

LNG bunkering

Technology innovations drive development of LNG infrastructure

The year 2020 is fast approaching and with it, comes the IMO's new global emissions regulations. Set to take effect on 1st January, this means owners of ships travelling in international waters must drastically reduce the amount of harmful particles they emit.

For many, this means looking to LNG, as **KC LNG** explains.



Liquefied natural gas, or LNG, is often regarded as the primary solution to achieving a greener marine sector as it offers significantly lower particulate emissions compared to diesel, marine gas oil and heavy fuel oil. The challenge right now, however, lies in the development of the technology and infrastructure

necessary to make LNG more profitable and convenient to adopt for cruise ships, freighters and ferries across the globe.

gasworld spoke to Frej Olsen, Head of KC LNG, the division of MAKEEN Energy devoted to designing and manufacturing small-scale LNG solutions, to learn more about the future

opportunities and trends in LNG bunkering technologies. And there is clearly no doubt in his mind that, with the right investments and innovations, LNG is set to be the next big thing in marine fuels.

A need for flexible infrastructure

Contrary to conventional fuels, the maritime

infrastructure for LNG is still far from fully developed. Production is centred in a handful of large-scale liquefaction plants around the world, meaning that it frequently has to be transported over great distances, through distribution terminals, to reach the consumer.

“The current distribution system for LNG is a big factor in driving up the price of the fuel. You have to pay a lot of extra money just to get the fuel to the user. This also means that LNG is not being as widely used as it deserves. It’s a shame, because it is such a practical and efficient fuel that can also do a lot of good for the environment,” Olsen says.

There are several players in the industry who are working on changing this, however. KC LNG is one of them. Olsen explains how his company is approaching this challenge. “One of our goals is to bring the liquefaction of natural gas closer to the consumer by offering small-scale liquefaction solutions that make it possible to localise the production. We have spent years on a project to develop a modular liquefaction plant that is more cost-efficient than any previous solutions.”

“We can shorten the supply chain significantly with these types of solutions, lowering the price and making it more feasible for the marine industry to make the switch to LNG.”

Time is of the essence

In the highly competitive and deadline-driven marine sector, there is one factor that is critical for success: time. Whenever a ship spends time at the dock, for example during bunkering, it is losing precious hours that could be spent at sea.

“There is a clear trend towards solutions that reduce the amount of time lost during bunkering. We hear this loud and clear from our customers: time is a deciding factor for them. That is why we focus on solutions that bunker at a higher flow speed compared to the standard truck-to-ship methods that are commonly used today,” Olsen states.

Mobility is another important factor - especially now that cruise and cargo ships are converting to LNG. These huge vessels



“One of our goals is to bring the liquefaction of natural gas closer to the consumer by offering small-scale solutions...”

often have no permanent port of call, meaning that they cannot rely on their destination having a permanent LNG bunkering installation - not yet, at least.

As Frej puts it, “It’s going to take years before the LNG infrastructure becomes so developed that an LNG vessel can bunker at a permanent installation at every port. In the meantime, we can create solutions that can be moved around without much effort - either on the ship itself or on a truck. This flexibility opens many options for ship-owners, which is why it is a feature that is being asked for more often.”

New products reduce time at the dock

With these concerns from its customers taken into account, KC LNG released a new product in 2018: the Y-piece. Named for its Y-shaped design, this mobile adapter allows its owner to bunker a ship with two tank trailers simultaneously - or more, if several adapters are combined.

This multiplies the capacity and drastically cuts down the time necessary to refuel an LNG-powered vessel. And the adapter itself is small enough that it can be hand-lifted by just two people.

“The Y-piece was our response to a customer who needed an inexpensive and flexible way to cut their bunkering time, and I think we came up with a solution that is so flexible that it can be applied almost anywhere. And we have new solutions coming that allow bunkering

with 4-6 trailers simultaneously. Even small innovations can make a big impact when it comes to helping ship-owners, as well as the fuel companies, embrace LNG.”

Olsen believes that the immediate public interest upon product release shows that there is a gap in the market for this type of flexible and time-saving bunkering equipment. “That is why solution providers like us need to work very closely with our customers and really understand the challenges they face,” he says. “That is the only way forward if we want to deliver the right technologies that can grow the market for LNG as a marine fuel.”

An industry on the rise

It is difficult to predict exactly when LNG will have its big breakthrough. The price of oil, geopolitical developments and a range of other factors all influence the degree of investments being made into fuel infrastructure. Olsen, however, is convinced that the use of LNG will only increase in the near future.

“It depends on the industry’s ability to innovate and bring new options to the table. If we can do that, and I know we can, then I am confident that we will see exponential growth over the coming years. With the rising attention to the environmental impact of the marine sector, LNG will take the front seat when investors decide where to put their money in the future.”

While the International Maritime Organisation’s (IMO) new regulations in 2020 are an important motivation for the marine sector’s transition to LNG, Olsen believes that regulations have to be accompanied by economic incentive. “Environmental concerns are just one thing - we need to develop technology and solutions that make LNG at least as financially viable as conventional fuels. It requires some outside-the-box thinking.”

“When the marine sector knows that it is possible to have LNG delivered anywhere, at any time and at competitive rates, then we will see investments go up significantly.” [EW](#)