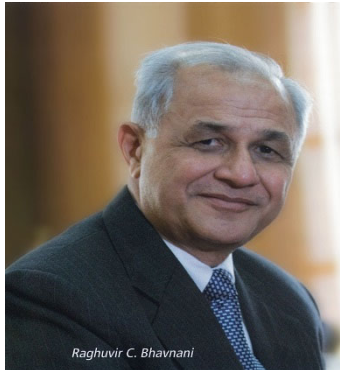


Viswa Scrubbers - A unique horizontal design for Marine Exhaust Gas scrubbing

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Abstract

H-Scrubber of Viswa group is innovative modularized horizontal scrubber skid. The scrubber skid contains cross heat exchanger, jet venturi ejector system, scrubber with spray chambers with proprietary internals that guide the gases in a cyclonic path with lowest pressure drop, demister system, and the prewired instrument panel. The spray chambers are unique from the perspective that each chamber comes in contact with fresh scrubbing liquid and hence provides maximum scrubbing efficiency. The instrument panel is prewired with all the instruments. The instruments provide the ability to remotely operate and control the operating parameters of the scrubber. Water analyzers and continuous emission monitoring system also are part of the skid and option is available to install at a client suitable location. The scrubber skid is typically installed on a deck space. Funnel casing and exhaust piping are altered only to install the dampers to divert the gases to scrubber skid and to receive the clean gas from scrubber. Funnel casing/bulk head is kept intact without any modification. The scrubber skid is default arrangement for open loop model. For closed loop and hybrid systems the scrubber skid comes integrated with recirculation tank for slurry circulation. The installation of the scrubber skid onboard takes less than 2 weeks from start to finish. Immobilization of ship is less than 5 days.