

Shaft alignment keeps cruise liners in operation

CASE STUDY



Three of MSC Cruises' cruise liners were experiencing overheating and wear of the stern tube bearings, due to misalignment of the shaft line. Thanks to the Wärtsilä Shaft Line Solutions team, who provided alignment services and new composite bearings, the cruise vessels are now back in operation. "In my opinion, the most important benefits are that the vessels are in operation serving our passengers and keeping the schedules," says Vincenzo Cirillo, Superintendent, Engine Technical Department at MSC Cruisetech.

The Mediterranean Shipping Company was founded in 1970. MSC has since grown to become a world leader in global container shipping operating over 465 vessels. 1988 MSC entered the cruise business and is now the world's fourth largest cruise line and largest privately-owned cruise

company, and market leader in the Mediterranean, South America and South Africa. MSC Cruises is a Swiss-based European company operating a fleet of 12 cruise liners and two more on order. The company employs 15,000 staff around the world and is present in 45 countries.

CHALLENGE

- Eliminating overheat issues of the stern tube bearings.
- Improving the vessel's safety, reliability and passengers comfort.

SOLUTION

- Installation of Wärtsilä Sternsafe oil lubricated composite stern tube bearings and shaft alignment by in-situ machining of the new bearings.

BENEFITS

- No high temperatures, stress or vibrations in the stern tube bearings.
- Higher reliability and safety.
- Higher comfort level for the passengers.

“The work was completed within the docking schedule and Wärtsilä’s people did a good job.”

Vincenzo Cirillo, Superintendent, MSC Cruisetech



OVERHEATING IN BEARINGS DELAYS CRUISE LINERS

The technical crew of the vessels started to notice constant high temperatures in the stern tube bearings. This affected the operations and had consequences for the schedules. “When the overheating occurred the vessels had to reduce the rpm on the shaft. The vessels were, however, able to continue their voyages, but it was very hard to keep the schedules. Sometimes there were also delays, which of course affected the passengers,” says Mr Cirillo.

Alignment issues can be hard to detect, and can often go unnoticed for long periods of time. If not promptly dealt with, the stress and vibrations caused by misaligned rotating equipment can lead to wear and breakdowns in the shaft assembly. In the MSC Cruises case the misalignment caused overheat and wear down of the bearings.

SHAFT ALIGNMENT AND BEARING INSTALLATION

MSC Cruises contacted Wärtsilä and were offered alignment measurements and in-situ machining services to solve the bearing overheat issues. Eventually the vessels got into dry-dock and new bearings could be installed. Fantasia and Splendida were dry-docked in Palermo, Sicilia at the Fincantieri shipyard and during February and March 2011.

Wärtsilä’s scope of delivery for MSC Cruises consisted of removing the propeller and the shaft, including shaft alignment services conducted using patented gyro laser technology. The alignment work and installation of the new bearings went all according to plan. “There were no problems with the alignment work or changing the bearings. The work was completed within the docking schedule and Wärtsilä’s people did a good job,” says Vincenzo Cirillo.

Wärtsilä replaced the old stern tube bearings with new oil lubricated composite bearings of the type Sternsafe. The bearings were supplied semi - finished and were aligned by in-situ machining. For Divina the problem was discovered already in the building phase during the sea trials and was fixed in April 2012.

In conclusion Vincenzo Cirillo says that MSC Cruises has had only good experiences with the work done by Wärtsilä. Everything has worked as promised. “For us it is important to have satisfied passengers and now when the vessels are back in normal operation and are able to keep their schedules, we can ensure that. Therefore, I would gladly recommend others with similar kinds of problems to contact Wärtsilä.”

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08 / 2020

