

Offshore Energy Law

LNG Propulsion: Are we there yet?

Since the Baltic meltdown, the shipbuilding market has remained, for most of the intervening period, at a Beaufort zero. At times, the scale occasionally nudged a 2 or a 3. It could be well said that those nudges were driven mostly by owners/operators' growing interest in more efficient propulsion systems capable of achieving cleaner emissions and lower fuel costs.

Naturally, using LNG as marine fuel as an alternative to diesel fuel has become an entertaining idea, and has been successful in practice with smaller vessels operating short runs such as ferries and support vessels. In respect of larger vessels operating longer routes, the LNG shipping industry naturally has been at the forefront of developing a method of LNG propulsion using boil-off gas ("BOG").

Although boil off rate has been greatly reduced thanks to advanced CCS (cargo containment system) technology, natural BOG is unavoidable and must be treated properly and safely.

It has been proven that onboard LNG reliquefaction is uneconomical for most ships. So manufacturers have focused on developing technology that allows BOG to be routed to the ship's propulsion system and used as fuel.

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The D/TFDE (dual/tri-fuel diesel electric) system allowed for a giant leap forward in fuel consumption but these systems do not allow the flexibility of mixing fuel types simultaneously. The next generation of clean and efficient propulsion, the M-type, electronically controlled gas injection ("MEGI") propulsion allows for burning gas and HFO simultaneously at an adjustable mix ratio and

hence it is expected that MEGI will achieve daily fuel consumption of approximately 25% less than the latest DFDE system.

For example, MEGI engines have flexible fuel modes that range from 95% natural gas to 100% HFO and anywhere in between.

A minimum of 5% HFO for pilot oil is required as natural gas is not self-combustible.

Despite the fact that MEGI engines have yet to be truly tested at sea, MEGI propelled vessels take up more than 25% of the current orderbook for LNG carriers, showing that the shipping industry is buying into the new system.

But perhaps the more intriguing part of the story is that the world's first MEGI propelled vessel is not an LNG carrier. That honour goes to US Jones Act carrier TOTE's 'Isla Bella', a 3100 teu class container ship delivered on 16 October 2015. She was designed by the Korean shipbuilder Daewoo Shipbuilding & Marine Engineering Co (DSME) and constructed at NASSCO's San Diego shipyard.

Even PCTCs (pure car truck carriers) are in the mix, as United European Car Carriers (UECC) placed an order for two MEGI equipped PCTCs, set for delivery in the second half of 2016. As for LNG carriers, Teekay recently revealed that its newly built 'Creole Spirit' equipped with MEGI engines has sailed out from the DSME shipyard for sea trials.

This is not to suggest that LNG powered vessels will suddenly take over the shipping world. As much as LNG propulsion has lower emissions and increased fuel efficiency when compared to conventional diesel-powered ships, the technology remains more expensive and the logistics of LNG bunkering will need to be sorted. To be truly accepted as the 'norm' in the shipping industry, LNG propelled bulk carriers would also need to progress beyond the design stage.

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However, environmental awareness is becoming an increasingly crucial factor in the shipping industry, and it may only be a matter of time before the efficiency of LNG propulsion is too significant to discount, even for the general cargo/bulk carrier.



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