from the Engineering University of Lisbon.



## **Charles Daly**

### CEO, Channoil Consulting Ltd

Charles Daly is an international oil marketer and consultant to established and emerging companies.

He is a recognised authority on Middle East, Mediterranean and Russian oil supply markets, and has expert knowledge of financing and legal matters.

He previously spent many years with BP and Ultramar, initially in research, then in logistics and refinery supply, and thereafter in developing business internationally.

Charles Daly is the founder and first vice-chairman of the UK's International Petroleum Exchange. He is deeply involved in due diligence on refinery and oil terminal M & A, and has lectured and given papers on a wide range of oil-related subjects in a number of countries

He is a visiting lecturer in Energy Economics at CASS Business School in London.



## **Leïla Esnard**

### Avocat au Barreau de Paris, Lewis & Co AARPI

After studying both French and English law at Panthéon-Sorbonne Paris and King's College London, Leïla Esnard became an Avocat at the Paris bar in 1999, working in the Paris law firm, Lewis & Co AARPI.

She specialises in shipping and trading litigation in court and arbitration proceedings. She acts for clients in the marine industry, including ship owners, charterers, cargo interests, insurers, bunker traders and suppliers.

She handles disputes arising out of charterparties, bills of lading, commodity sale agreements, bunker supply contracts, ship casualty and pollution, and she is also often involved in ship arrests and the auctioning of vessels. She also has expertise in advising, negotiating and drafting contractual documents, such as oil supply public tenders, contracts of carriage, or pilotage and towage terms.

Leïla Esnard has been consulted in the last few years to advise more specifically on ship air emissions and pollution. She is a member of WISTA (Women's International Shipping and Trading Association) and the AFDM (Association Française de Droit Maritime). She is also a lecturer at the University of Paris VII and at the Training Center for Insurers (IFPASS).



## John Ghio

### Deputy Captain of the Port, the Port of Gibraltar

John Ghio started working in the bunker industry in 1998 when he joined Aegean Bunkering (Gibraltar) Ltd, a subsidiary of Aegean Marine Petroleum Network Inc., when Aegean first set up in Gibraltar.

Whilst at Aegean, he actively participated in expansion projects (with the company going from having three bunker barges to having its own floating storage vessel and five bunker barges) and these included the opening of a station in neighbouring Morocco, obtaining Aegean's own bunker licence and agency licence, and the coordination of supply operations in Gibraltar as well as in other ports.

In early 2011, John Ghio joined the Gibraltar Port Authority as the Bunkering Superintendent. His role was to regulate the bunker industry specifically and, more generally, all oil transfer operations carried out in Gibraltar. The main tool in achieving this is ensuring compliance at all times with the Bunkering Code of Practice, as well as ensuring that the code of practice reflects the best industry practices across the board through constant revisions and updates.

In 2011, he was responsible for the launch and introduction of the STS Code of Practice, through which the Gibraltar Port Authority ensures that all ship-to-ship transfers are similarly regulated. In 2015, he was promoted to the role of Senior Port Officer (Operations Manager) and this role involves the supervision of all port operations. He is currently Deputy Captain of the Port.



## James Kennedy

### Senior Associate, Clyde and Co

James Kennedy qualified as a solicitor in 2008 and has a growing reputation as a strong technical shipping lawyer. He has a good commercial understanding of shipping and international trade disputes, particularly from his secondments to a major international insurance company and one of the world's leading commodities traders. He acts for clients throughout the marine industry, including insurers, ship owners, charterers, traders and bunker suppliers.

He has a broad range of shipping and international trade expertise and is a recognised specialist in bill of lading disputes and bunker disputes. He was a member and legal advisor to the BIMCO sub-committee responsible for drafting the new BIMCO Bunker Terms 2018, and also has a keen interest and growing reputation in the Turkish shipping market.

James Kennedy has represented clients in numerous LMAA, LCIA, ICC and *ad hoc* arbitrations. Recently, he has advised a major bank on a US\$133 million bill of lading fraud, obtaining a Worldwide Freezing Order, Anti-Suit Injunction, and a series of Unless Orders resulting from the defendants' persistent breaches of the court's orders in the Commercial Court. His other significant recent cases in the English Courts include: *Habas Sinai v Sometal* [2010], *Enviroco Ltd v Farstad Supply AS* [2011], *Access Bank Plc v Capital Oil and Gas* [2013], *Aria Inc v Credit Agricole* [2014] and *Songa Chemicals v Navig8 v Glencore Agriculture* [2018].



## **Dirk Kronemeijer**

### CEO, GoodFuels Marine

GoodFuels is a fast-growing sustainable fuel company which is active under various labels and various companies in the production, sales and marketing, trading and development of advanced biofuels across three continents, with headquarters in Amsterdam, the Netherlands.

The company is focussed on serving the following transport segments for which advanced biofuels is (one of) the best option(s) for the foreseeable future to reduce carbon: aviation, shipping and heavy ground transport. With the founders having made a name for themselves in making the market for sustainable jet fuel, GoodFuels Marine is recognised as the global pioneer and market leader in sustainable marine biofuels, serving renowned global marine clients across various marine segments, such as offshore and dredging, navy and coast guard, ferries and cruise, yachting, bulk and container – the latter with the award-winning Goodshipping program ([www.goodshipping.com](http://www.goodshipping.com)) in conjunction with major cargo owners.

Sustainability is paramount for GoodFuels and therefore it has set up its own independent sustainability board consisting of leading NGOs and academics, actively overseeing and monitoring the Group's sustainability practice.

Prior to GoodFuels, Dirk Kronemeijer founded SkyNRG, the Amsterdam-based global market leader in sustainable jet fuel, serving more than 25 aviation customers on more than five continents.

Before his time at GoodFuels and SkyNRG, he worked for 12 years in the airline industry in London and Amsterdam for both low cost and flag carriers, his last position being Vice President - Business Innovation at KLM Royal Dutch Airlines.

Dirk Kronemeijer (1974) achieved his MSc in Business Economics from the University of Groningen and he has completed executive programmes at the International Institute for Management Development (IMD) and INSEAD.



## **Panos Panousis**

### Managing Director, Infospectrum Ltd

Panos Panousis has over 25 years of direct experience in counterparty risk assessment and corporate credit in the maritime and energy/commodities trading sectors. He is the Managing Director and one of the founders of Infospectrum Ltd, which, since its launch in October 1999, has grown to become a leading provider of counterparty commercial due diligence, credit risk assessment, and company analysis reports with a team of around 40 analysts and offices in the UK, Singapore, Australia, Kiev and Bogota.

Prior to the formation of Infospectrum, Panos worked in the same field as a Senior Analyst and Analyst Manager for the maritime unit of Informa Plc, after serving as an Equities Analyst for an investment bank and a maritime equity fund.

Panos has a BSc in Mechanical Engineering and has attended executive education programmes in Business Administration and Corporate Finance at Imperial College and London Business School respectively.

## **Duncan Ross**

Commercial Projects Manager, Heidmar UK Ltd

Duncan Ross served with Pritchard Gordon Tankers and BP before coming ashore to work in Heidmar operations. He subsequently served as fleet manager for handy, MR, Panamax and LR1 vessels. He left operations to drive digitisation and modelling projects within the company's commercial projects team.



## **Hein Timmermans**

Product Manager – Exhaust Gas Cleaning,  
Alfa Laval

Hein Timmermans is a Master of Science in mechanical engineering and within Alfa Laval he is responsible for the PureSOx scrubber range. Built on a century of maritime experience, PureSOx comprises Alfa Laval core technologies and over 50 years of specific experience with marine scrubbers. This is why every PureSOx scrubber ever installed is operating and is in compliance today.



## **Muhammad Usman**

Product Manager, FOBAS, Lloyd's Register

After graduating in marine engineering, Usman started his career as a sea-going engineer and qualified as a chief engineer. During his career at Lloyd's Register FOBAS, his main areas of interest are conducting market research for alternative marine fuels and technologies, the sustainability of fuel choices, environmental legislation and compliance options. He is a member of the ISO and CIMAC marine fuel and lubes working groups.

## **Moderator**

**Lesley Bankes-Hughes,**  
Publishing Director – Petrospot  
Editor – Bunkerspot

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