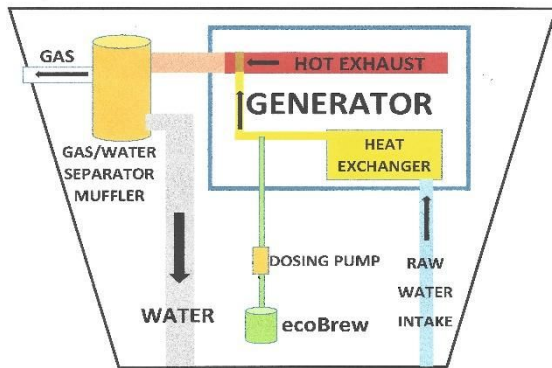


clean-exhaust.com
SYSTEMS



clean-exhaust soot reduction system



Patent No. US9074503, International #61/638,669

Vessels with diesel engines or generators with gas/water separator mufflers that are experiencing soot and particulate residue on their hull and in surrounding waters will appreciate the efficiency of **clean-exhaust**. The system's purpose built technology creates no engine back pressure.

clean-exhaust has been integrated into a compact design with long service life that requires miniscule power to run...less than a light bulb. It has been configured to fit into many different engine room space requirements. The dosing pumps and electronics can be remote from the **ecoBrew™** storage tank. An average installation takes three days with our system specialists. The monthly maintenance is minimal.

clean-exhaust injects **ecoBrew™** into the generator's raw water cooling system just before the spray ring where the **ecoBrew™** binds the particulate in unburned fuel to seawater. The emulsified soot tumbles through the gas/water separator muffler and is expelled biodegrading away from the vessel's hull. The remaining gas exhaust that is discharged into the air contains little or no particulate which facilitates a cleaner water line on the vessel, no floating sludge in the water and fresher air for the Owners, Crew, and Guests to breathe.

Prior to or during the installation of **clean-exhaust**, a thorough cleaning of the vessel's exhaust piping and muffler is recommended. This initial cleaning process will produce immediate results from the **clean-exhaust** system.

clean-exhaust has over 5 years of testing on vessels with thousands of hours of operational time under the watchful eyes of highly trained Engineers.

clean-exhaust was designed by an Engineer and a Captain who saw a need and met the challenge. It's time to **EXPERIENCE THE CLEAN.**

ecoBrew



ecoBrew™ powers **clean-exhaust**. The US EPA states, "The ingredients in **ecoBrew™** meet the EPA's Safer Choice criteria."



ecoBrew™ is approved and fully compliant for use and after use to be discharged into the marine environment by the EPA and MARPOL Annex III, V.

MARPOL Annex III and V

Meets EPA Safer Choice Criteria



The **GREEN** solution to marine diesel exhaust pollution

- ✓ **Designed for generators and main engines with water separator mufflers**
- ✓ **Significantly reduces soot and particulate**
- ✓ **Facilitates fresher air for healthier living**
- ✓ **Creates no engine back pressure or engine room heat**
- ✓ **Reduces hull cleaning time**
- ✓ **Reduces harsh chemical usage on the hull**
- ✓ **ecoBrew™ is EPA and MARPOL Annex V approved**

A lot of time has been spent on one great idea. This idea will benefit the air that we breathe, every ocean that we love, and every hull that it cleans.

For more information



54m (178') Benetti
3 clean-exhaust systems installed
2 3306 Caterpillar generators
1 3304 Caterpillar generator



50m (154') Westport
3 clean-exhaust systems installed
2 99KW Northern Lights generators
1 65kW Northern Lights generator



49.7m (163') Westport
3 clean-exhaust systems
(2) 99kW Northern Lights
(1) 65kW Northern Lights

ecoBrew™ is inserted into the raw water cooling line exiting the heat exchanger before the spray ring



clean-exhaust system for 3 generators with bracket, dosing pumps, controls, and a 5 gallon **ecoBrew™** reservoir

February 2019