

**CROE IN-LINE EXHAUST GAS CLEANING SYSTEMS**

**THE EMISSIONS  
SOLUTION**

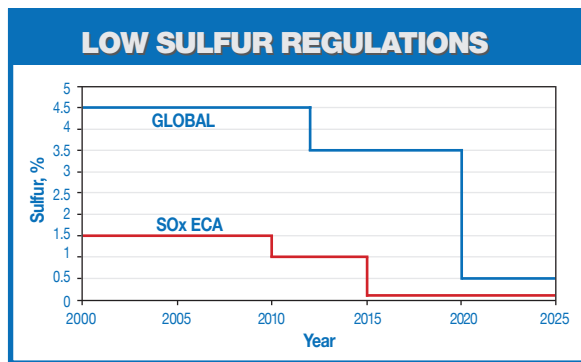
**SCRUBBING SYSTEMS TO  
KEEP YOU COMPETITIVE  
WHILE MEETING MARPOL  
ANNEX VI REQUIREMENTS**





**0.1% and 0.5% Sulfur Equivalency to Meet MARPOL Compliance Without the High Prices of Low Sulfur Fuels.**

MARPOL **Annex VI** stringent, new regulations for vessels operating in the Emission Control Areas (ECAs) in North America and North Sea/Baltic present formidable challenges for ship owners who now face higher prices, low availability and operating difficulties.



Ship owners, however, enjoy an alternative path to compliance by using the CROE exhaust gas cleaning scrubbers. **CR Ocean Engineering's** exhaust cleaning systems do the job, providing an assurance of meeting the 0.1% or 0.5% sulfur fuel equivalency when burning high-sulfur fuels. This means you will be fully compliant at a fraction of the cost.

**Ideal for Cruise Ships, Ferries, Bulk Carriers, Container Ships, RoRo and Others—For Retrofit and New Build Ships.**

RORO



Cargo Ships



Ferries



Car Carrier



Container



Cruise Ships





### Available in Three Standard Designs to Meet Your Ship's Requirements.

The **CR Ocean Engineering** ship exhaust gas cleaning technology is available in three standard configurations, customizable to a ship's requirements:

- ▶ **Open-Loop:** once through scrubber using seawater
- ▶ **Closed-Loop:** a recirculating scrubber using freshwater with caustic
- ▶ **Hybrid:** a combination of both designs for maximum flexibility

### CR Ocean Engineering Scrubbers Offer the Following Features at Competitive Prices:

- Bottom entry design to allow a direct up-flow configuration and simplify engine exhaust gas duct without requiring a bypass.
- Strategically configured **exhaust gas inlet** and **scrubber drainage** to eliminate any potential water backflow to the engine.
- **Eliminated circulation water storage** from bottom of scrubber vessel to a separate tank at a lower elevation to reduce weight at the higher elevations, improving stability.
- **Metallic construction** (external and internal) to extend the life of the system and allow the exhaust gas to travel through the scrubber system in dry conditions, without a bypass in areas of the world where scrubbing is not yet needed.
- Used **proprietary internals** designed specifically to increase contact area with lower liquid flows to save on typical pumping costs associated with some scrubber designs.
- **Proprietary Caustic-Assist™** feature for Open-Loop assist operating in low-alkalinity areas.



**WE MEET YOUR  
MARITIME EMISSIONS  
CHALLENGES**

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