



# FUEL FOR THOUGHT

Frances and Michael Howorth look at the importance of maintaining an efficient and properly functioning fuel tank

In today's modern world there is still a good deal to be gained from old fashioned ship's husbandry and never more so when it comes to the care and attention to the yacht's bunkers which are after all, her very lifeblood. Engines, lovingly polished and serviced by the yacht's engineers, demand high quality, clean fuel to power the vessel. With all the stresses that fill the day-to-day running of a superyacht, the last thing crew need worry about is problems with fuel. Without a properly functioning and efficient fuel system, yachts do not leave the berth. Delays and possibly even the cancelling of an owner's trip or charter for lack of good husbandry are simply not worth the risk.

In today's technology driven era there are two tools that can assist the engineer in his husbandry duties. They are the fuel additive and the onboard fuel test kit. It is important to not always assume that fuel is in good condition when loaded on board. Buying through an accredited agent both known and trusted by the yacht should give better quality fuel and provide some come back in the event if problems later. Good fuel agents source the best quality fuel at the best prices. They provide yacht crew with recommended bunkering locations, the best times to purchase fuel and also advise on regulations specific to the area. However fuel incorrectly stored or stored in poorly serviced facilities can be prone to increased water content, increased particulate content and possible microbial contamination. This can lead to filter blockage and ultimately increased engine wear and the potential for in tank corrosion.

### Keep it clean

Poor quality or water contaminated fuel can block filters which can cause the danger, inconvenience and cost of breaking down. It will also cause engines to run inefficiently, burning more fuel. Long term, fuel not of top quality will gradually cause additional wear on engines and potential permanent damage. That's where fuel additives comes into their own. Fuel additives work in many different ways, from enhancing cetane rating giving more bang to the buck to improving lubricity. They each tackle the challenge of improving efficiency by achieving more complete combustion of available fuel, thus getting more work for any given fuel input. Many have water dispersing agents within them while others go the extra mile when it comes to providing a helping hand. By using XMILE in fuel, guarantees fuel will be of premium quality, minimising risk and long term wear and maintenance costs.

One of the world's top ship diesel engine analysts, Cees Roos from RDA Ship Support, highly recommends using the product to help to avoid engine damage or problems. All fuel additives work in various different ways but XMILE differs in that it is made from natural plant enzymes containing no chemicals, metals, abrasives or ash forming materials so it is impossible to cause any engine damage. The enzymes act as catalysts with the fuel molecules giving a high ignition quality which enables the fuel to burn correctly and fully efficiently. This fuel can be compared to the quality of that used by car manufacturers when developing and testing engines. The end result is a fuel saving reduction of 5%+.

We asked Richard Franklin Managing Director of GO2 Global Yachting if all Fuel additives are not just water dispersants. "That's just plain fiction!" he answered. He added "Fuel additives have been around probably as long as fuel and combustion engines. There has undoubtedly been a lot of snake oil marketed over the years. Franklin went on to suggest that most products



### XMILE Med

XMILE is an enzyme based fuel enhancer suitable for all engine/fuel types. It is a certified EU fuel supplied to 300,000 daily consumers through their 34 distribution companies, 220 branded fuel stations and direct to companies such as Stena Lines. To guarantee your fuel quality, adding XMILE produces a premium marine fuel solution to yachts and superyachts. Using XMILE improves energy efficiency, reduces soot, smoke and gas emissions as well as reducing engine maintenance requirements. As the product does not take the fuel out of standards, it does not void engine warranties.

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fail three litmus tests: The first asks can the supplier tell you very clearly the physics and chemistry of how their product works within the engine in order to deliver the benefits that they claim? The second asks can they provide independent (ie 3rd party) verification of their performance claims? While the third asks suppliers to provide class type approval showing that their product allows fuel to remain within spec against OEM fuel standards? "Once you've asked these questions," says Franklin, "You end up with a very short shortlist indeed."

### Added benefits

As with many products, fuel additives have moved with the times, enabling modern science, and this is the case with Cerion's product GO2, cutting edge applied nanotechnology, to be applied to problems that have been around for many years, with excellent results. We asked, "If it's so good, why isn't everyone using it?" He replied, "Well, the answer is that the preconceptions about snake oil do not change overnight, and that engineers are rightly a conservative bunch, who seldom lead at the first new product that comes their way. But three years on, and having won a DAME Award and obtained the first RINA type approval for a performance fuel additive, the superyacht market is buying enough GO2 each season to treat over 5% of the fuel used by the industry, with a rapidly growing customer base and a re-order rate of over 80%, serviced by a network of distribution partners all over the world.

Richard Harrison a Director of XMILE Med Limited told us, "At least 300,000 people are already adding our product on a daily basis, both for marine and land." He added "It provides engineers with a consistent insurance of a premium fuel with all of the benefits: reduced fuel consumption, reduced soot, smoke and other harmful emissions as well as reduced engine

maintenance costs. Supplied anywhere in the world XMILE is delivered in a concentrated form. As the ratio is 1:10,000, it is convenient for yachts to store and dose their own fuel and has been found to be perfectly safe for crew to handle. The cost of upgrading your fuel with XMILE is also extremely efficient at less than EUR 0.01 to treat 1 litre of fuel. There are currently 34 fuel distributors supplying this branded fuel and there are plans to expand this service across the Mediterranean for the added convenience to superyachts.

### Up in smoke

Although superyachts may not be very high up in the air pollution offenders, it is still important for each person to "do their bit" in the reduction of harmful gas emissions, especially when near land. Fuel conservation is also an important factor in helping to preserve the world's declining fossil fuels. Fumes and smoke, which are in fact unburnt hydrocarbons, can also be very unpleasant and dangerous to inhale so any reduction is recommended. The additive has been found to reduce emissions by up to around 70%. One Captain, Danilo Del Bianco the Master of Jasail II, has been using the product specifically for this purpose and is thrilled with the results, especially with the impressive soot and smoke reduction. Captain on board Captain Winston Joyce-Clark of MY Big Fish was equally impressed with the performance of GO2 and allowed his yacht to become the subject of a comprehensive case study which highlighted the positive aspects of using the additive.

The key issue currently isn't CO2 or NOx (although both are important and will increasingly be regulated in future) but soot: black carbon stains on the topsides downwind of exhaust ports, greying of awnings and soft furnishings on deck, soot deposits on the water near to guest swim areas and on the waterlines of tenders and neighbouring yachts. No one likes soot, least of all the crew who has to clean it off, the engineer who gets the blame for it and the owner who gets the bills for re-painting and replacement of soft furnishings, and in some extreme cases, even possible fines for local water pollution.

### Reducing emissions

Some additives can help reduce Nitrogen and CO2 emissions. Many will give a fuel reduction of 5%+ which in turn will reduce CO2 emissions by this figure. It will also reduce NOx by 8-10%. The overall smoke emission reduction will be up to around 70%. Additives are however, just one weapon in the ships husband's arsenal. On board fuel testing kits are the other. Increasingly the risk of microbial contamination of a yacht's fuel and the tanks that contain it is putting the vessel at risk. There are many different types of microorganism, under the umbrella term 'diesel-bug'. They can enter fuel at any stage in the supply chain and given sufficient moisture and time, they will flourish. The bugs live in the water and feed off the fuel. The increased use of bio-fuels seems to exacerbate the problem possibly due to the reduction of sulphur and the addition of FAME (Fatty-Acid Methyl Ester). These harmful micro-organisms, if undetected, can cause blocked fuel filters, increased injector wear and engine damage. If they are left for long periods, without treatment the 'bugs' can literally eat through stainless steel. Fuel systems are a perfect habitat for micro-organisms to live and grow. Effective fuel husbandry; regular draining of tank bottoms to ensure no water or sediment build up coupled with periodic fuel testing will ensure your systems are fit for the season ahead.



### Global Services

Global Services is a world leader in superyacht support. They offer a complete range of equipment, spare parts and consumables for your vessel whilst under construction, during refit and when in operation. For 17 years they have been supplying the top 600 operational superyachts in the industry, building their reputation on quality of service, reliability and expertise. They also have over 250 new build projects under their belt and are proud to work with Europe's leading shipyards to supply everything found on a superyacht today. Global Services are very pleased to announce, that they are the new distributors for the FUELSTAT<sup>®</sup> resinase PLUS test kit, within the Superyacht sector. FUELSTAT<sup>®</sup> resinase PLUS test kit is the latest 10 minute accurate on site fuel test, detecting the diesel bug. For more details Tel: +44 (0) 1392 354 300 or visit [www.globalservicesltd.co.uk](http://www.globalservicesltd.co.uk)

A fuel maintenance schedule, designed according to risk, should arguably begin with fuel testing to gauge the levels of diesel-bug in the system. Fuel testing technology company Conidia Bioscience are manufacturers of the FUELSTAT<sup>®</sup> resinase PLUS test kit. This onsite fuel test can be conducted wherever fuel is manufactured, stored, distributed or consumed. The 10 minute test is capable of detecting all known organisms which grow in fuel and in fuel systems. The test can even be used prior to bunkering to check fuel quality before loading on board. The objective of this test is to provide rapid screening of fuel samples, giving a quick and accurate assessment of microbiological growth in the fuel tank. This test is unlike current growth-based tests, which require a minimum of 72 hours to provide any results. It measures the amount of active growth in the sample and provides actions and alert levels. Gerry Herman, Technical Manager of Conidia Bioscience advised, "Regular fuel testing, is the only way we can identify a microbial problem. If on testing, the diesel tanks show evidence of moderate levels of microbial contamination then an effective biocide treatment can save the day. If, however microbial growth has been left unchecked for too long and heavy contamination is detected then a tank clean will be in order."

Fuel additives and on board fuel testing kits have entered the 21st century and are increasingly being accepted as a very cost effective way in which to improve fuel economy and reduce environmental emissions, enabling captains and engineers to counter the effects of rising fuel prices and ever tighter environmental legislation. Call them what you like, they are all part of the on board housekeeping routine and are one way of ensuring the yacht has the perfect ship's husband.