

Yacht fuel: The importance of testing

With all the stresses that fill the day-to-day running of a superyacht, the last thing your crew wants to have to worry about is problems with fuel. Without a properly functioning and efficient fuel tank, the superyacht won't be leaving the berth, delaying and possibly even cancelling any trip.

It's true that it is important to know your bunkering company, to get the best product to increase performance, to make sure you get the best rates, to bunker in a location suitable for your trip. However the company you use probably won't be able to properly test your fuel and provide the solution to any problems. This article will make sure you don't get caught out and will ensure you know what you're doing when it comes to maintaining your fuel tank.

Fuel testing

Leading fuel testing technology company Conidia Bioscience, has suggested that before bunkering, you should do a simple 10 minute fuel test, which can help avoid taking contaminated fuel on-board. They explain below how the supply of fuel has changed and how diesel bug can have a critical impact on your yacht.

How has fuel changed?

Internationally, pressure is growing to increase the percentage of bio-fuel in diesel and to reduce its sulphur content. These factors increase the potential for diesel bug growth, as sulphur actually restricts bug growth and bio-fuel attracts additional water.

The leisure industry is now faced with lower sulphur fuel across the board and the potential inclusion of bio-diesel, depending on the source of the fuel.

What is diesel-bug?

There are different types of microorganism, under the umbrella term 'diesel-bug,' which tends to act as a consortium. They can enter fuel at any stage in the supply chain and given sufficient moisture and fuel, they will flourish.

The bugs live in the water and consume the fuel. The increased use of bio-fuels is thought to exacerbate the problem because they have the organic compound FAME (Fatty-Acid Methyl Ester) added.

Diesel-bug can cause:

- Reduced filter life due to clogging and blockage
- Coalescer filter and centrifuge malfunctions
- Engine wear due to variations in fuel flow
- Damage to in-line instruments
- High fuel consumption
- Blockage of pipes and valves
- Long term infestations can result in corrosion of tanks and lines

Recommendations researched by Conidia Bioscience

The speed at which diesel-bug can multiply is of real concern, microbiological contamination stems from water content in fuel, but if you remove the water you remove the breeding ground. It is very difficult to remove the water from a system and experts describe this as the “holy grail” of fuel maintenance. Conidia Bioscience has researched and recommended some useful tips below.

<h3>Testing is essential</h3>

At present it is possible to control the problem with a combination of filtering, regular filter inspection, testing and treatment (including biocides, fuel polishing and mechanical cleaning). This can be time consuming and expensive but is considerably more straightforward and cheaper than dealing with any resulting tank and engine damage.

<h3>Why test?</h3>

- Prevent contaminated fuel coming on board
- Protect your ship from blocked filters, engine failure and corrosion
- Reduce the costs of maintenance and repair
- Ensure the longevity of your engine

<h3>Types of testing</h3>

A fuel maintenance schedule, designed according to risk, should arguably begin with fuel testing to gauge the levels of diesel-bug in the system and there are several different types of test available.

The main types are colony counting, ATP and Immunoassay testing; there are pros and cons with each method with regards to the time involved to obtain results, the cost, the equipment required and the expertise required to carry out the test. The choice of test will depend on the nature of the boat and the requirements of the engineer.

Testing before bunkering, to avoid taking contaminated fuel on-board, is now an option with the introduction of the new 10 minute immunoassay method.

<h3>The 10 minute FUELSTAT test</h3>

Conidia Bioscience has created and recommended the FUELSTAT® resinae plus test. The onsite fuel test can be actioned wherever fuel is manufactured, stored, distributed or used and is capable of detecting all known organisms which grow in fuel and in fuel systems.

The objective of this test is to provide rapid screening of fuel samples (water in fuel or fuel), giving a quick and accurate assessment of H Res, bacteria & other fungi including yeasts 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.

<h3>Why use FUELSTAT® resinae PLUS</h3>

- Detect both high and low levels of contamination within minutes
- Accurately identify the type of contaminants that may be present in your fuel
- Discover contamination at an early stage before it becomes problematic
- Easily determine the right course of action to treat the problem

- Keep a simple log of test results using the easy to read test paddles
- No special equipment needed – everything is provided
- All components of the test are completely disposable

<h3>Looking after the fuel tank</h3>

Gerry Herman, technical manager of Conidia Bioscience advised, “Over the winter periods, all fuel tanks should be filled to 100 per cent ~~as and~~ this will ~~prevent help-stop~~ condensation forming on the tank walls. ~~Tanks can be treated with biocides as a preventative measure and it~~ is advisable to keep tanks ~~as full as possible in service too, to minimise any condensation build up. at least a quarter or half full. The movement of the boat will splash diesel onto the walls of the tank and prevent condensation. W~~The water should be drained from ~~the tank if possible all fuel~~ and water separators regularly, and the filters inspected and changed as per the servicing plan. ~~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.~~”

<h3>Fuel polishing</h3>

Conidia Bioscience also briefly explained that Fuel polishing can remove diesel-bug from the fuel but not the entire system; it is the equivalent of cleaning the furniture in a mould filled room but neglecting the ceiling and the walls. It will not take long before the walls and ceilings are still covered in mould and the furniture will soon be contaminated again. If the infestation is so bad that fuel polishing is necessary, it is important that the entire fuel system is also thoroughly cleaned.