

August 2019

## **No big bang: the future of clean marine fuel is a process of evolution**

By Chris Chatterton, Chief Operating Officer, The Methanol Institute

The launch this week [August 16] of the next two Methanol-powered tankers by Waterfront Shipping and Marinvest – and the delivery of a further two before the end of the year – is a timely contribution to the industry conversation around clean fuels of shipping.

These next generation dual-fuel vessels which produce almost no SO<sub>x</sub> or PM emissions, are also able to achieve NO<sub>x</sub> Tier III compliance without the need for complicated and expensive equipment on the ships.

It's not a tipping point for Methanol as marine fuel but it is a milestone that starts with IMO2020 and moves towards 2030 and beyond.

At present, the majority of Methanol production is from natural gas, which creates carbon emissions through the fuel's lifecycle, though on a well-to-wake basis, it compares favourably to fossil fuels and even to LNG.

Increasing volumes of renewable Methanol are coming onstream and what happens next could change the conversation completely on how the shipping industry sources the fuel it needs for a low emissions trading environment.

Until very recently, the consensus has been that the energy needed to displace fossil fuels was decades away from delivery and came at a cost which made it uncompetitive compared to conventional sources.

But something akin to digitalisation is happening in the energy sector. The pace of change, the growth of renewables and reduction in their delivered cost is happening much faster than previously predicted.

In some developed economies the cost of renewables will be lower than existing coal and gas before 2030 according to a McKinsey study from January 2019. Across a sample of developed and developing economies, including the US and China, a tipping point occurs within the next five years.

For an industry that is, in some cases still coming to grips with a comparatively simple problem like exchanging one fossil fuel for another, the issue of decarbonisation in shipping has so far had little attention. This will need to change, but this time, there can be benefits in doing so before the 11<sup>th</sup> hour.

It is clear that post-2020 and 2030, the cost of doing business will continue to rise – in the process making alternatives and renewables ever more cost effective. This trend will continue until not just compliance, but a sustainability mindset becomes second nature.



It's therefore encouraging to see some shipowners investigating the fuels that will help them start their decarbonisation journey. In particular, Mitsui OSK Lines is to be congratulated on its vision to lower its in-sector carbon emissions using synthetic natural gas.

Could it be that the shipping industry is about to make a quantum leap – from reliance on fossil fuels to renewables, missing out on conventional alternatives in the process? It's a mouth-watering prospect but with the best will in the world, this will be a process of evolution.

Despite the growth in renewables, the concept of 'surplus renewable energy' is still an aggressive assumption in most major economies at present.

The technology to produce synthetic gas from renewable energy coupled with electrolysis is not new – many companies are already employing such technology to lower their emission profiles – but the scale required for a project of this kind is some years away.

Neither are all alternatives and renewables created equal. For example, synthetic methane to be consumed as LNG, requires around a third more hydrogen than to produce synthetic methanol from the same amount of CO<sub>2</sub>.

Renewable methanol produced from solar, wind, geothermal, or hydropower, coupled in future with direct air capture of CO<sub>2</sub> would be an ideal 'power-to-X' 'electrofuel' 'liquid sunshine' or whatever buzz term you prefer. By 2050, Europe alone will need to import one third of its energy as liquid renewable fuels – from large solar farms in North Africa as an example – and Methanol is the simplest liquid molecule to move all this renewable electricity.

Both are more expensive than their conventional counterparts, but the price spread for synthetic methane is significantly larger. The fact that Methanol is liquid and therefore easier to handle than other fuels is one of the reasons why it is already in use as a transport fuel in many applications around the world.

The majority of those observing the debate accept that LNG can play an important role as a transition fuel as we move towards 2030, but also that it has limitations around price, availability and infrastructure.

In the longer term, we believe the combination of hydrogen fuel cells powered by renewable Methanol with a contribution from syngas and other renewables could power a significant portion of the global fleet.

Recognised as an innovator in safety and performance, MOL already operates two vessels for Waterfront Shipping using Methanol as fuel. The news that Waterfront and its partner Marininvest had passed 50,000 hours of problem-free operation on Methanol as fuel demonstrates its suitability as a proven and reliable alternative.



We believe the industry could be taking more steps of this kind to define its long term transition to clean, sustainable fuel. It could be that ability to continue operating in the future will depend on it, as social and political pressures on shipping continue to grow.

What we can predict is that the future of marine fuel is not a 'big bang' followed by a sudden miraculous release of energy, but more like an evolution and ultimately the application of the fittest solution.

Ends