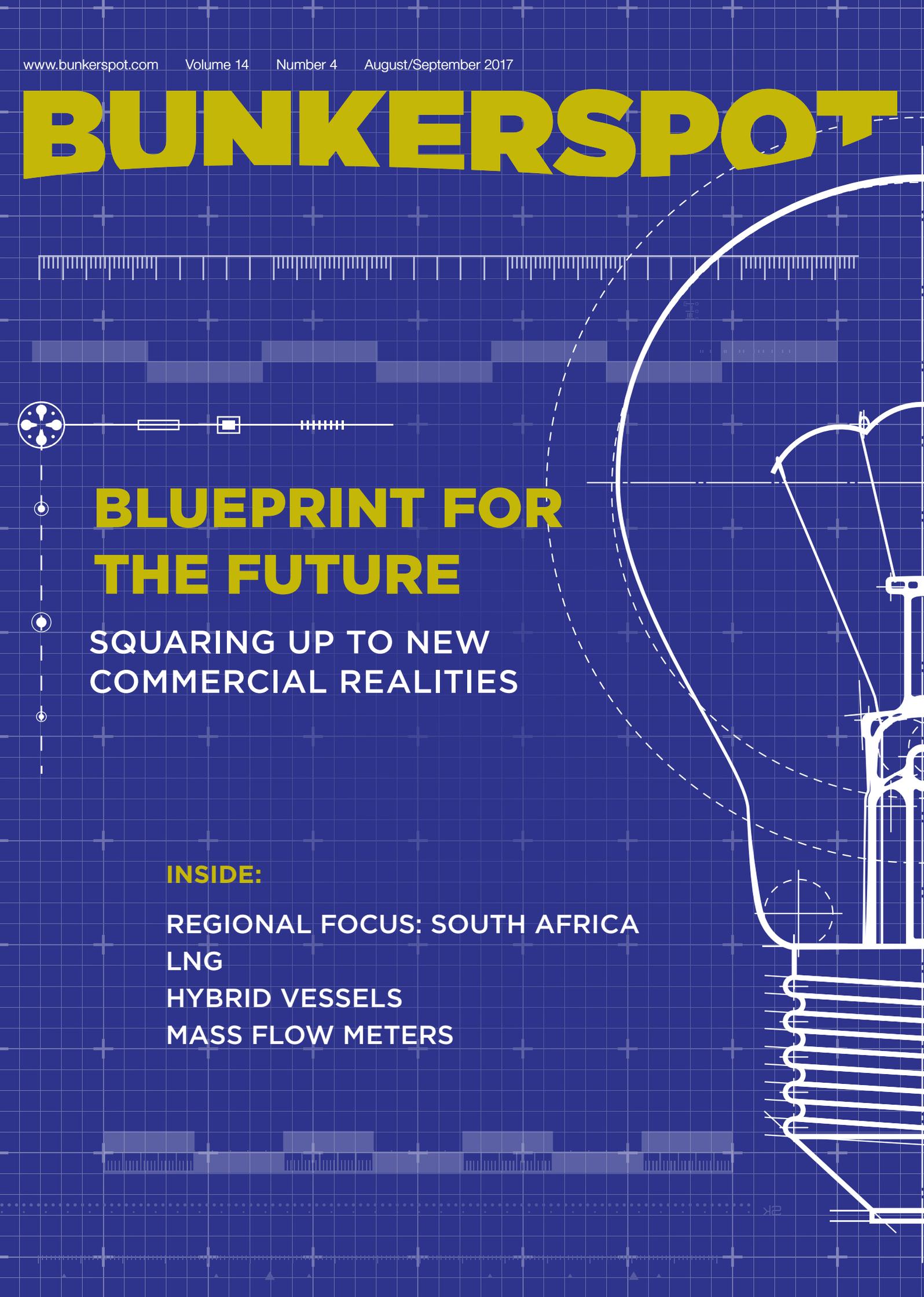


BUNKERSPOT



BLUEPRINT FOR THE FUTURE

SQUARING UP TO NEW
COMMERCIAL REALITIES

INSIDE:

REGIONAL FOCUS: SOUTH AFRICA

LNG

HYBRID VESSELS

MASS FLOW METERS



A robust defence

In July, members of Singapore's bunkering community were alerted by a well-known P&I club's article on the 'limitation of mass flow meters'. **Gabian Chew** talks to experts involved with the Singapore MFM technical committee and representatives of the equipment manufacturer, consultancy, barge operator and industry association segments to gain some clarification about the situation

A report from protection and indemnity (P&I) club Gard on 'discrepancies' of local mass flow meter (MFM) bunkering operations has drawn the attention of several Singapore-based stakeholders within its bunkering community.

The report indicated some Singapore-registered bunkering tankers had siphoned fuel back to their cargo tanks, with the Maritime and Port Authority of Singapore (MPA) suspending several barges for further investigation.

SINANJU TANKERS HOLDINGS - MFMS RAISING SINGAPORE STANDARDS

'The earlier Gard report gives the impression that such discrepancies are rather rampant in Singapore's bunkering industry, which is far from the fact,' says Desmond Chong, General Manager of Singapore-based bunker tanker owner and operator Sinanju Tankers Holdings.

'In the past, before [the use of] MFMs for bunkering was enforced, some operators may not

have been paying too much attention to how the flow meter works or had wrong interpretations of the Singapore Technical Reference for Bunker Mass Flow Metering (TR 48:2015).

'[There] was an awareness and education phase during the initial period of implementation, so minor disputes were not uncommon.'

According to Chong, Sinanju has reduced its bunker fuel delivery time and raised productivity and efficiency with MFM systems.

The process – which includes physical sounding, calculation of bunker volume and documentation before and after a bunkering operation – usually takes three hours on average; while a MFM seal check before and after a similar bunkering parcel, only takes an hour on average, resulting in time savings of two hours.

'The resulting time saved allows shipowners to save money by shortening the receiving vessel's port stay at Singapore,' explains Chong.

'Sinanju, as with many other bunker suppliers here, have built up a reputation of being steadfast in carrying out our operations with utmost integrity, reliability and safety.'

'We would like to reassure fuel buyers that we remain highly committed in helping to raise Singapore's bunkering standards in terms of advancement, increased productivity and higher efficiency.'

SING FUELS - MFM DELIVERY SYSTEM 'CLEAR AND CONCISE'

Bunker disputes have also recently reduced considerably as shipowners experience bunker deliveries with MFM systems, says the General Manager of Singapore-based bunker trading firm Sing Fuels.

'Shipowners initially noticed a variance of 0.5% to 1% in the final delivered quantity after bunker deliveries above 2,000 metric tonnes (mt) and it was this type of quantity dispute which arose in the beginning of the year,' Jeremy Long tells *Bunkerspot*.

'But once we explained to them the mechanics of TR 48:2015, owners were willing to accept the figures and due to this we have recently seen a sharp drop in quantity disputes,

except for certain familiar vessels who always insist on their figures no matter what.'

According to Long, most shipowners have learnt to trust the MFM system as opposed to the sounding method.

'Most ships [which arrive at Singapore] for bunkers-only calls still prefer the MFM system and are so far pleased with the transparency of the MFM delivery system, which is clear and concise,' says Long.

'Enquiries have increased, fixing of nominations is faster as the price difference is minimal and the key to fixing a nomination now lies in the relationship and credit terms between the trader and the owners.'

TR 48:2015 – COMPLETE DOCUMENT COVERING ALL ASPECTS OF BUNKERING

The Gard report further stated 24 cases of discrepancies over the first six months since the official start of MFM bunkering operations at Singapore in 2017 – attributing errors to the receiving vessel's bunker tanker calibration and MFM flow rate measurement.

The Singapore Technical Reference for Bunker Mass Flow Metering (TR 48:2015) is a complete document that covers all aspects of MFM bunkering from set-up, testing and approval to bunkering operations, says industry pioneer and expert Seah Khen Hee.

'All MPA-approved MFM systems installed on bunker tankers here have gone through a very comprehensive and rigorous process to get approval for custody transfer operations in accordance with TR 48:2015, in particular, Clause 6 [metrology requirements] and Clause 7 [system integrity requirements],' he notes.

'TR 48:2015 requirements must also be followed during bunkering operations.'

The project to start TR 48:2015 began in 2009 when MPA and SPRING Singapore jointly initiated a multi-stakeholder Working Group (WG) on Mass Flow Metering under the direction of the Technical Committee (TC) for Bunkering to develop and validate the use of MFM for bunkering, says Seah, who was instrumental in setting up its principles, requirements and procedures.

'In a broader sense, the objective of the [TR 48:2015] project to introduce MFMs was to make the Singapore bunkering industry more efficient than tank gauging, as manual sounding is outdated and susceptible to external interferences,' he explains.

'The direction is also to bring about a more transparent system where all data can be captured, and by that process reduce quantity disputes while bringing the whole industry into the digital age with

the possible integration with other services such as the electronic bunker delivery note (e-BDN) and remote real time monitoring.

'The objective has been met.'

In response to the alleged fuel siphoning activities of Singapore-registered bunkering tankers highlighted by Gard, Seah noted the TR 48:2015 document having already laid down the requirements to prevent such activities.

A key principle of Clause 7 of TR 48:2015 is for the piping between the meter and custody transfer point on the receiving ship to have no bypass to cause measured quantity to flow back into the bunker tanker.

'We already expected attempts to break the system to happen, that is why we wrote down procedures in TR 48:2015 which offer bunker surveyors a role for checking the seals, a piping diagram of the bunkering tanker and more,' says Seah.

'Bunker surveyors are still needed. They need to know about MFM system set-up and operation and how dispute arises; this is why they must remain vigilant to properly carry out the job. It is misguided thinking for shipowners not to employ bunker surveyors just because of MFMs, as in the bunker context you always need vigilance.'

A source earlier told *Bunkerspot* that discrepancies in the report, where shipowners claimed a loss of 6.79 to 57.24 mt in 24 cases, ranged between 0.6% to 2.3%.

'There is no basis to the claim. Shipowners using 0.6 to 2.3% tolerance as discrepancy for lodging a dispute represents an incorrect understanding of legal metrology,' states Seah.

'MFM systems under TR 48:2015 have metrological traceability to the International Prototype of the Kilogram (IPK) and should there be any reason to dispute the MFM figure, the dispute resolution involves only checking whether the approved MFM system breaches Clause 6 and Clause 7 of the TR48:2015 as well as the procedures laid down in the document.'

Proper courses and training are currently available at a number of accredited ►

The Maritime and Port Authority of Singapore responds

The implementation of MFMs for bunkering operations at Singapore has achieved positive feedback from the shipping and marine fuels industry, says an MPA spokesperson.

'The MPA's move to make MFM mandatory for fuel oil deliveries has helped enhanced transparency in the bunkering process and increased productivity,' he tells *Bunkerspot*.

'With greater transparency, the MFM enables the MPA to better enforce the bunkering regulations.'

'For example, the MFM delivery profile allows us to look into the details of bunker deliveries including abnormalities such as excessive stoppages or aeration, thereby deterring abuse to bunkering procedures.'

According to the spokesperson, Singapore's total bunker sales volume posted growth of over 2% year-on-year during the first six months of 2017 – achieving sales of almost 25 million mt.

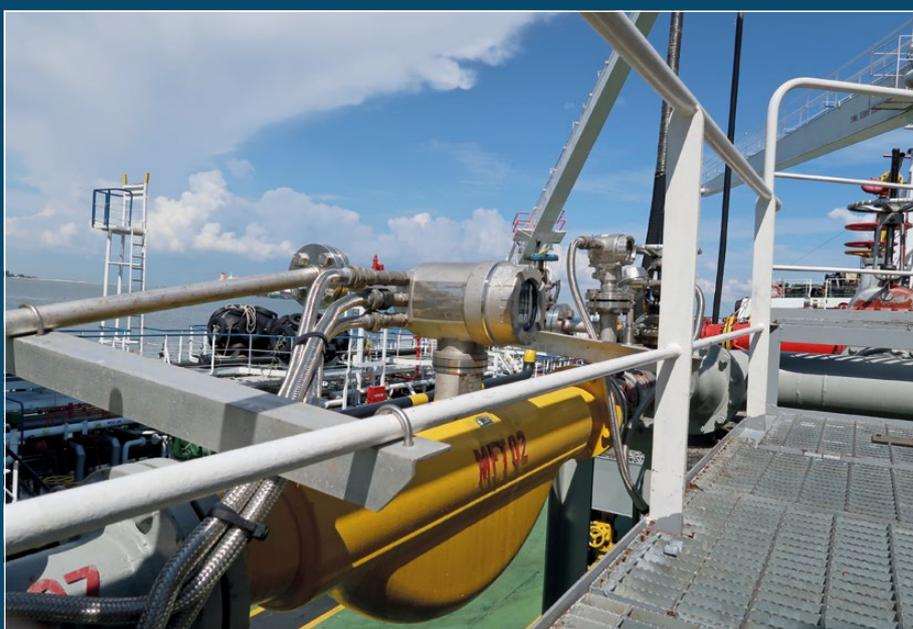
Bunker suppliers have also reported time savings of between two and a half to three hours per bunker delivery.

'With greater efficiency in bunkering operations, bunker craft operators can optimise the turnaround time of their bunker tankers to bunker more vessels,' he says.

'These time-savings represent significant productivity gains for our bunkering industry.'

'In the first six months since implementation, we observed our fleet of bunker tankers delivering close to 10% more bunkers compared to the same period last year.'

'The MFM system is designed with a traceability stem all the way back to the S.I. unit and comparing its readings with the receiving vessel's unverified calibration tables from shipyards will be the key cause of error in measurement'



institutions, such as the Singapore Shipping Association (SSA) and the International Bunker Industry Association (IBIA), for interested parties such as shipowners and P&I clubs to properly learn more about MFM.

ENDRESS+HAUSER - CONFIRMS LONG-TERM RELIABILITY OF MFMS

The measurement uncertainty and reliability of MFM systems is backed by Ingo Knudsen, Regional Business Development Manager at MFM manufacturer Endress+Hauser, which has participated in the development of TR 48:2015.

‘Some people are thinking whether the measurement uncertainty of the system could be maintained for the long term,’ he says.

‘So far we have one MFM operating for 10 years installed onboard a cruise liner that undergoes bunkering operations every week – the device is still on spec even until today.’

Knudsen, in the meantime, understands the introduction of MFMs in Singapore has resulted in a number of bunker disputes – but only during the first three months (January to March) since the official start of MFM bunkering operations in 2017.

However, disputes ‘dropped dramatically’ after March when shipowners realised that there is no more room for negotiation when operations are conducted in accordance with TR 48:2015.

‘Now, it is very seldom to hear of an official bunker complaint,’ he states.

‘In fact, shipowners have told us since Singapore has introduced MFM they have received the amount of fuel they pay for.’

One future development which Knudsen hopes to see more of is surveyors gaining a deep knowledge of MFM systems in order to support shipowners.

‘We still need surveyors, but they will need to take on different duties now,’ he observes.

‘In the past it was tank sounding; today surveyors getting a to be smarter to look for possible breaches within the piping system behind the MFM system. Also to check if seals and components are intact before and after the bunker operation. They also need to ensure the bunker tanker crew is following TR 48:2015 operation guidelines.’

METCORE INTERNATIONAL - MFM MAKES ‘REVOLUTIONARY’ CHANGES TO THE MARKET

TR 48:2015 covers the scope of traceability, system integrity and metering operations – says Darrick Pang, Managing Director at

Singapore-based MFM consultancy Metcore International and bunker surveyor firm Metcore Inspection Services.

'The whole MFM system was calibrated and tested under bunkering conditions to ensure that the overall expanded uncertainty falls within 0.5%,' he explains.

'That is why the Singapore MFM-equipped bunker tanker is subjected to tests that not only include measurement repeatability but meter traceability, crew competency and system integrity to ensure conformity of both the tankers and meter with the requirements [TR48:2015].'

The accuracy of the MFM has also resulted in a number of shipowners using the technology to verify the vessel experience factor (VEF) of their vessel's bunker tanks to produce consistent readings when compared to manual sounding, says Pang.

He believes it will require some time for all the 'bad apples' in Singapore to understand the MFM is a robust system and here to stay.

'There's always a system set-up and compliance phase,' notes Pang.

'This is the early stage in the culture where we witness people who try not to comply; but if you look at the bigger and more positive side, MFMs have already started making the revolutionary change but it is just that there are still some bad apples trying to break the system.'

'However, the key thing is today all MFM bunkering operations can be digitally traced through a metering profile and culprits cannot escape anymore when they get caught – this is the advantage.'

According to Pang, TR48:2015 also specifies operational guidelines such as the minimum mass flow rate (Qmin) and maximum max flow rate (Qmax) of a MFM unit which players need to work within in order to achieve compliance.

'The issue comes about when players try to do things outside the system and then blame it when measurements get inaccurate,' he says.

Additionally, the transparency of MFM data has also brought about a new trend in bunker disputes where small quantities, such as 10 mt of fuel, are coming into question; in the past players would simply settle the figure on the spot when using manual tank gauging.

'In the early days you never heard of a 6 mt dispute so it brings out the transparency of the system where the expectations of the Chief Engineer have to be changed,' Pang explains.

'The MFM system is designed with a traceability stem all the way back to the S.I. unit and comparing its readings with the receiving vessel's unverified calibration tables from shipyards will be the key cause of error in measurement.'

'This is the new type of dispute we are

looking at when compared to the old days where we compare inaccurate readings from manual tank gauges to a vessel's unverified calibration tables, where both readings may be wrong in the first place.'

Moving forward, Pang believes the continued periodic monitoring of MFM on both system integrity and metering operations on Singapore-registered bunker tankers will be a key topic of discussion for the future.

INDUSTRY VETERAN ADDRESSES MARKET MISUNDERSTANDING

Singapore's MPA started conducting spot checks on all MFM bunkering tankers since the start of 2017 to ensure system integrity; these checks are conducted regardless of the bunker tanker being in operation or not – the routine inspection was how the port authority found irregularities with several bunker tankers in March, says industry veteran Simon Neo.

disputes or were the complaints officially lodged with the port authority concerned? Also, how accurate was the receiving vessel's tanks in terms of calibrations?

'There have been many cases where the receiving vessel has hidden tanks. It is not new to hear of a vessel explosion when undergoing hot works at a shipyard due to workers not knowing there is a hidden tank.'

He recommends highlighting to the MPA discrepancy cases involving MFMs, as the MPA will be able to extract the raw data from the MFM unit concerned for comparison with surveyor data; this is because the surveyor data is extracted in the form of an Excel document that is susceptible to intentional changes while data stored within the MFM system can only be accessed by MPA.

'In the past when there is dispute of 5 to 10 mt the supplier tends to just give way or absorb half, but now with MFMs you cannot negotiate because the

'A key principle of Clause 7 of TR 48:2015 is for the piping between the meter and custody transfer point on the receiving ship to have no bypass to cause measured quantity to flow back into the bunker tanker'

Overall, the Gard report may be a result of a general market misconception by shipowners who believe any Singapore MFM bunker delivery with discrepancy of more than 0.5% to be a valid case for dispute, observes Neo, a former Chairman of IBIA.

'0.5% is the measurement uncertainty of the MFM system which bunker tankers are subjected to during the testing phrase for approval under TR 48:2015,' clarifies Neo.

'This 0.5% is not for quantity dispute, the percentage for quantity dispute has never been specified all along and it has always been a commercial settlement between the buyer and seller. Historically this has been the case all along.'

'Basically, we are back to the traditional argument of a binding final quantity based on the bunker tanker. Quantity received by the receiving vessel is always for shipowners' reference only. This is practised worldwide and in every port that the vessel takes bunkers from.'

'Gard represents shipowners. Did they launch an investigation into all these alleged

whole thing is computerised,' says Neo.

'When doing physical sounding in the past there also is a tendency for measurements to be inaccurate as the bunker tanker is rolling and moving, so with all the movement of oil in the tank one never can get an accurate sounding – these factors are now irrelevant to MFMs because the technology is not affected by movement of the ship.'

'In fact, business has changed and the majority of suppliers don't do stripping during bunkering operations these days and any stripping is usually reserved at the very last tank.'

Note: This feature is an amplified version of an online *Bunkerspot* news article, 'Singapore bunker supply chain clarifies "limitation of MFMs" P&I club report', which was published on 14 July 2017.

 Gabian Chew

 Tel: +65 9833 30 67

Email: gabianchew@hotmail.com