

V25

CASE STUDY: *Managing Severe Microbial Contamination Onboard a Superyacht*

POWERED BY:
A DERCO
Manufactured in USA

PREMIER
FUEL SOLUTIONS LIMITED



OVERVIEW:

This case study examines the use of Premier V25 Advanced Fuel Treatment onboard a superyacht experiencing severe microbial contamination within its diesel fuel system. Following independent laboratory testing that identified elevated levels of aerobic bacteria, the yacht sought an effective alternative to conventional chemical biocides to help restore fuel quality and manage the risk of recurring contamination.

Microbial contamination is a particular concern in marine fuel systems, where water accumulation can create favourable conditions for bacterial growth. Left unmanaged, this can contribute to sludge formation, blocked filters, deteriorating fuel quality and potential operational disruption.

Rather than chemically killing microorganisms, V25 uses a non-biocidal approach based on physical fuel conditioning. The technology is designed to create a thin polarised layer around the storage tank walls and at the fuel-air and fuel-water interfaces. This separates bacteria from the oxygen and nutrients they need to thrive, inhibiting their growth without altering the fuel's pH.

Alongside this process, V25's surfactant properties help disperse agglomerations of sludge and contaminants, while its demulsifying action encourages water to separate from the fuel. This supports the subsequent removal of water and associated microbial contamination through appropriate drainage and filtration.

The yacht proceeded with an initial double-dose treatment of V25, with follow-up laboratory testing undertaken to assess changes in detectable aerobic bacterial contamination. The case study documents the treatment approach, laboratory findings and the potential benefits of incorporating a plant-derived, non-biocidal fuel treatment into an ongoing fuel-management programme.

Beyond microbial contamination management, V25 also provides additional fuel-conditioning benefits, supporting lubricity, fuel stability and combustion performance – offering a broader approach to fuel care than treatments focused solely on microbial control.

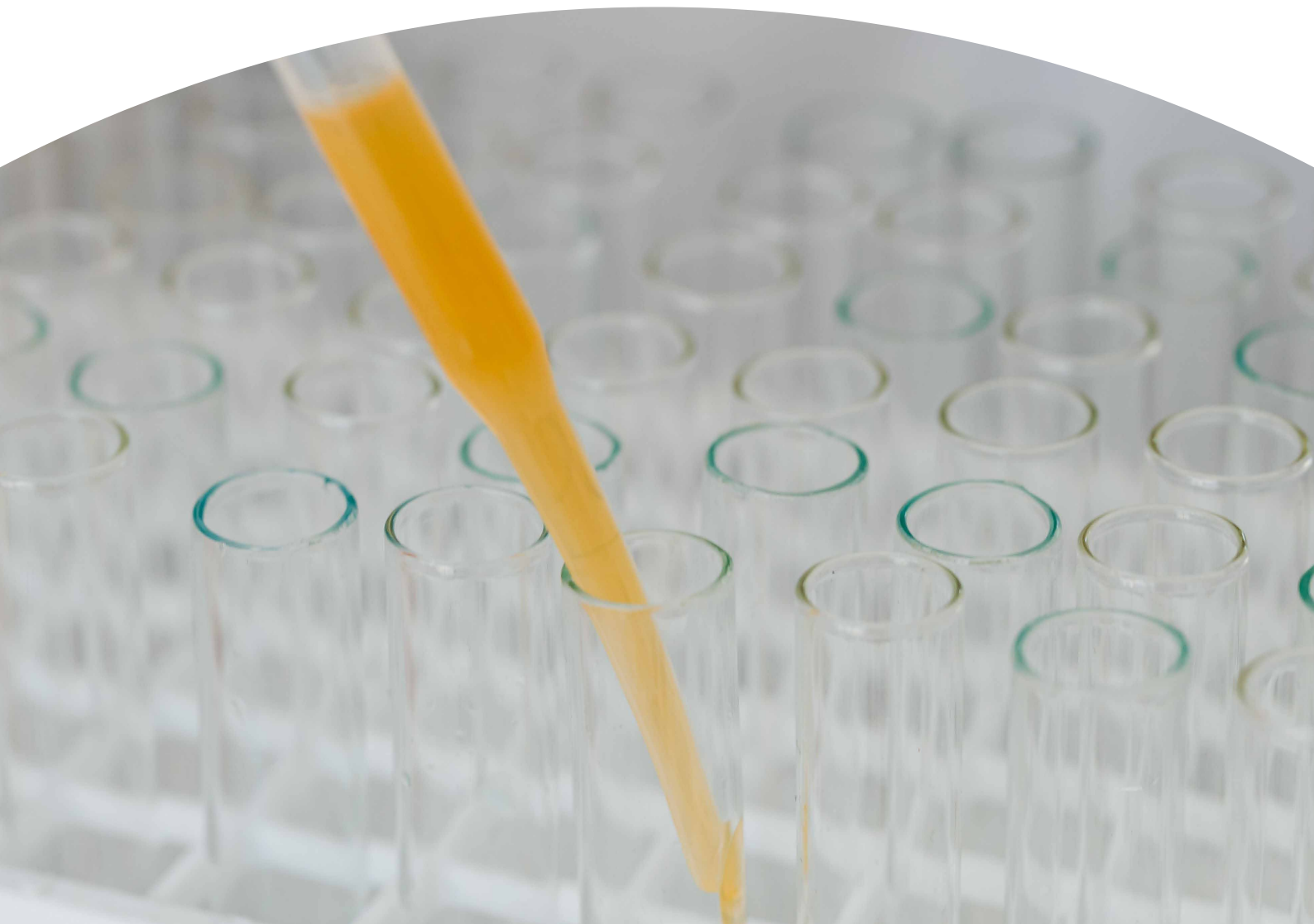
SOLUTION

V25 Advanced Fuel Treatment was chosen to replace the yacht's existing fuel management strategy.

Unlike conventional biocides, which are designed to kill microorganisms chemically, V25 is a non-hazardous, non-biocidal fuel treatment that works through physical fuel conditioning.

Its demulsifying properties help promote the separation of water from diesel fuel. As microorganisms are commonly associated with the water phase and fuel-water interfaces, separating and removing water can help manage the conditions that support microbial contamination.

V25 also helps disperse fuel deposits and agglomerations, while supporting fuel lubricity, atomisation and combustion performance. For this application, V25 was introduced at a double preventative treatment concentration, with the objective of improving fuel condition and helping manage the existing contamination.



TREATMENT IMPLEMENTATION

The yacht opted to proceed with the standard initial double dose of V25, rather than the higher-concentration shock treatment recommended for severe contamination. The procedure was designed to allow V25 to condition the fuel, encourage water separation and support the physical removal of associated microbial contamination.

Stage 1 – Initial Treatment

V25 was to be introduced at double the standard preventative dosage (2 litres per 10,000 litres of fuel) into the yacht's storage/double-bottom tanks and settling tank. This initial treatment was intended to condition the existing fuel and fuel system while allowing the product to begin acting on water and accumulated contaminants.

Stage 2 – Settling Period

The treated fuel was to remain undisturbed for a minimum of 24 hours, ideally 48 hours, allowing V25 time to act and encourage the separation of water and associated contamination from the fuel.

Stage 3 – Water & Sludge Removal

Before operating the fuel separator, any accumulated water and sludge were to be drained from the settling and service tanks where possible. This step was intended to remove separated contamination before further fuel circulation.

Stage 4 – Fuel Purification

Fuel was to be transferred from the settling tank through the yacht's existing fuel purifier/separator and into the service tank. Where the system permitted, fuel could then overflow back into the settling tank, allowing continuous purification for a minimum of 24 hours.

This stage was particularly important because V25 is not a biocide. Rather than chemically killing microorganisms, its physical conditioning properties support the separation and subsequent removal of water, sludge and associated microbial contamination through drainage and purification.

Stage 5 – Follow-Up Sampling

Following purification, the fuel was to be allowed to settle before a second sample was collected for independent laboratory analysis. Sampling from an upper section of the tank, rather than a drain or low point, was recommended to obtain a representative fuel sample while minimising interference from settled water and contamination.

Additional Technical Recommendations

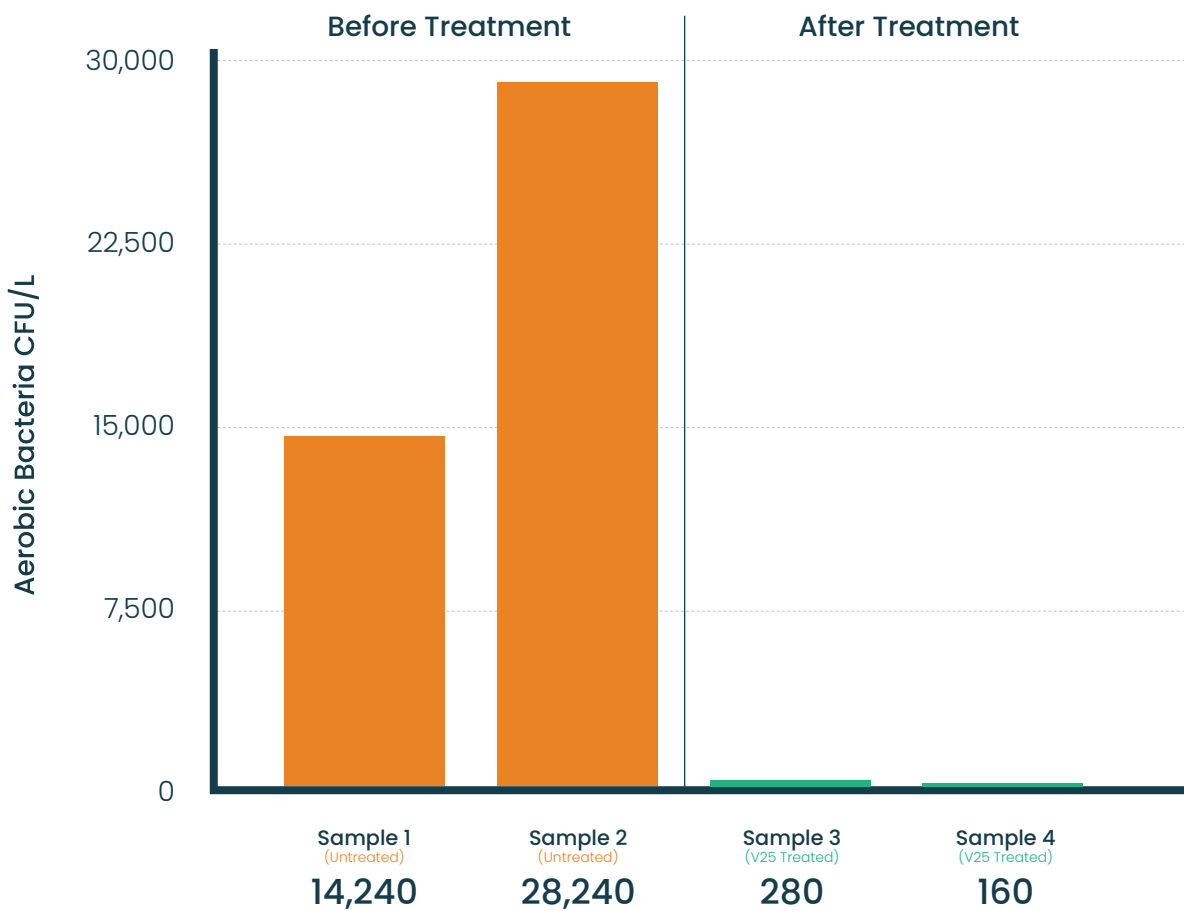
Given the severity of the initial contamination, the technical supplier also advised that a higher-concentration treatment, potentially up to four times the standard dosage, could be required. Fuel acidity testing was additionally recommended, as significant microbial contamination can contribute to acidic fuel conditions and potential damage to pumps and injection equipment.

The subsequent laboratory results are presented in the following section to assess the change in detectable aerobic bacterial contamination following treatment.

RESULTS

Initial laboratory testing confirmed severe aerobic bacterial contamination within the yacht's fuel. Following treatment with Premier V25, subsequent laboratory analysis recorded a 99% reduction in detectable aerobic bacteria, with the highest initial reading falling from 28,240 CFU/L to just 160 CFU/L.

This substantial reduction was recorded following the yacht's standard initial double-dose treatment, despite a higher-concentration shock treatment having been recommended due to the severity of the contamination.



99%

Reduction in detectable aerobic bacteria

28,240 CFU/L before treatment → 160 CFU/L after treatment

Unlike conventional biocides, V25 does not chemically kill bacteria. Instead, its technology is designed to form a thin polarised layer around tank walls and at the fuel-air and fuel-water interfaces, separating microorganisms from the oxygen and nutrients they need to multiply.

The substantial reduction recorded in the yacht's subsequent laboratory samples highlights the success of this non-biocidal approach as part of an effective fuel-management programme.



CONCLUSION

This case study demonstrates the potential of Premier V25 as an effective, non-biocidal approach to managing microbial contamination onboard superyachts. Despite the severity of the initial contamination, laboratory testing following treatment recorded a 99% reduction in detectable aerobic bacteria, achieved using the standard initial double dose rather than the higher-concentration shock treatment recommended for this situation.

Unlike conventional biocides, which rely on hazardous chemicals to kill microorganisms, V25 uses plant-derived technology to physically condition the fuel and disrupt the conditions that allow bacteria to thrive. Its non-hazardous formulation offers a more crew-friendly approach to routine fuel management, without the handling, storage and disposal concerns associated with many traditional biocidal treatments.

Importantly, V25 goes beyond microbial contamination management. Its ability to support water separation, disperse sludge and deposits, improve lubricity and promote cleaner combustion makes it a practical, multi-benefit treatment for vessels operating with varying fuel qualities and bunkering locations.

With straightforward dosing directly into the fuel tank and no specialist dosing equipment required, V25 can be incorporated into routine bunkering procedures, helping engineers maintain fuel condition proactively rather than relying solely on reactive treatments when problems arise.

Confidentiality note: The vessel's identity and identifying operational details have been anonymised. The findings relate to a specific application and should not be interpreted as a guarantee of equivalent results in other fuel systems.

PROACTIVE APPROACH TO FUEL MANAGEMENT

While the immediate priority was addressing the existing contamination, ongoing preventative fuel management remains essential.

Water accumulation, condensation and variable fuel quality can continue to present challenges for yachts, particularly when bunkering from different suppliers or operating across multiple locations.

Regular dosing with Premier V25 can form part of a wider preventative strategy, helping to:

- Promote water separation and support effective water removal.
- Manage conditions associated with microbial contamination.
- Disperse sludge and fuel deposits.
- Support lubricity within fuel pumps and injection systems.
- Improve fuel atomisation and combustion characteristics.
- Support fuel stability during storage.

Where severe microbial contamination is established, appropriate filtration, tank drainage, fuel testing and specialist intervention may also be necessary.



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