

The heat is on

In recent years, sales of 500 cSt heavy fuel oil have risen sharply, in line with a decline in the demand 180 cSt product. **Rhys Berry** examines this trend and asks whether the popularity of cheaper, higher viscosity residual grades – used in operation with a scrubber – is set to increase post-2020

Heavy fuel oil (HFO) 380 centiStoke (cSt) has long been the bunker fuel of choice for the overwhelming majority of shippers burning residual fuel. At the world's biggest bunkering port, Singapore, HFO 380 cSt accounts for three out of every four metric tonnes (mt) of marine fuel sold. However, in the last eight years, sales of the lower viscosity HFO 180 cSt have fallen sharply in contrast to the more viscous HFO 500 cSt, which have grown exponentially. In 2009, the latter accounted for 10.1% of the 36.4 million metric tonnes (mt) of marine fuel sold at the global bunker hub that year. Fast forward to 2017 and more than one mt out of every five mt of marine fuel sold at Singapore is 500 cSt.

In August, CEPESA announced it was to begin sales of RMK 500 at the Port of

Barcelona. It was noted that, while the fuel is similar to IFO 380 cSt, it has 'a greater density and viscosity and is also a lower cost product'.

'We follow what our customers want,' says CEPESA's International Sales Manager, Francisco Diaz. 'One of our main sectors is the container sector and we detected demand [for 500 cSt fuel] in Barcelona. It's a product that we can supply on a regular basis with a guarantee of good service.'

In terms of the Iberian Peninsula, the company also supplies RMK 500 in the Strait of Gibraltar from the ports of Algeciras and Gibraltar. According to Diaz, the demand for HFO 500 cSt is coming from ship operators switching from HFO 380 cSt but he is not sure if this is a short-term situation or whether RMK 500 uptake will continue to increase.

'Not everybody can use it because of the

engine configuration but we believe that the customers who use it are using it because there is a good balance between the calorific value and economics. If you compare the density and viscosity of RMK 500 with Intermediate Fuel Oil (IFO) 380 cSt, the specs are a little bit wider. This can give a little bit more flexibility, but for us we produce fuel in the refinery and it's not a major issue producing RMK 500 or IFO 380.'

As with most things in shipping, the increase in HFO 500 cSt consumption is almost certainly associated with cost, and the cost factor is going to become even more critical when the global sulphur cap comes into play in 2020. According to President of Kassinger Consulting LLC., Dr Rudy Kassinger, going with HFO 500 cSt and an exhaust gas cleaning system (EGCS) is a no-brainer. ►

'That to me makes the most sense. I think the spread between by-product residual fuels – "black oils" – and marine gasoil (MGO) is going to widen,' says Kassinger. 'If you look at historic premiums right now, MGO is selling at about 120% of crude cost and black oils are selling at 45% of fuel costs. So the spread between the two is about 45% crude cost.'

He continues: 'I think that spread is going to balloon. There is relatively little alternative for black oil, other than for marine fuel. Also, to make more distillate fuel and to really ramp up production is going to take a massive investment cost which will raise the price. I wouldn't be surprised if the premiums turn out to be 50%-100% of crude costs.'

He points out that: 'Almost anything you add to a black oil will make it better. It makes it lower in sulphur, lower in viscosity, lower in carbon residue among others. It's very hard to make back oil worse!'

But what about the effect of the high-viscosity 500 cSt product on the engine? According to Kjeld Aabo, Head of Marine and Offshore Sales at MAN Diesel & Turbo, this is negligible.

'Of course, you have to treat the engine differently, because you need to be between 10 cSt and 15 cSt, but we have no reports saying 500 cSt should be worse than 380 cSt or 180 cSt. It's just a matter of treating it correctly.'

He continues: 'MAN Diesel & Turbo engines are installed with equipment that can operate with 600 cSt and 700 cSt bunker fuel and there are no long-term effects from using more viscous fuel.'

It is worth noting that the engine manufacturer has also received enquiries from some 'larger operators' asking about going above the ISO 8217 specification to 800 cSt.

'There are certain clients that we work with who've been using these [high viscosity fuels] for a long time and they seem to feel that they're getting a bit better deal'

'That's actually also possible to operate on but there are some issues because if the temperature is getting too high, the ____? in the fuel injection equipment and maybe also the auxiliary system has to be changed a little bit,' says Aabo. 'These are minor things, but issues that, of course, have to be dealt with before.'

In fact, Aabo sees signs of a broader shift to high viscosity fuel and predicts demand for 'more heavy stuff' will continue to rise as the 2020 global caps approaches. Like many

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in the industry, he believes that the spread between HFO and distillate will broaden. The arrival of stricter sulphur standards, however, means that all residual fuel with a sulphur content exceeding 0.5% will need to be scrubbed.

With the looming uncertainty over the availability of ECA-compliant, low-sulphur fuel, ship operators are bracing themselves for the worst. Some will elect to go for distillates and or 0.5% blended fuels, whilst others will opt for EGCSs and hope that their investment pays off sooner rather than later. This will inevitably have a negative impact on HFO 180 cSt. In Singapore, the low viscosity residual fuel, which is around \$30 per mt more expensive than HFO 380 cSt, has become an increasingly scarce component in the overall bunker mix. Almost 3 million mt of HFO 180 cSt was sold at the South-East Asian port in 2007, accounting for 9.3% of all fuel sales for the year. By 2016, this number had fallen to just 562,300 mt, or 1.2%. This figure is likely to slip to below 0.5% come the end of the year.

The rise in popularity of HFO 500 cSt in Singapore is one that is recognised by bunker

testing company Veritas Petroleum Services. According to the group's Commercial & Business Development Director, Steve Bee, there has been a 12% increase in the number of 500 cSt fuel samples submitted for testing compared with 2016. This increase in demand, says Bee, could well be price driven, with 500 cSt fuel less expensive than 180 cSt or 380 cSt grades. However, it is not only Singapore which has seen an upward swing in demand for higher viscosity residual fuel.

'It would appear there has been a definite increase in demand for 500 cSt residual fuel worldwide in 2017,' says Bee. 'VPS has seen a 7% increase worldwide in 500 cSt fuel samples submitted for testing in 2017 versus 2016.'

In addition to the cost savings, there are also other benefits of HFO 500 cSt over low-viscosity fuels. Additives may improve heavy fuel oil but the more viscous the fuel, the less complicated it is. A key benefit of this reduction in cutterstock is that there is less chance of the fuel exceeding specifications.

'From a quality perspective, at present VPS are witnessing approximately 10% of 500 cSt fuel samples tested, exceeding specification for at least one ISO:8217 test parameter, versus the current level of 15% for all residual grades,' says Bee.

'This indicates that 500 cSt fuel is currently of good quality when benchmarked against the total residual fuel grades. The main parameters exceeding specifications are viscosity, density and cat-fines (Al+Si).'

Michael Green, Global Technical Manager, Intertek ShipCare, also attests to the performance characteristics of 500 cSt product.

'[With 500 cSt fuel], you're not necessarily seeing potential issues such as low-flashpoint, sediment, cat-fines. If the owner and the operator are fairly clued up and their crew is decent, then they can handle this onboard without any problems.'

Therefore, this begs the question: why have ship operators persisted with lower-viscosity products for so long if there are substantial savings to be made burning 500 cSt?

'I think to be perfectly honest with you,' says Green, 'it's perception, and it's a historical perception rather than anything else. I think there's an idea – certainly with a lot of owners – that this stuff is probably more difficult to handle. The perception is, because of the higher viscosity, you are going to be limited by the heating capabilities of the vessel. But, in real terms, you're probably not looking at a massive variation regarding heating requirements compared to a 380 [cSt fuel]. It's probably going to be something in the region of 10-15 degrees [Celsius] difference to get it down to a reasonable injection viscosity.'

Green continues: 'There are certain clients that we work with who've been using these [high viscosity fuels] for a long time and they seem to feel that they're getting a bit better deal.'

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