

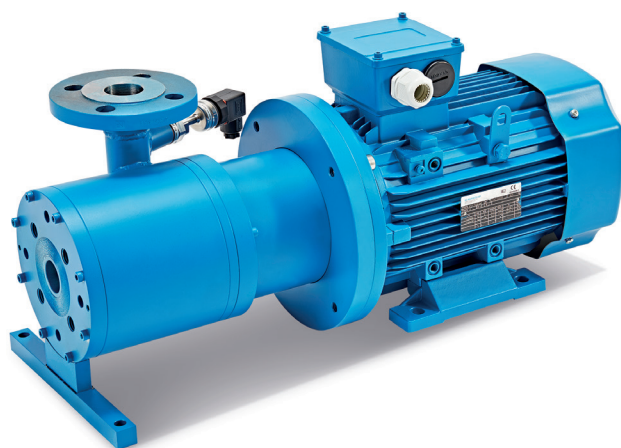
HOMOGENIZER

Management & Treatment

HOMOGENIZER

Device for fuel sludge treatment

The Homogenizer is a dynamic milling machine to be used in the fuel system on board ships. It is designed to improve your fuel quality which will lead to a better combustion and less maintenance. Furthermore the Homogenizer can reduce sludge in case of fuel incompatibility and increases the amount of burnable fuel in case of bad fuel quality. The Homogenizer has a high saving potential and is suitable for all types of vessels with 2 and 4-stroke main engine in dual fuel operation (HFO/MDO/new type of fuel oil acc. sulphur cap), e. g. tankers, LNG, container, bulkers or cruise vessels.



Features:

- » Continuous homogenizing by shearing of asphaltene clusters
- » Pure mechanical & no chemical treatment
- » Continuous generation of water in fuel emulsion
- » Sludge treatment on board
- » Fuel treatment in fuel circulating system reduce sludge of fuel incompatibility



Control Cabinet

Benefits:

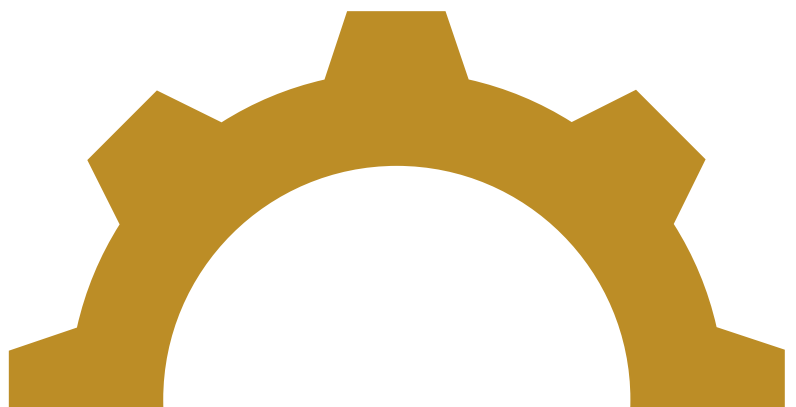
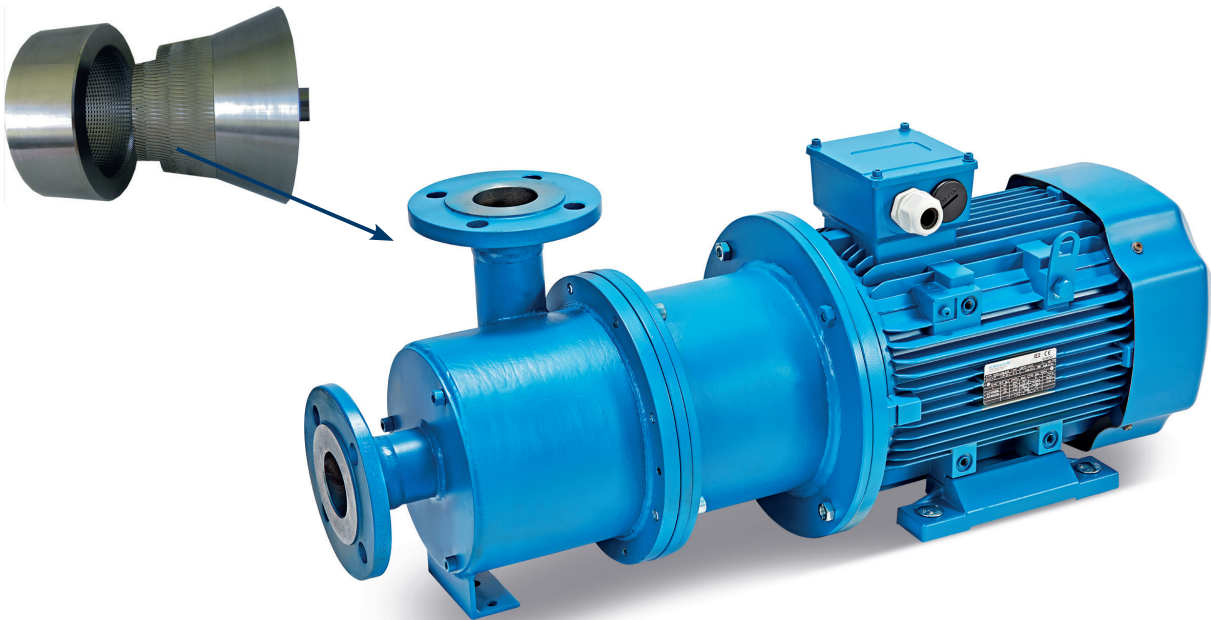
- » Reduces sludge through waste oil treatment
- » Avoid fuel incompatibility in circulating system
- » Fuel treatment, conditioning and harmonizing
- » Maximizes the amount of burnable fuel
- » Increases fuel quality for optimized combustion
- » Less wear and tear on engine components

FUNCTION

The homogenizer is a dynamic milling machine and it mainly consists of a specially constructed stator / rotor-milling gear to improve the fuel quality as well as to allow sludge treatment on board of sea-going vessels.

- » Pure mechanical homogenizing
- » Free adjustable clearance between rotor and stator
- » Low maintenance

The Homogenizer operates on the principles of mechanical shearing and ultrasonic forces. It utilizes a special conical shaped milling gear, to generate high hydrodynamic power consisting of shearing, friction and acceleration forces with pressure waves of high frequency. The high molecular asphaltenes are reduced in their size to below 5 μm and homogenized into the heavy fuel oil.



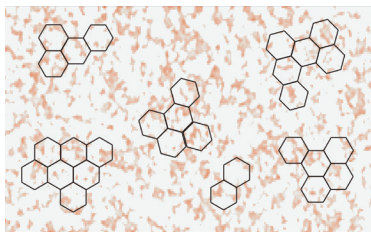
PERFORMANCE

Effect

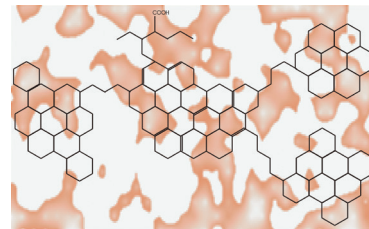
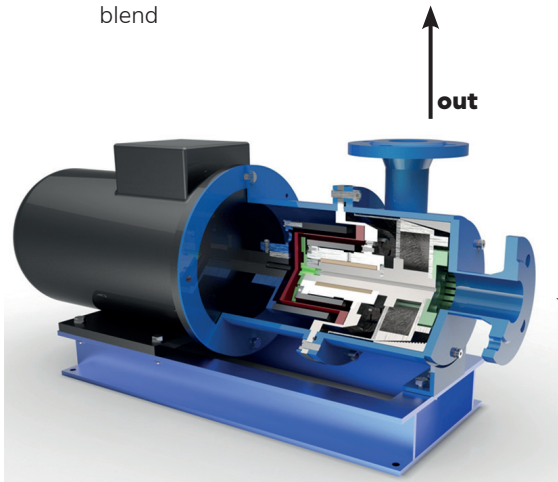
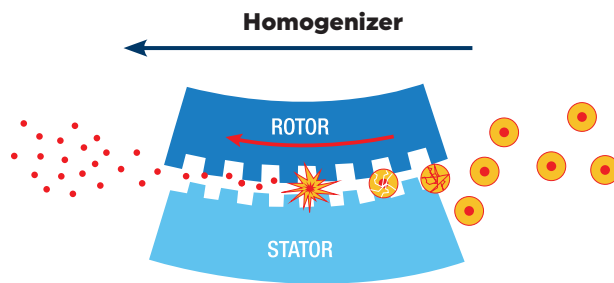
- » Dynamic rotor-stator milling machine
- » Chemical-free approach for treating residual fuels

Rotor-stator arrangement

- » Conical shaped layout - concentrically mounted
- » Slightly decreasing clearance between rotor and stator



Asphaltenes are sheared back to approx. 5 μm into a homogeneous blend



Asphaltenes formed into cotton like strands in residual oil

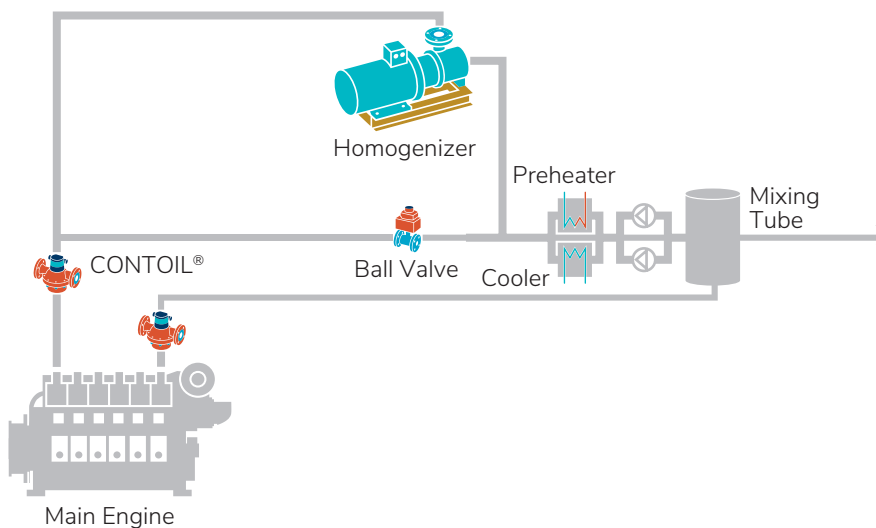
SYSTEM OVERVIEW

Application Homogenizer in Fuel Circulation System

- » Preventing of fuel incompatibility after blending / mixing
- » Improved combustion
- » Reduces sludge and emission

Saving effects:

- » Prevents sludge forming and clogging filters; fuel costs saving up to 2 - 3 %
- » Extended life time filters and injection parts; operating and spare part costs saving up to 3 %

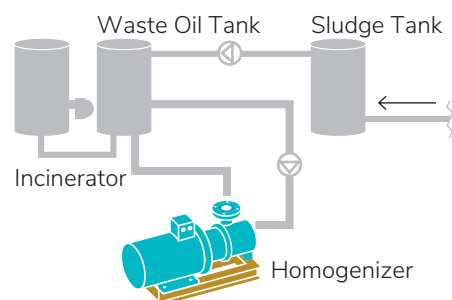


Application Homogenizer in Sludge Treatment Unit (STU)

- » Continuous HFO homogenizing on board
- » Pure mechanical and no chemical treatment
- » Reduces sludge discharging
- » Increases amount of utilizable fuel in waste oil system

Saving Effects:

- » Prevents sludge forming and clogging filters; fuel costs saving up to 2 - 3 %
- » No chemical treatments

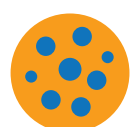
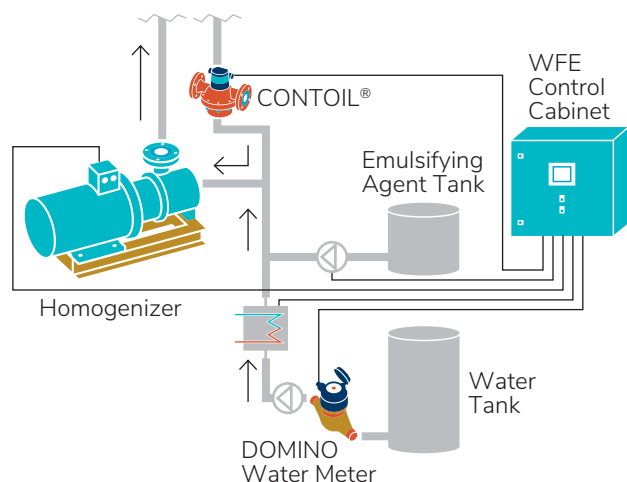


Application Homogenizer in Water in Fuel Emulsion Unit (WFE)

- » Creates long term stable water in fuel emulsion
- » Lowers combustion temperature
- » Improves spray pattern and vaporization
- » Reduces emission

Saving effects:

- » Uniform and fine spray pattern at injection; fuel saving up to 2- 3 %



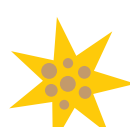
Water-in-Fuel
Emulsion



Temperature
increase in
combustion
chamber



Vaporization of water
droplets



Transition of water into
steam breaks fuel into
smaller droplets and
lowers temperature
peaks during
combustion



Smaller fuel droplets
provide an increased
contact surface area
between fuel and air

1m³ H₂O water



approx. 1'500m³ steam

CERTIFICATE



TYPE APPROVAL CERTIFICATE

Certificate no.:
TAP00001FV
Revision No:
7

This is to certify:
that the Fuel Oil Homogenizer

with type designation(s)
HG100, HG130, HG150, HG220

issued to
Aquametro Oil & Marine GmbH
Rostock, Mecklenburg-Vorpommern, Germany

is found to comply with
DNV rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV rules for classification – Ships Pt.4 Ch.9 Control and monitoring systems

Application:

Products approved by this certificate are accepted for installation on all vessels classed by DNV.

Type:	Max. flow:	Max. fluid temperature:	Max. operating pressure:
HG100	3 m³/h	150 °C	15 bar
HG130	8 m³/h	150 °C	15 bar
HG150	12 m³/h	150 °C	15 bar
HG220	25 m³/h	150 °C	15 bar



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