

LNG as vessel fuel and the problematic issues concerning ship emissions

# Meeting several targets at once

**Discussion is good and, having worked within several areas of LNG business, we would like to contribute to the ongoing LNG debate with a short response to the article "Sobering up the future vessel fuel battle" (BTJ 1/2011) by Dr. Per Olaf Brett on the challenging issues of ship emissions.**

Photo: BW Gas

**T**he article has many good ideas, such as increasing load factors, shortening port times, speed reductions, and wider bodied ships. We like to look across the silos to try to get the full picture: the abovementioned proposals could be combined with LNG and result in achieving even greater savings.

## Is the future now? Tipping point

Dr. Brett's main concern regarding LNG lies in the area of expenditures – both of added installation costs and fuel costs. There are some practical challenges on the ships and getting infrastructure in place, but these are already business opportunities for some. This is always the case with new technology, often more easily quantifiable than income.

Ship engine manufacturers have seen the potential and several are building gas-fuelled engines (or they are enabling their land-based gas engines to be used in ships). Wärtsilä and Rolls-Royce have been the main pioneers, but also Cummins, Caterpillar, Mitsubishi and MAN have come a long way in developing gas-driven marine engines. Increased competition is good for the market, both in terms of innovation and cost reduction.

Even though the market for LNG as marine fuel is still small, it is becoming a competitor to high quality oil products in Northern Europe. Wholesale LNG prices are at times lower than those of oil products and this trend may extend to fuel providers sourcing the fuel directly from large scale terminals, such as Gate (The Netherlands), Zeebrugge (Belgium) and Swinoujście (Poland). Further, scrubbers and other environmentally driven investments are avoided. Developing attractive business models for infrastructure which incorporate synergies by

integrating several types of users add value too; Volvo has trucks running on LNG and there could be synergies e.g. in ferry ports for fuelling both land and sea traffic from the same terminal. Gas grids could get an additional delivery point, and biogas suppliers could get a back-up resource and access to new markets.

## Which energy source should one commit to?

Oil is a finite resource already struggling to meet growing demand (partly due to political issues, e.g. Iraq, Libya, Iran) and it is controlled by the OPEC cartel. High oil prices are motivating more shipping companies to look for new solutions. Gas is an abundant resource, and over the past few years huge additional reserves have become economically accessible in the form of unconventional gas. The US and China plan to reduce their oil imports by using these enormous gas supplies for electricity generation and transportation. This, in itself, will de-link oil and gas prices.

With the new IMO requirements, demand for low sulphur oil will rise and be at risk of significantly higher prices – especially after 2015. For refineries to meet the increasing demand for low sulphur oil products, investments in the hundred-billion-dollar range are needed, affecting the market price. Installing scrubbers is another option, but this is also expensive.

## Speeding up LNG

The governments can help by putting regulations in place in order to avoid long term uncertainty. Markets will develop faster with better clarity than today. Also, seeing national value in reduced emissions may help finance initial infrastructure.

There are not many sellers and those who sell often prefer long term contracts linked to oil, very different from the functioning of oil markets. Buyers renegotiate agreements and few new contracts linked to oil are entered into. Compared to bunker oil, the LNG fuel business is currently slow and secretive, and buyers need to spend a lot of time and effort on negotiating inflexible long term contracts with a limited number of suppliers. Proper risk management and flexibility is important when contracting for LNG; future developments are uncertain and building optionality into the business model and contracts is essential, but big savings could become available long term.

Going forward, we think a new breed of suppliers will enter with improved solutions bringing liquidity; this will improve competition and speed up the LNG market. There is a large potential in this market on a global scale and early steps are already being taken in order to use LNG-driven ships in the US, Southeast Asia and even China. In fact, China's National Development Reform Commission has decided that by 2020 the use of natural gas shall quadruple, with emphasis on the transportation sector. If the country decides to expand its fast growing fleet with LNG-driven ships, we could see a big difference in technology costs and even infrastructure solutions.

The shipping industry faces many challenges today, such as fuel costs and increasing environmental expectations, with the focus not only on spills in the sea, but also NOx, SOx and particulate emissions into the air. Liquefied Natural Gas indeed seems to be the best solution. ■

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