



THE IMPORTANCE OF FUEL SYSTEM CHECK



Why is Fuel System Check Necessary?

A common misconception is that meeting international standards, ISO 8217:2012 for instance, means that the fuel is "fit for purpose". But this is definitely not the case as even fuels that are "on spec" can cause major engine damage if not managed properly. ISO 8217 "specifies the requirements for petroleum fuels for use in marine diesel engines and boilers, prior to appropriate treatment before use", which means that fuels should be treated onboard before use.

Major marine engine manufacturers recommend less than 15 mg/kg Aluminium plus Silicon (Al+Si) at the engine inlet. However, assuming a delivered fuel meets the strictest ISO limit of 60 mg/kg Al+Si, the fuel treatment plant would have to operate at an efficiency level capable of removing 75% of these highly abrasive particles in order to meet the engine manufacturers' requirements.

Furthermore, the International Council on Combustion Engines' (CIMAC's) recommendation regarding fuel quality states that "Fuel analysis is the only way to monitor the quality of fuel as delivered at the time and place of custody transfer, before and after the fuel cleaning onboard and at the engine inlet. Regular monitoring of the fuel cleaning plant will provide information, which will help to make decisions about the maintenance cycles of the equipment as well as potential engine problems resulting from malfunctioning or inadequate operation."

Reasons why a regular fuel system check is critical:

- Helps identify potential risks and operational issues before major damage occurs
- Confirms that the system's flow rate, temperatures, discharge cycles are properly adjusted to handle the specific fuel that is being treated
- Verifies that the fuel treatment system is properly maintained
- Reduces operating cost and increases lifecycle of critical components
- Identifies the presence of unusual components that can enter the fuel after delivery



CORE ELEMENTS OF AN EFFECTIVE FUEL SYSTEM MONITORING PROGRAMME

Mitigating Operational Risks

The primary purpose of a fuel system check programme is to monitor and evaluate the effectiveness of the fuel oil treatment plant. The ship staff or crew draws samples for testing periodically, and upon receipt in the laboratory, the samples are analysed, and the results assessed and reported by technical experts from VPS. If operational problems are experienced or triggered by the VPS fuel oil analysis reports in connection with poor quality bunker deliveries, follow-up action can be taken.

For analysis results to be useful, sampling must be carefully carried out at key locations throughout the fuel oil system. Based on a customer's requirements, VPS experts will customise a fuel system monitoring programme that includes specific recommendations for the best locations to draw fuel system samples, instructions for sampling procedure as well as safety precautions.

Testing the Fuels

A good fuel management system should include fuel system check of samples and an analysis before and after the separators at least once each quarter. Checking the condition of the fuel cleaning system is necessary to protect the engine as correct interpretation of these results provide valuable insight into the consumed fuel quality and the efficiency of the individual fuel treating components.

Samples taken from the fuel system when a fuel is in use will help indicate the efficiency of the treatment plant and thus assist the ship's staff in taking preventive action, if needed.

Periodic sampling from the fuel treatment system will also identify problems such as water ingress from ballast systems, leaking heating coils and cargo contamination. A good fuel management system would include a fuel system check of samples and analysis at least once each quarter.

Crew Education

Education of crew and regular checks of the fuel treatment performance (e.g. by taking samples before/after separators and evaluate the efficiency) are recommended to protect the engine from high wear or scuffing and reduce the resulting operational costs.



VPS FUEL SYSTEM MONITORING PROGRAMME FOR PEACE OF MIND

Experience gained by VPS and its customers since the introduction of the Fuel Quality Testing programme in 1981, and studies have shown that fuel treatment systems are not always operating at optimum efficiency. Contamination may occur in the ship's fuel system and tanks, for example, due to defective steam heating coils, seawater/cargo ingress resulting from badly located or damaged vent pipes or from settled cat fines, and/or water being mixed into the fuel from the tank bottom.

Even if the delivered fuel meets the ordered specifications, a fuel system check is of paramount importance in ensuring that the fuel oil treatment plant is operating at maximum efficiency. Efficient separator operation is essential for the removal of heavy fuel oil contaminants such as water and cat fines. With a customised fuel system monitoring programme, inefficient operation, malfunctions and defects in the separators can be identified.

Contact VPS for a Free Consultation

Please contact your nearest VPS office now to learn more about how we can help you create a customised Fuel System Monitoring programme for your operations. Do not wait for poor quality bunker deliveries or operational problems to surface before taking action.



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