



**MARINE
EXHAUST
SOLUTIONS**

C3.0 Compact Scrubbers

OFFSHORE
SOLUTIONS
UNLIMITEDTM



MES CS3.0 Compact Scrubbers



Totally Redesigned, Our Scrubbers are Easier to Own, Install and Operate

With extensive input from ship owners, MES has recently completed a **totally redesigned** compact scrubbing systems.

Over the last 3 years we have invested over \$20MM reimagining scrubbing to make our solution easier to own, install and operate.

Whether you choose our open, closed or a hybrid system, investing in a MES scrubber is a compelling strategic move by **allowing ship owners to become more competitive** while at the same time driving out risk.

MES C3.0 Compact Scrubbers



DNV Certified, Our Systems Exceed All Marpol VI Regulations

Our C3.0 Scrubber Systems **exceed** all Marpol Annex VI regulations in force now (0.1%) and those world-wide in 2020 (0.5%). **Our product is successfully operating** on the Orasund, a Danish, coastal tanker.

MES C3.0 Compact Scrubbers



Our Innovative, Compact Designs Make Scrubbing Simpler

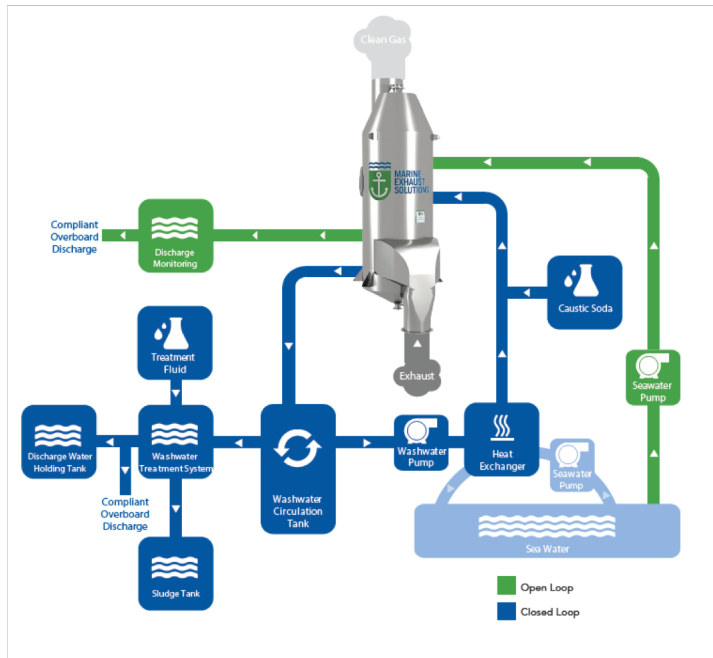
MES offers closed, open and hybrid scrubber designs.

Our efficient, all new designs **fit easily into most retrofit situations**. Our methods and modular approach make **installation methodical and straightforward**. In virtually all cases **no modifications to the stack or sea chest** are required and with **no back pressure remediation!**

In closed mode the scrubber can operate with **either small or no overboard discharge modes** providing flexibility in ship operations in meeting regulatory requirements.

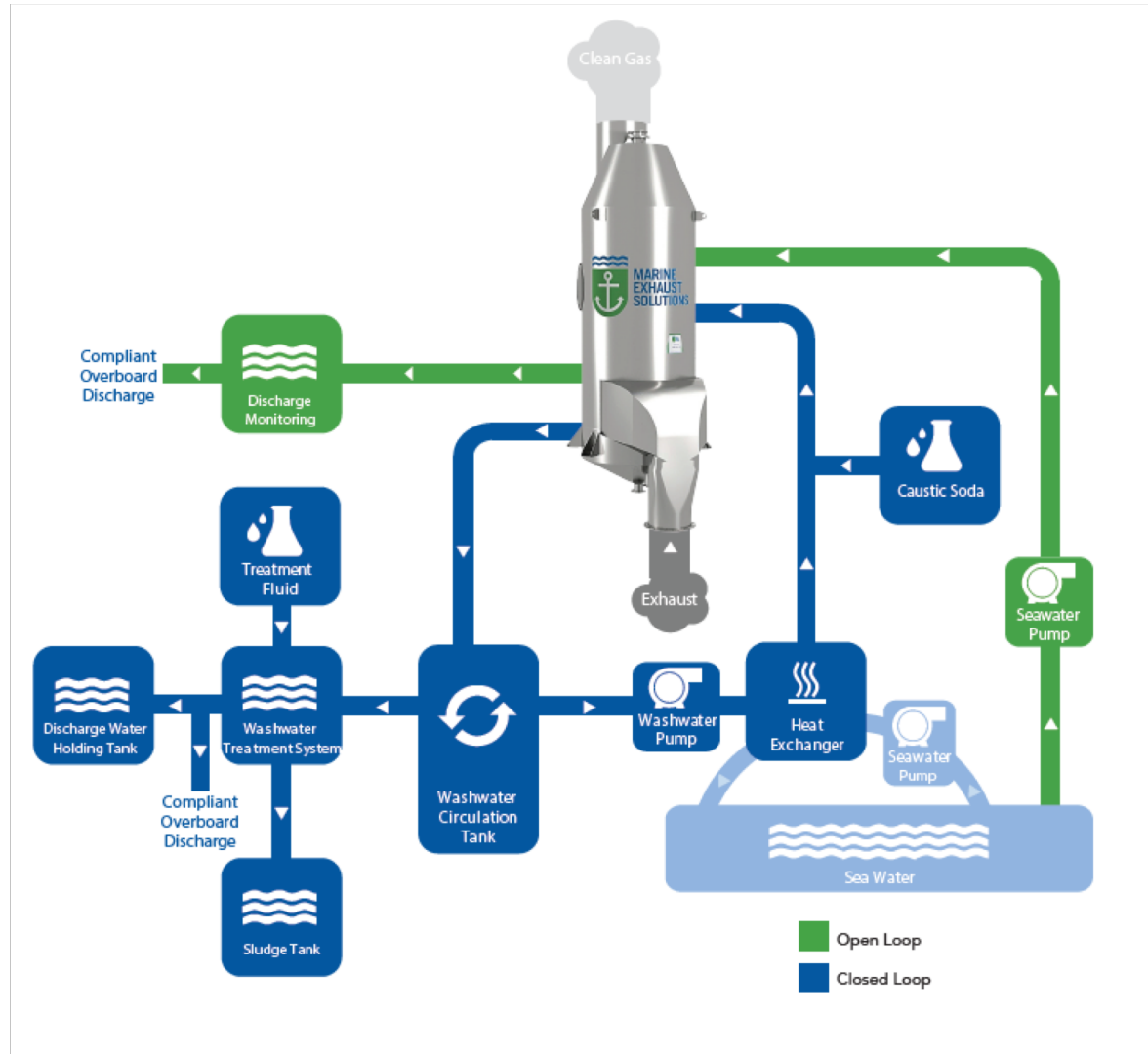
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The SOX and particulates from the exhaust gas stream are absorbed and collected in a sprayed washwater solution. This solution is then cleaned in a washwater treatment system. The resulting extracted neutralized SOX, salt precipitate and other residues are then stored for shore side disposal using existing port waste management approaches in closed mode or discharged overboard in open mode. To ensure Marpol VI compliance the exhaust gas and overboard discharge is continuous monitored. Also our scrubber can be turned **off** when scrubbing is not required.

MES C3.0 Flow



MES C3.0 Compact Scrubbers



Reduce Your Fuel Price Risk and Increase Competitiveness

Predictability is something all business owners seek. With our scrubber the ship owner can always use the lowest cost fuel. **This makes the ship owner more competitive** when compared to rivals who use low sulfur fuels to comply with Marpol VI. Even at relatively low fuel price deltas the spreads will give a **material competitive advantage** to owners with scrubbers.

MES C3.0 Compact Scrubbers



Our Scrubbers Provide Full Route Flexibility

Many analysts and industry watchers are predicting a **low-sulfur compliant fuel shortage** when the 2020 regulations come into effect. This could affect both availability and price, which in turn could impact where and when owners can use their ships. Our scrubber eliminates this challenge allowing owners to **use any fuel, including widely available and relatively inexpensive IFO 380.**

MES C3.0 Compact Scrubbers



A Good Investment

Our scrubber systems provide **attractive payback periods** even with current depressed fuel deltas which many feel are unlikely to continue especially as 2020 approaches.

In addition, our scrubbers allow owners to **operate any where in the world** in both sea and fresh water. It also **“future proofs” your investment** should overboard discharge regulations tighten as many expect, as our scrubbing solutions will meet any envisioned requirement. **Innovative financing is available.**

MES Is Part of JV Driver Group

Some JVDG Companies



JV Driver Group Works Around the Globe

JV Driver Group (JVDG) is a large conglomerate based in Edmonton, Canada with offices and facilities across North America including Houston, Vancouver, Newfoundland and Montreal, the Caribbean and Africa. Our businesses include industrial construction, industrial and marine fabrication, marine equipment install and repair, environmental technologies, and buildings. Established in 1989, JVDG has sales in excess of \$1B.

MES was purchased by JV Driver Group in 2010. Since that time JVDG invested over \$25MM in MES demonstrating the capability and willingness to make it a leader in scrubber technology.



solutions@unlimitedoffshore.com