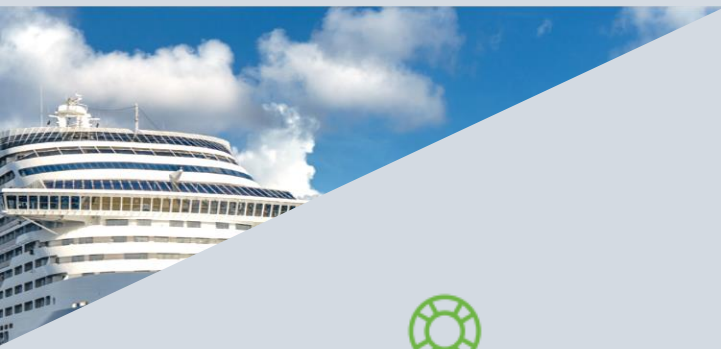




INTRODUCTION

A RoRo Ferry operating in the Baltic Sea has been equipped with a Closed Loop Scrubber (I-Type) a few years ago. While the emission results (SO₂/CO₂ ratio) were quite satisfying the overall exhaust gas back pressure (from Turbo Charge to Scrubber outlet) during operation was at limit beside a lack of efficiency. Also, the scrubber was showing significant wash water carry over resulting in “scrubber rain” on the sun deck of the ferry.



CHALLENGE

The shipowner was planning to replace one of the main engines with a larger engine with app. 25% higher output resulting in an increased exhaust gas mass flow exceeding the design parameters of the scrubber. Shipowner’s expectation was to save fuel due to a better energy management of the engine configuration (main engines and auxiliary engines). The calculated exhaust gas back pressure showed that the existing scrubber would not be able to handle the additional exhaust gas mass flow at an acceptable back pressure level.



SOLUTION

PRIMARINE redesigned the scrubber system as well as the exhaust gas duct work. The design of the scrubber has been converted from I-Type to U-Type. Additional spray levels and a quench spray system were designed. In order to mitigate the “scrubber rain” wash water carry over a new demister was introduced with an effective demister cleaning system. PRIMARINE delivered all necessary calculations and drawings enabling the shipowner and the shipyard to carry out the conversion. Also, PRIMARINE supplied the main parts and components.



RESULTS

Shipowner reported that all objectives were accomplished and the new engine concept with the modified scrubber system is successfully in operation. While the back pressure is exactly where it was supposed to be the new demister is reducing the wash water carry over significantly. After conversion the overall energy efficiency of the vessel increased while operational cost for scrubber operation decreased significantly.

All the positive results convinced the customer to place the next order for scrubber conversion for a second vessel.