



SHIPPING'S GREEN evolution

James Rhodes explains how emissions regulation unlocks the true potential of the clean technology market

Hunger for energy efficiency amidst surging fuel prices combined with a year of milestone emissions reduction regulation have set the scene for a greener 2013 for shipping.

The last 12 months have seen the introduction of significant regulatory changes in shipping. The adoption of the Energy Efficiency Design Index (EEDI), the Ship Energy Efficiency Management Plan (SEEMP) and several Emission Control Areas (ECAs) all entering into force in 2013 equates to a rise in dramatic and lasting action from ship owners and operators looking to comply with these regulatory changes, as well as reap the resulting cost savings generated by fuel efficiency.

Whilst new legislation has broadly been praised as a progressive

move, the lack of measurement and comprehensively defined regulation is firmly under the spotlight, amplified by the recent European Union announcement to introduce a Monitoring, Reporting, Verifying (MRV) system as a potential pre-cursor to placing a price on carbon. That said, mandatory measures aimed at reducing greenhouse gases and increasing efficiencies in international shipping mean that ship owners and operators can no longer afford to turn a blind eye to increasing efficiency and reducing emissions.

The EEDI was adopted in 2011 and from January 1, 2013 will be mandatory for all new ships. The emission reduction programme stipulates that vessels built after this date must comply to a minimum standard of energy efficiency, with the overall level

depending on the type of ship. Between 2013 and 2020 the aim is for vessels to improve their emissions by ten per cent. If achieved, it is expected that the legislation will lead to greenhouse gas emission reductions of between 45 million and 50 million tonnes per year by 2020.

The EEDI is a positive step in the right direction and will eventually lead to more efficient and sustainable shipping. However, due to complications and technicalities it could be a while before the true benefits of such legislation are proven. Developing countries are exempt from the regulation for another six and a half years, meaning shipowners and operators could effectively delay the introduction of the legislation until 2019. Furthermore, the EEDI only applies to newbuilds replacing older vessels from 2013. Considering vessels have a relatively long lifespan, it could take a significant amount of time to fully come into effect.

Unlike EEDI, which is only required for new ships, SEEMP is required aboard all vessels over 400 gross tonnes from January 1, 2013. SEEMP is an efficiency management plan that is required aboard vessels, establishing a mechanism to improve vessels operational and energy efficiency. To deliver the greatest results it should be customised to each individual vessel.

Designed to assist ship owners and operators to gauge the environmental performance of their vessels, SEEMP, if completed properly, can not only reduce vessels carbon emissions but also increase fuel efficiency. Given that fuel costs can account for up to 70 per cent of a ships total expenditure, even a minimal reduction in fuel usage can equate to millions of pounds in savings, meaningful at a time when financial restraint is common across the industry.

Whilst SEEMP requires ship operators to record ship emissions and assess efficiency, there are no specific requirements for setting and meeting goals. Furthermore, completing a SEEMP does not lead to a further stage where vessel owners are forced to implement measures aimed at reducing emissions. Some have therefore gone as far as describing it as 'just another paper exercise.'

One solution is to replace older vessels with new, technologically advanced eco ships. Modern ships are significantly more efficient and often boast emission reductions of upwards of ten per cent, saving charterers money and ensuring they meet current and future regulation. While this is a viable option for a small number of vessel owners, the initial costs involved with purchasing modern eco ships often substantial and therefore out of reach for many. One alternative option does however exist, retrofitting.

Retrofitting is a cheaper, quicker and often equally efficient way of reducing costs and meeting emissions targets. An example comes from a Magnuss, a leading maritime technology firm is the Magnuss (VOSSTM). I am the co-founder and CEO of Magnuss, and have developed the Magnuss VOSS (Vertically-variable



Ocean Sail System), which is an updated version of technology first introduced in the 1920s, and consists of a mechanical, rotating sail that utilises wind to produce forward thrust using the Magnus Effect. The chief difference is the Magnuss VOSS is retractable and can be stowed below deck. In addition, the VOSS can be fitted to both newbuilds and retrofits across virtually all of the cargo ships worldwide.

Fuel savings can be between 20-35 per cent, affording a short payback (two to three years). As the system enables vessels to operate on less fuel, it is designed to meet both current and future emissions regulation, adding further incentive to ship owners and operators considering retrofitting.

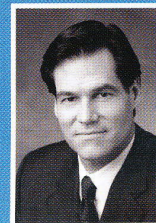
The New Year will bring a significant shift in the shipping industry. While long-term goals remain top of mind, the need for immediate action has become vital, as EEDI and SEEMP will now enter into force. As such, technologies such as the Magnuss VOSS will become fundamental to meeting these targets and ensuring an efficient and sustainable future for shipping. ❖

James Rhodes

James Rhodes is CEO of Magnuss Ltd.

Magnuss is a leading maritime shipping technology firm specialising in delivering onboard systems to reduce fuel consumption and emissions for the global shipping fleet. The Magnuss VOSS is its key technology and comprises of a retractable mechanical sail that harnesses wind power to augment ship propulsion.

For further information visit:
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WINDS OF **change**

The commercial case for wind-powered clean technology. By **James Rhodes**

Fuel costs, securing ship finance and increasing environmental regulation, such as the recently announced maritime emissions Measurement, Reporting and Verification (MRV) system by the EU are dominating the agenda of ship owners and operators. Finding cost-effective and comprehensive solutions for each of these challenges is therefore paramount and as a result, shipping's clean technology market is growing in response to demand.

Today, fuel costs can account for up to 70 per cent of a vessel's total running costs, so by reducing this by as little as five per cent can have a significant impact, and prompt vessel owners to consider investment in technology. Fuel cost figures are increasingly alarming for ship owners and operators, who are desperately attempting to lower costs and meet regulation changes as quickly and efficiently as possible.

Within this context, debate over a two-tier market is emerging, as fuel usage is paramount and the determining factor for the value of a vessel, its lifespan, as well as its appeal as a charter vessel in generating fuel efficiencies. The European Commission's recent confirmation of a sulphur limit of 0.1 per cent, from 2015 in Emissions Control Areas (ECAs) and the decision to apply a 0.5 per cent sulphur limit to marine fuels used in European Union (EU) waters by 2020 only serve to exacerbate the commercial implications of fitting the right technology and measures to compete; fuel bills will rise significantly on the back of an increase in the use of expensive distillate fuels.

Given these new developments, the impact of clean technologies that can deliver double-digit fuel savings is significant and opens the door to other possibilities. The choice is not between newbuild vessels or scrap; there is an available alternative - retrofit technology.

For many, retrofitting clean technology is a strong solution. Double-digit savings from retrofit technology can improve the efficiency of the second-hand market and extend the lifespan of a vessel in an ever-increasingly competitive environment where vessels as young as 15 years old are heading for scrap during a continued period of over-capacity and flat rates.

Retrofitting is a cost effective and convenient way to avoid scrapping vessels, and can offer the same savings as implementing the technology on a new build. Offering both of these options from the same technology solution is a powerful proposition for the market.

One clean technology that has emerged in recent years is the Magnuss Vertically-variable Ocean Sail System (VOSS). The



system, that converts wind into forward thrust aboard a ship, is an innovative and updated form of technology first introduced to the shipping industry in the 1920's. Described as a mechanical sail, the Magnuss VOSS utilises the Magnus Effect, a principle stating that a rotating cylinder in a wind stream produces a force perpendicular to the wind direction. Aboard a ship this effect can generate up to 80,000lbs of thrust, and in turn reduce the need for conventional fuel.

German physicist Heinrich Gustav Magnus first discovered the Magnus Effect in the nineteenth century. Following this, an aviation engineer named Anton Flettner replaced the masts of a schooner with two rotating cylinders in the 1920s, proving that it is possible to use the Magnus Effect to propel a ship. These two individuals helped pave the way for the development of the Magnuss VOSS that exists today.

Crucially, the technology introduced by Magnuss in 2010 is easily implemented on new builds and older vessels; therefore has the opportunity to be fitted to over 50,000 vessels worldwide and should allay concerns over a potential two-tier market.

The system, which offers a two to three year payback, offers fuel savings of up to 50 per cent in optimal conditions, a figure far greater than any other technology currently on the market. What's more, the system is being designed to meet both current and future emissions regulation, saving operators both time and money in the long run.

Clean technology will play a key role in the future of shipping, as the industry seeks increasingly innovative ways to meet commercial and energy efficiency targets, and ship owners are increasingly appreciating the tremendous value that the right technology can add to the business, directly benefiting the bottom line and safeguarding your fleet and company against carbon risk and non-compliance with ever-increasing environmental regulations. ❖

James Rhodes

James Rhodes is CEO, Magnuss. Magnuss is a leading maritime shipping technology firm who specialises in delivering on board systems to reduce fuel consumption and emissions for the global shipping fleet. The Magnuss VOSS, their key technology, is a mechanical sail that converts wind into forward thrust. **For further information, visit: www.magnuss.com.**

