LNG

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Webinar Q&A summary:
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Most of the time, you have been speaking about newbuilds. Do you see any opportunity for retrofit activities on existing fleets? And who is best placed to take the lead on retrofitting?

PK | Retrofitting is extremely difficult except in certain specific types of vessels and engines, such as the Wes Amelie feeder class.
I would be interested to see a direct comparison between LNG and other fuels, e.g. methanol and hydrogen, comparing the advantages and disadvantages and which fuel works best in which application.

PK | Please follow this link to the SEA-LNG web site, and find the alternative fuels study undertaken by DNV GL.
How will the industry cope with methane slip in the future?

PK | The OEMs are working hard to continue to reduce methane slip. Winterthur Gas & Diesel Ltd (WinGD) has unveiled a new exhaust recycling technology in its second generation of X-DF dual fuel engines that promises a 50% reduction in methane slip, and Wärtsilä has also undertaken work in this area. In addition to engine developments, Wärtsilä has pointed out that the largest source of methane emissions – the production, storage and transport of fossil LNG – will be significantly lowered when biomass and synthetic sources emerge.
Clean Jacksonville has been mentioned quite often -- is it the most developed port today with regard to infrastructure for providing LNG to customers?

PK | Clean Jacksonville is an LNG bunker barge which operates in the Port of Jacksonville and uses GTT’s membrane technology for its onboard LNG tanks. Yes, Jacksonville is a model for LNG bunkering. Shipowners TOTE and Crowley support two liquefaction plants operated by Eagle and JAXLNG as well as truck to ship, tank to ship and barge to ship LNG bunkering.
CMA CGM decided to build large, LNG-powered container ships with 18,000 m³ membrane tanks that allow their ships to bunker once on a Europe-Asia-Europe roundtrip. What is the reason for that decision? What tank sizes should we expect in the future? Will these sizes be the norm for deep sea vessels adopting LNG?

Each operator has its own plans and programs. SEA-LNG members have LNG tank sizes ranging from the relatively small tanks used by local feeders to the 18,000 m³ for CMA CGM and all numbers in between. Once size does not fit all when it comes to LNG tanks, but will vary with owner preference and vessel deployment and size.
Are class society approvals in place for use of LNG?

PK | Absolutely. All class societies embrace LNG as a marine fuel.
Are there any special storage requirements for LNG?

PK | LNG is a cryogenic fuel and requires proper storage and specialised tanks to keep the fuel in its liquid form.
LNG shipping has an incredible safety track record over the past 50 years thanks to very skilled crews. As more and more conventional ships are fueled with LNG, more and more conventional crews (not used to dealing/managing LNG) are using this fuel. I know most companies are training/familiarizing their crews, however I wonder whether this safety track record will remain as unblemished in the coming 5-10 years. Training is of the utmost importance, but surely with more operators, there will be an increased risk?

PK | Training is essential and Port State authorities are well aware of the training requirements. [Training crews] has not been an issue to date and with the programmes that exist for added training, it should not be a problem in the future.
What are the real production figures of bio-LNG nowadays? Though surely very promising, I’d like to know the production costs of bio-LNG compared to normal LNG from an oil field and also the true production capabilities. Where are we now and are there any big plans by governments or utility companies to develop bio-LNG at an important scale?

PK | Please follow this link and see the CE Delft study on availability and costs of liquefied bio and synthetic methane on the SEA-LNG web site for detailed information.
What are the STCW certification requirements for engineering crew members on an LNG-fuelled vessel?

PK | I do not know, but SGMF can likely respond to that question. Please follow the link to visit their website.
Hi Peter, It would be great to understand the business case for ports to invest in LNG bunkering given the very small number of vessels utilising LNG to date and the 30 bunker vessels/barges planned for construction. Are these vessels being built for ports with regular LNG powered vessels visiting them?

PK | In many cases it is not ports investing, but private enterprise. There is a need to bunker LNG, it can make a return and therefore the investment. Please follow the link to find business case studies on the SEA-LNG web site.
Question to Peter: Any comments on the potential for technology being developed by Samsung Heavy Industries and Bloom Energy, a US-based fuel cell manufacturer, of fuel cell-powered vessels that'll use LNG as fuel.

PK | No, I have no knowledge of that technology.
Is there enough infrastructure available at ports to supply LNG to ships?

PK | At major ports there is enough infrastructure, yes, and the infrastructure development is growing.
Only Europe seems to have some infrastructure. How is it developing in Asia and the US?

PK | Japan, Singapore and others are developing infrastructure in Asia. In North America, Florida, Virginia, Labrador, Vancouver, Tacoma and New York are all operational or developing. So LNG infrastructure development is global.
What are the plans to develop infrastructure at ports to supply LNG in the next 5-10 years?

PK | The infrastructure is growing as demand increases globally.
How many ships are operating on LNG as a fuel currently?

PK | More than 200, with about the same number currently on order.
How many ships are expected to operate on LNG in the next 5-10 years?

PK | That number is difficult to predict given the downturn in the global economy, but a sizeable percentage of newbuilds will be LNG capable.
Loss of storage space to LNG could impact economics of shipping operations as ships will be able to carry less goods. How do you plan to resolve issues of space on ships given that LNG will need storage space on board?

PK | This will always be an issue, but given its energy density, LNG has about half the space needs of alternatives such as ammonia and hydrogen. Please follow the link and see the DNV GL Alternative fuels paper on the SEA-LNG website.
It was stated that LNG greenhouse gas (GHG) life cycle assessment shows 21% reduction in GHG -- compared what type of fuel(s)?

PK | As compared to current fuels on the market.
As we have few ships burning LNG, are you able to conduct a proper or factual measurement of methane slip [levels]?

PK | The engine manufacturers (OEMs) measure slip and have programmes to reduce it, especially in low-pressure four-stroke engines.
Does the aforementioned 21% GHG reduction refer to LNG versus very low-sulphur fuels (VLSF)? What about LNG’s overall CO2 footprint?

PK | As compared to current fuels on the market.
Is the 21% GHG reduction enough to achieve the IMO 2030 and/or IMO 2050 target?

PK | No, but with other EEDI measures and bio or synthetic fuels as a drop in fuels, [the target] would likely [be achieved] by 2050.
In your opinion, will it be possible to achieve a higher level of GHG emission reduction by mixing carbon-free fuels, like ammonia and/or hydrogen, with LNG?

PK | Ammonia and hydrogen may mix in the engine, but there may be issues regarding storage due to pressure requirements, toxicity, etc. These need to be studied once alternatives are available for real testing. That is likely more than 10 years out.
When will the industry start looking at the methane slips/leaks from high-pressure compressors required to supply LNG to MAN's ME-GI engines?

PK | The industry has constantly been looking at slip and how to reduce it. Much improvement has been realized as recent announcements have indicated.
What are the current standards and procedures available, globally, for LNG use and which is the regulating body on LNG safety?

PK | No global standards exist as yet, but organizations such as SGMF are actively involved in their development.
How does methanol compare against LNG as a fuel oil bunker in terms of cost of fuel, engine use, storage, and safety?

PK | Please follow this link to the SEA-LNG web site, and find the alternative fuels study undertaken by DNV GL.
How does LNG compare in terms of GHGs against marine gas oil (MGO) and methanol?

PK | Please follow this link to the SEA-LNG web site, and find the alternative fuels study undertaken by DNV GL.
LNG is still fundamentally fossil fuel derived and whilst it has great emission-reduction benefits, how can it truly be a 'sustainable' part of net-zero?

PK | When LNG is blended with and ultimately displaced by bio- and synthetic LNG, it is truly a sustainable part of net-zero.
Why LNG over hydrogen?

PK | LNG is safe, available now, competitively priced, sustainable and there is adequate supply globally. LNG solves air quality issues and assists world health initiatives and moves us forward immediately. Waiting only makes the problem worse. We should take the improvement offered by LNG now and work to build.