

LNG as a fuel- Good or bad?

We have given this Comment page over to Ian Adams, the former IBIA secretary general and now an independent consultant*, who airs his views on LNG as a fuel (see Bunker Feature on page.....).

In 2007, I attended a conference where the possibility of using Liquefied Natural Gas (LNG) as a fuel for international shipping was raised.

At the time, a cruise ship company's representative said that he could not see how this would be a viable option unless the fuel was towed behind the ship in a separate vessel. This was greeted with great hilarity among the audience and among the panellists.

Ten years on and we are now awaiting the delivery of the first cruise ships to be LNG powered along with Ro-Ro ferries, containerships, platform support vessels, dredgers and drillships to name but a few, either under construction or indeed delivered and operating.

Why? Is this fuel the panacea for all our emissions issues?

Let's look at the reasons why LNG has become for many the fuel of the future.

MARPOL Annex VI when it was revised in 2008 had set targets for ships emissions. The sulfur content of fuel oil globally has been reduced to 3.5% m/m and the fuel used in Emission Control Areas (ECA's) to 0.1% m/m.

Previous experience gained when MARPOL Annex VI first entered into force in 2005 had enabled both sides to prepare for the subsequent transitions well with minimal disruption. In 2020, the global sulfur cap will reduce to 0.5% m/m.

Except for a very small number of crudes residual fuel from the refineries of the world

will not comply with this limit. Instead, we will have to find an alternative source of energy. The simplest solution is to switch to distillate fuels - marine diesel oil (MDO) or marine gas oil (MGO) but both MDO/MGO are expensive.

LNG on the other hand is plentiful and cheap. It also has the added attraction that when burnt it produces no Sulfur Oxides (SOx) and it reduces Nitrogen Oxides (NOx) by about 85%. In addition, by switching from heavy fuel oil (HFO) to LNG, we will produce around 20% less carbon dioxide (CO2).

The international code of safety for ships using gases or other low-flashpoint fuels (IGF Code) was developed and adopted at the IMO through the Maritime Safety Committee (MSC) on 11th June, 2015.

During the revision of Annex VI there was another parallel working group (WG) at IMO discussing Greenhouse Gas (GHG) emissions from ships. Whilst there has been no progress currently, IMO is coming under increased pressure to take action. The Paris agreement failed to include international shipping, but it is only a matter of time before attention will turn to our industry. Shipping contributes around 2% of global CO2 emissions (796 million tonnes in 2012).

As mentioned above, by switching to LNG, we will reduce the amount of CO2 produced by around 20%. LNG is predominantly methane. Methane is identified as a GHG and is rated at 28 times more harmful over 100 years and 84 times more harmful over 20 years than CO2.

Crosshead - 'Methane slip'

A catastrophic release would undo all the good that burning it has done. An EC report produced in 2016 indicated that although

improvements have been made there is still 'methane slip' through engines, around 7 g per kg at high loads, increasing to 23-36 g at lower loads. We should also look at the whole supply chain from well to consumer and consider all the methane slip in the system.

The report acknowledged the reduction in the headline gases but also identified the fact that burning LNG generated more ultrafine particulates. These ultrafine particulates can penetrate the respiratory system and get transported to all parts of the human body via the bloodstream.

LNG shipping has a fantastic safety record. Again, why is this? The crews on the LNG fleet are the highest trained in the fleet. Are we going to train all our crews to this level? Then there is a question of infrastructure. We do not have the facilities for delivering this fuel. You cannot use a standard bunker barge to deliver it. Will LNG terminals be keen to welcome all comers to their berths?

In conclusion, LNG is a distraction, at best it is an interim solution to a larger problem. The sooner shipping grasps the nettle of the bigger picture the sooner we will have a truly sustainable solution for an industry that is vital for international trade.

There are many lobby groups that are calling for a zero-carbon world. One where fossil fuels are eliminated from the energy market. LNG will not fit with that idyll.

*IMA Marine is a consultancy specialising in bunker fuels. Services offered include advising on purchasing policy, training, and provision of expert witness. Adams was the secretary general/CEO of the International Bunker Industry Association (IBIA) between 2001-11. He holds the Cardiff University Bond Solon Civil Expert Certificate.

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