SHIP SUPPLIER INDUSTRY OFFSHORE

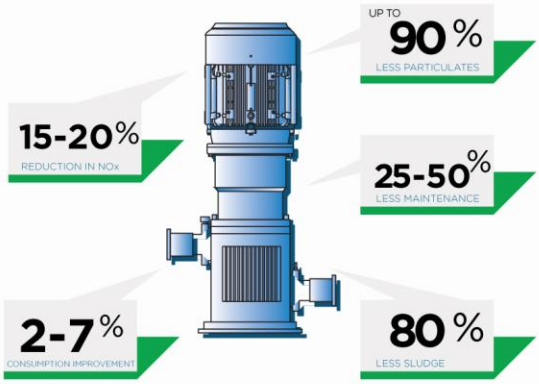
LIMAN MARINE SERVICES

LMS TECHN. PROPRIETARY LIQUID SHEAR FUEL MICRONIZATION AND ASPHALTENE DE-AGGLOMERATION SYSTEMS

The LMS Technology is a Powerful Liquid Shear Fuel Micronization and Asphaltene De-agglomeration System that has been in continuous operation onboard many vessels without incident or replacement since 2007. The second generation system was introduced in 2013, including a proprietary Siemens SPS Automatic Control and Fail Safe System.

Fuel is micronized by the multi-level liquid shearing effect created by the proprietary high speed rotor/Stator design. Ultrasonic forces and the associated liquid shear forces efficiently separate organic molecule chains and micronize fuel droplets to a uniform 3 microns. The system works on most fuels.

THE FOLLOWING BENEFITS HAVE BEEN CONSISTENTLY ACHIEVED;



FUEL CONSUMPTION

Typically achieves 2% to 7% improvement in fuel consumption.

ASPHALTENE SLUDGE

80% asphaltene de-agglomeration into combustible fuel preventing sludge.

MAINTENANCE BENEFITS

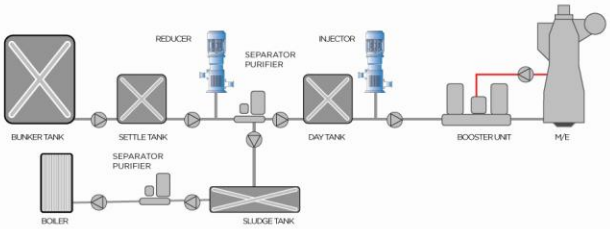
25% to 50% due to more efficient combustion / cleaner engine.

No impact - Cat Fines

BEFORE FLUE STACK ENTRY BENEFITS:

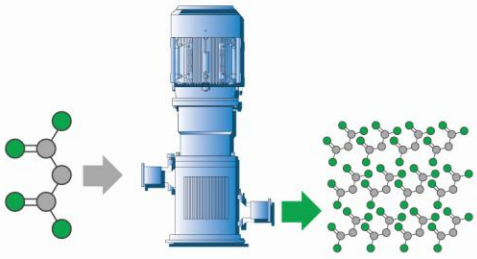
Unburnt Fuel Droplets	100% consumed.
NOX	15% to 20% reduction.
Particulates	Up to 90% reduction.
CO2	Reduced fuel based benefit.
Sulfur	No direct benefit.

LMS Technology REDUCER is located before the purifier and micronizes fuel droplets and de-agglomerates 80% of asphaltenes to three microns thereby enabling separator pass through and combustion. Sludge handling, disposal and scheduling costs are reduced by approximately 80%.

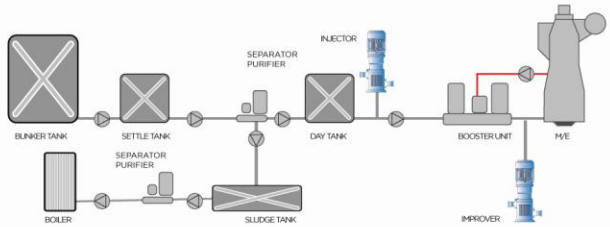


Fitted vessels can often secure a 'Low Sludge Producer' MARPOL/IMO certification enhancing trading flexibility and reducing port fees and logistical expenses.

LMS Technology IMPROVER is located at the fuel rail and micronizes fuel droplets increasing surface area for oxygenation thereby improving combustion efficiency and engine cleanliness.



LMS Technology INJECTOR is a LMS Technology IMPROVER that is custom designed for water injection and emulsification to further increase surface area for oxygenation and improved combustion.



INSTALLATION: In-line installation is less than 2 days while the vessel is underway with only a 1 to 2 hour engine shut-down to weld a temporary fuel line by-pass. An Injector installation can take up to one week due to calibration related testing.

INSTALLATION COMBINATIONS: Typically a REDUCER is coupled with either an IMPROVER or an INJECTOR, but not both.