



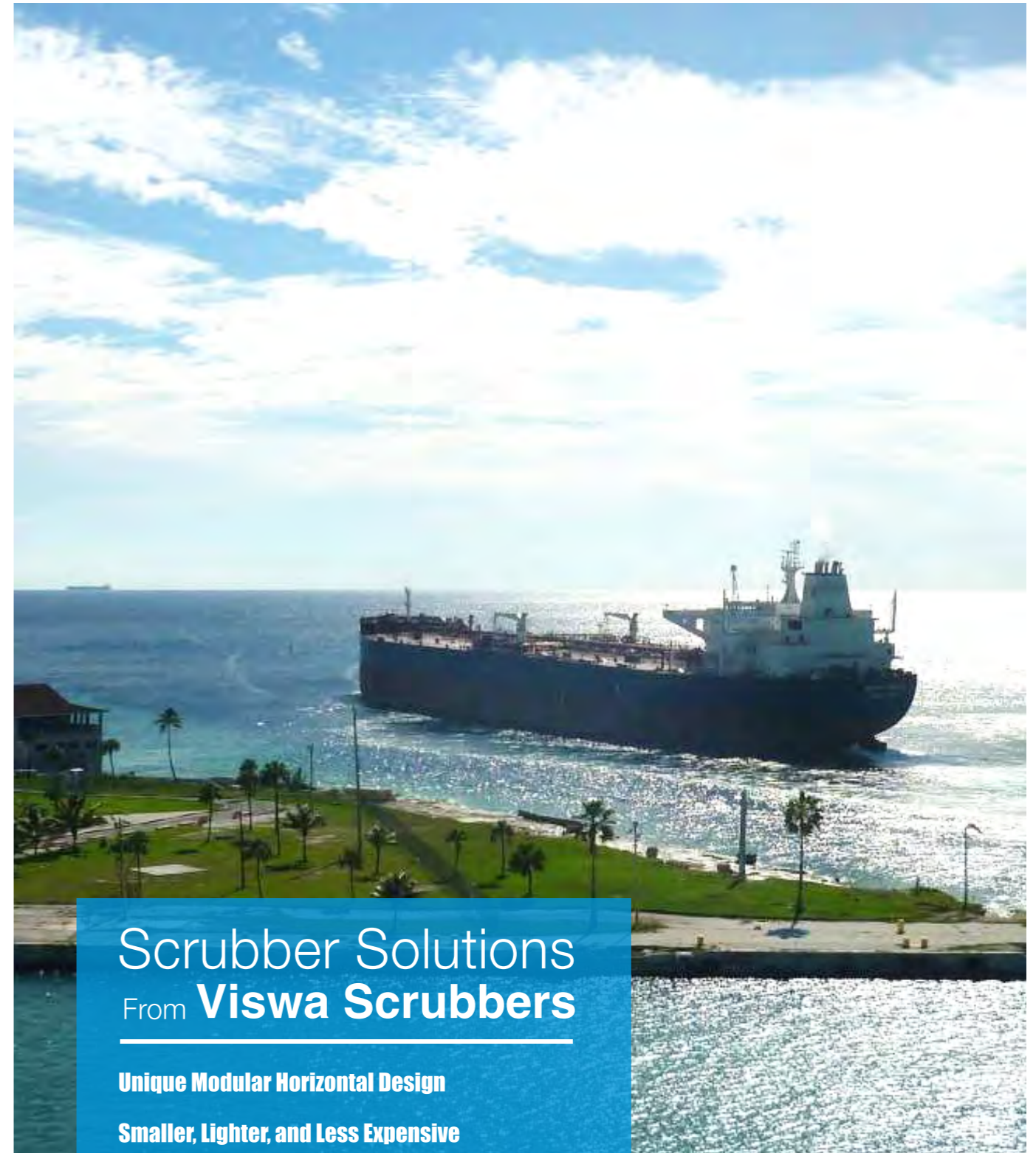
Viswa H-Scrubber – Simple connections in and out of the Exhaust Stack

The Viswa Scrubber fitted onboard a bulk carrier has been issued a Certificate of Performance by ABS Class certifying that the scrubber is working with 100% efficiency with discharge water pH, PAH and NTU values well within the stipulated limits.



Viswa Houston | Viswa Singapore | Viswa UK | Viswa UAE

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Scrubber Solutions From **Viswa Scrubbers**

Unique Modular Horizontal Design

Smaller, Lighter, and Less Expensive

Quick Installation and Short Immobilization Time

**Low Maintenance, Low Operation Cost,
Peace of Mind Design**

Are You Ready For 1.1.2020?

Innovation & Excellence to meet
Exhaust Emission Regulations



Are you ready for 2020 ?

On 1.1.2020, the Marine industry will have to be ready for the landmark regulation passed by the IMO regarding controlling the SOx emissions from engines using marine heavy fuels. The regulations stipulate 0.1% Sulfur Fuel in Emission Control Areas (ECA's) and 0.5% Sulfur Fuel sulfur globally. Using low sulfur distillate or hybrid fuels is very expensive; using alternate fuels such as LNG or Biofuels has a very limited coverage. The best option is to fit a scrubber from the marine engine exhaust and ensure emissions stay within the limits.

What are your plans to meet this regulation?

Allow us to introduce our unique and innovative scrubber(patented)delivering superior scrubbing performance while providing the added benefits of being smaller in size, lighter in weight and easier to install/retrofit.

Viswa's H-Scrubber has been developed by a World class team of Engineers and designers with combined over 100 years of experience in supplying solutions for petroleum, power and process industries. Combining this with Viswa's vast experience in the marine industry, we present our innovative design-which is modular, flexible, and customizable for each vessel according to its needs.

The H-Scrubber is a single scrubber solution (available with both open loop and hybrid optionsthat can treat exhaust gas streams from ALL combustion sources-Main and Auxiliary engines, and Auxiliary boilers.


In comparison with available vertical scrubbers, the H-Scrubber typically has a 50% smaller footprint, 50% lighter weight and a lower initial and lifetime cost. The vessel can carry more cargo (equal to the weight/space saved), use lesser power to haul a smaller weight (50% weight saving) and has huge savings in installation, maintenanc ease of maintenance and user friendliness. The engine immobilization time is just a few days and the skid mounted scrubber installation time is a fraction of other scrubbers in the market.

Viswa scrubbers has been systematically designed to eliminate many problems currently experienced by vertical scrubbers.

In addition to the H-Scrubber with the venturi contributes to very high particulate removal efficiency. The Continuous Emission Monitor (CEMS) will record scrubber performance which can be viewed from the office and by Port State Inspectors without having to board the vessel.

The Duplex stainless steel material can withstand high temperatures and marine corrosion. It is possible to design, engineer, manufacture and install a scrubber in as little as 4 months on special request.

If you need more information please contact us for a detailed FAQ.



Vertical Scrubber Issues	Viswa H-scrubber Solutions
Insufficient space in exhaust; extensive work needed on the exhaust	H-Scrubber located outside funnel; simple, modular design and connections. No structural supports needed.
Insufficient space in exhaust; extensive work needed on the exhaust	H-Scrubber design and location allows for quick installation and short ME immobilization time. Has a Bypass option.
High Power consumption as water has to be pumped to the top of exhaust	Much lower power consumption due to design and location at much lower level
Increased back pressure on main engine	Unique venturi and scrubber design allows for low back pressure even without a blower
Difficult to clean and maintain; Lots of soot and deposits	Easy maintenance - scrubber on deck outside funnel
Heavy vibration and noise	Proprietary internals leading to no problems with vibration or noise