CASE STUDY CONTAINER VESSEL

INTRODUCTION

A series of container vessels was equipped with Open Loop Scrubbers. The scrubbers were handling the exhaust gas of the main engine and four auxiliaries. Since the retrofit, the exhaust gas back pressures of the auxiliary diesel engines exceed the permissible limit values at certain operating points, so that the scrubber is bypassed and emission values were passed. The vessels had to switch to compliant fuel.

CHALLENGE

It turned out that the backpressure calculated by the scrubber manufacturer of 26 mbar was in reality more than 37 mbar right from operation start. It was PRIMARINE's task to identify if the cause of the too high backpressure was a mechanical problem or a design error.

SOLUTION

PRIMARINE reviewed all data and drawings submitted by the ship owner. Data were analysed and recalculated. It turned out that the scrubber design was not sufficient to handle the exhaust gas mass flow generated by all engines. Whereas in dry operation the scrubber's backpressure was within the limits the backpressure increased significantly as soon as the scrubber pumps were in operation. In addition to that the installed "rain cap" (preventing wash water from dropping into the exhaust gas pipe) was not designed in flow-optimized way thus creating additional backpressure. PRIMARINE recommended major conversions of the scrubber design.

RESULTS

PRIMARINE submitted a detailed report to the shipowner containing the analysis of the problem as well as recommendations for improving the scrubber design leading to an acceptable backpressure level.

PRIMARINE's report helped the shipowner to submit a warranty claim against the scrubber supplier and to persuade the supplier to deliver the best available and most sustainable technology.

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