

Wet Electrostatic Precipitator

Description

Black-blue plumes, visible at the stack, are an issue that affect most ships during engine start-up and maneuvering. These plumes are mainly composed from harmful particles, which are by-products of the engine's combustion (such as PM10, 5 and 2.5) and part of the condensable species (SO_3), therefore removing them will solve, or at the very least mitigate, the issue.

Ecospray **re-engineered the well-know electrostatic filtration technology** to make it suitable within **marine context**.

The system consists of a reactor installed in the exhaust gas stream either as a stand-alone unit or integrated in the DeSOx tower. In this reactor, high voltage electrodes are installed inside collecting tubes.

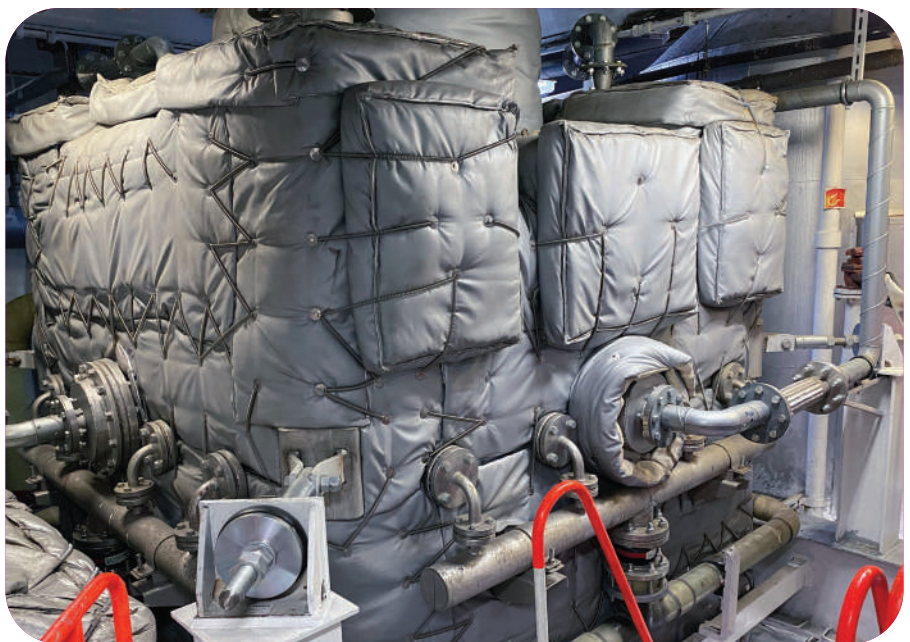
A strong electric field is generated because of the potential difference (up to 60kV), producing a flux of ions pushing the particles (including PM2.5 and lower) to the tube walls (collecting plates). A proprietary purging system removes soot and particles deposits from the collecting plates.



Technical Information

Features

- Works with both open loop and hybrid EGCSs.
- Very high particulate matter removal efficiency: up to 95% even for very fine particles (<PM2.5 and PM1).
- No backpressure issues: additional backpressure is very limited (up to 4 mbar), thanks to the specific design and the possibility for tailor made solutions.
- Low OPEX: the power consumption is low, about 0.5% of the engine's rated power or 15-20% of the existing EGCS.
- Maintenance and consumables are negligible.



Maximum nominal power*	WESP dimensions**			Particular Matter removal efficiency
MW	mm (L)	mm (W)	mm (H)	%
Up to 8 MW	2.200	2.200	3.600	PM2.5 and PM10: up to 90% at design conditions.
Up to 12 MW	2.600	2.600	3.800	
Up to 16 MW	2.700	2.700	3.800	
Up to 18 MW	3.000	3.000	4.000	
Up to 20 MW	3.300	3.300	4.000	
Up to 24 MW	3.500	3.500	4.000	
Above 24 MW	Custom design TBD***			

*WESP is designed for 55-65% engine load

**WESP design dimensions are based on estimated exhaust gas flow rate

***Multiple WESP units concept