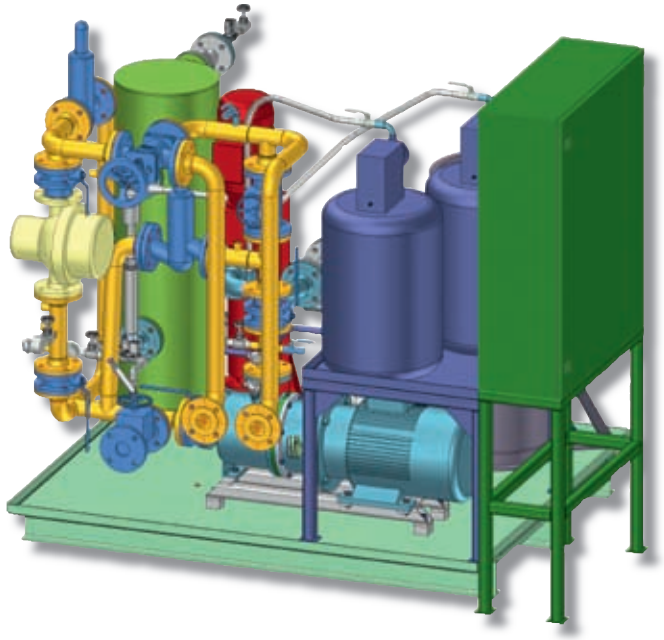
Marine Instruments
& Fuel Systems GmbH

LEMAG Slashpol® *E*

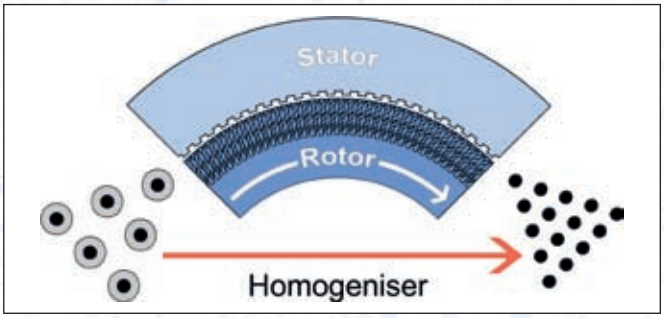
WATER-IN-FUEL EMULSIFER

- **Reduced NOx and particle emissions**
- **Improved combustion quality**
- **Low operational costs**
- **Integrated safety system**
- **Available for operation with HFO and / or MDO/MGO**



Conform to MARPOL ANNEX VI

The water-in-fuel emulsifier **LEMAG Slashpol® *E*** is designed to reduce NOx and particle emissions by adding water to the fuel oil. The main process takes place inside the integrated LEMAG FQI homogeniser, which creates a homogeneous water-in-fuel emulsion enabling NOx and particle emissions to be reduced across the marine or power station engine's entire operating range.



The control system allows adding up to 50 % water and monitors all necessary process data.

To ensure the **LEMAG Slashpol® *E*** reaches its maximum potential, we can run all kind of rotor speeds, temperatures, pressures and viscosity with MDO, HFO, palm-oil etc in our laboratory to find the best relationship between clearance and rotor speed and the best MDO/MGO stabilizer dosage.

It is often assumed that the temperature reduction required for lowering NOx emissions increases fuel consumption. This is not the case as the water-in-fuel emulsion can also improve the combustion process significantly. Many older engines may therefore reduce fuel consumption by 1–2 %. New engines adjusted to TIER 2 can be readjusted to lowest fuel consumption and can reach the TIER 2 by adding water. Savings of up to 5 % are possible!

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For easiest installation the complete water-in-fuel emulsifier is mounted on a common foundation with standardised connections. All flanges come with counter-flanges.

The **LEMAG Slashpol®** ***E*** is also equipped with an integrated safety package to increase the engine's safety when running on water-in-fuel emulsion.

The integrated homogeniser that emulsifies the water-in-fuel is based on the stator-rotor principle. The conical rotor with a highly efficient grinding profile runs against the stator with only very low clearance but high rotating speed. This creates strong frictional forces that cause the long carbon chains in the fuel to break up.

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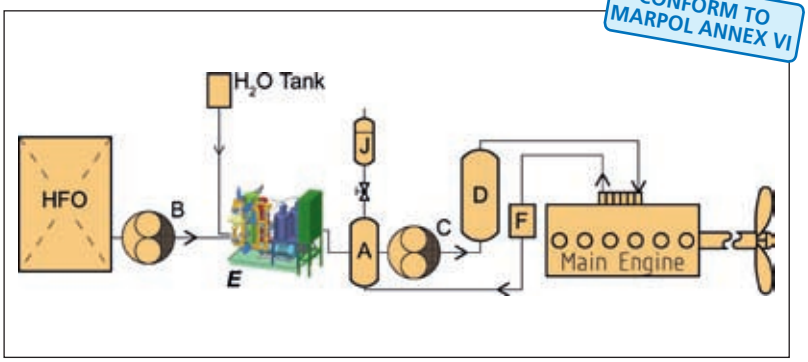

Fig. 1 NOx / particle emission reduction

A: Buffer Tank
B: Supply Pump
C: Circulation Pump
D: Final Pre-heater
F: Pressure reg. Valve
J: Bleeding Valve

The water-in-fuel emulsions are regularly analyzed by our R&D department, who have discovered that the majority of water droplets are approx. 5 µm in size. Approx. 50 % of the water droplets and particles were shredded to just 1 µm or less *(see Fig. 2)*. However, the **LEMAG Slashpol®** ***E*** is not able to shred cat fines.

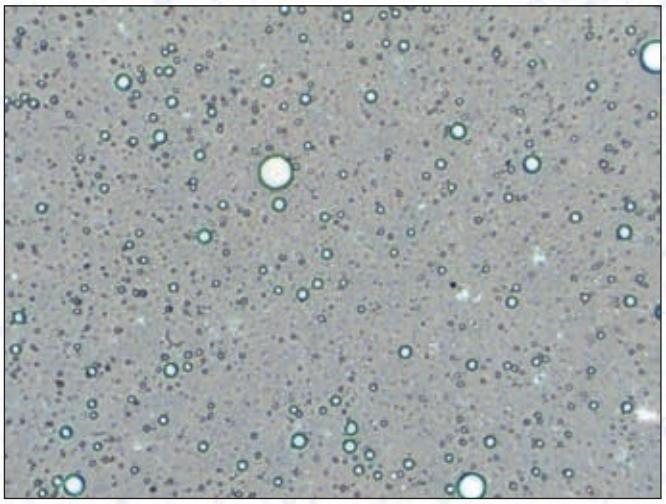

Fig. 2 Water-in-fuel emulsion sample

To enable successful operation over a long period of time the integrated homogeniser is manufactured with an adjustable clearance between stator and rotor.

The stator, rotor and certain parts of the mixing chamber housing are made of special extremely hard coated steel while the chamber cap and magnetic coupling are made of stainless steel to ensure that the emulsion is of a good quality. This is vital for the combustion process and also protects the injection equipment.

The LEMAG FQI safety homogeniser is furthermore equipped with a magnetic coupling that hermetically seals the mixing chamber.

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Subject to change without notice

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