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BUNKERSPOT

INSIDE:

SHIP.ENERGY SURVEY 2024

EBDNS

ELECTROFUELS

Fuel for thought

With expansion in global trade, an ongoing economic recession and ever more stringent regulations on emissions, shipping needs easy-to-adopt solutions that minimise operational disruptions – and **Ben Richardson** of SulNOx believes that maximising fuel efficiency remains the simplest solution to this Gordian knot

Caught between ever-increasing operational costs and tightening regulatory requirements, ship operators find themselves called upon to consistently improve performance despite having financial pressures limit resources available to meet those targets. Our industry needs viable and scalable solutions that can meet immediate global imperatives – reduce fuel waste, save on costs, improve operations, and meet compliance requirements, so that ship operators are able to do more with less i.e. increase efficiency.

Although the industry focus is currently concentrated on which future fuel is likely to define green shipping – and how best to ensure safety, availability, economic implications, and technology requirements for these – these discussions also leave ship owners and operators with difficult routes to immediate action. After all, an ambition such as having entire fleets operating on green methanol by 2050 does not help meet the [EU Emissions Trading System](#) (EU ETS) requirements of 2024.

To enable decarbonisation and progress the transition to lower emissions, successful owners and operators will need to show prowess in their operation of today's ships using today's fuels – and for an overwhelming majority of the world's merchant fleet, that means getting more efficiency from traditional fuels now.

COMBUSTION EFFICIENCY

In most cases, ship owners and operators seeking enhanced efficiency in shipping begin by exploring opportunities to make better use of the power generated by engines, reducing the amount of fuel used for a given voyage to generate a related reduction in emissions. These processes may involve retrofitting vessels with new technol-

ogies, training crew to utilise these processes and requiring significant initial investment – which may take some time to demonstrate fuel savings and emission reductions.

At SulNOx, our focus is on boosting combustion efficiency within the engine to increase the amount of useful energy from fuels, meaning more 'work' can be done with less fuel. Our readily available, drop-in fuel conditioners require no changes to existing vessel machinery to accommodate this process, and the mixture of fuel and SulNOxEco™ will remain stable in the fuel tank for months on end. By addressing this separate but related part of the overall efficiency equation, our solution

nation by dispersing and trapping any free water in the fuel. This then becomes advantageous to promote cleaner combustion. Second, an organic component contributes additional oxygen to the fuel further promoting cleaner and complete combustion via the 'secondary explosion mechanism', a relatively well-known effect, whereby large fuel globules are smashed into smaller ones, increasing the surface area of the fuel and enabling a cleaner, more efficient combustion.

Unlike many fuel additives, which are derived from waste petroleum distillates, SulNOxEco™ delivers these benefits from natural, biodegradable sources. By adding

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is both compatible with, and amplifies the effect of, those various technologies that seek to make ships more efficient users of power.

Our fuel conditioners increase combustion efficiency through the combined effects of emulsifiers and increased oxygen availability. SulNOxEco™ Conditioner works well with a wide range of marine fuels, such as very low sulphur fuel oil (VLSFO), marine gasoil (MGO)/marine diesel oil (MDO) and heavy fuel oil (HFO). SulNOx products are also specially patented and formulated for compatibility with biofuels.

SulNOxEco™ Conditioner relies on four key mechanisms. Our emulsifiers assist with preventing issues arising from water contami-

SulNOxEco™ to a ship's bunkers, more energy can be drawn out of each tonne of fuel, providing sufficient fuel savings to more than cover the cost of the SulNOxEco™ Conditioner many times over. Manufacturer [Nouryon's](#) (formerly AkzoNobel) EcoVadis Platinum status ensures our products are holistically beneficial, bringing emissions improvements without a cost to be paid by the environment.

LUBRICITY BENEFITS

Fuel costs are just part of the challenge facing ship operators. Inflationary economic environments in many parts of the world have

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Image © SulNOx

Ben Richardson

brought higher price tags for consumables, machinery parts, and the expertise and support that may be needed to install them. At the same time, reduction of sulphur content in fuels has reduced their natural lubricity, increasing the risk of premature engine wear.

Taking care of ships' engines has never been a more prudent investment, and as the industry moves towards the adoption of predictive maintenance and conditioning monitoring systems to pinpoint their engine health and maintenance needs, SulNOxEco™ has further benefits to offer in reducing friction, wear and tear by adding lubricity back to fuel which may potentially even extend maintenance intervals.

SulNOx's fuel efficiency has been demonstrated independently. A laboratory analysis of SulNOxEco™ carried out by VPS using the High Frequency Reciprocating Rig (HFRR) method showed an average improvement in Wear Scar Diameter (WSD). Or simply put, an improvement in lubricity on average of 17.2% across all fuel samples tested.

While the results reflect just one aspect of lubricity, the combined effect of SulNOxEco™'s lubricity improvements and the cleaning characteristics of its detergency adds up to a reduction in maintenance costs in addition to its fuel efficiency savings. With squeezed budgets and rising costs, small

savings can make a world of difference on a single ship or across the entire fleet.

IMPROVING AIR QUALITY

Air quality around ports and areas of maritime operations has increased in importance to societies and regulators alike in recent years and is an environmental impact of the maritime industry that falls outside the reach of many shipping efficiency solutions.

As well as the overall emissions reductions inherent in burning less fuel, our fuel conditioners have been shown to reduce emissions of harmful particulate matter. In-stack tests carried out by independent firm **Green Sea Guard** onboard the super yacht *Yalla* showed particulate matter (PM) reduced by >90% after a year-long evaluation. This slashing of soot and smoke output is not only good news for public health – especially in the PM 2.5 range – but reflects improved conditions within the engine where more complete combustion mean less deposits on critical components like injectors and pistons.

TRIED AND TESTED

Results from numerous trials with shipowners consistently show the potential SulNOx fuel conditioners have to cut global fleet emis-

sions. A five-month trial independently verified by a Northern German university onboard a Hamburg-based shipping company's marine-diesel powered vessel showed a 5% reduction in fuel consumption using SulNOxEco™. Additionally, a recent three-month trial on a Marfin VLSFO-powered two-stroke bulk carrier showed a 6.4% reduction in fuel consumption. A further roll out of the trial to additional vessels within the fleet is now planned.

We estimate that the savings potential for Marfin's *Paolo Topic* alone could amount to around \$200,000 per annum. The savings quickly add up when projected across a company's assets, and with solutions available for most common marine fuels, the scope for SulNOx's global impact is staggering.

Emissions regulations are already in force upon the shipping industry, and our fuel conditioners have the benefit of being a no-capex solution that can be delivered without delay. As SulNOxEco™ more than pays for itself with each bunker of fuel, proven results and savings on one ship can easily snowball into a fleet deployment of even greater savings without huge capital expenditures. With significant partner Nouryon operating in 80 countries around the world, SulNOx has the scalability to meet the requirements and growing demand of the global shipping business.

A NEW FRONTIER IN SHIP EFFICIENCY

The pressures facing vessel owners and operators in the first few years of the EEXI, CII and EU ETS are difficult and set only to increase. As an industry we are right to be mindful of the long decarbonisation journey ahead, but to survive and flourish on that journey we must get to grips with the technologies and challenges of today.

Through years of extensive research and development, SulNOx has opened up a new frontier in the journey to meet the demands of modern vessel operation. In the quest for greater efficiency, rather than just squeezing every mile from a tank of bunkers, SulNOx can optimise the power generated from each tonne of fuel used – and maximise cost savings in the process.

 Ben Richardson,
CEO,
SulNOx

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