

Industry: Thermal Power Generation

End User: Termo Electrica Barranquilla SA (TEBSA), Colombia

Application: Gate Filter Strainer for Water Supply to Cooling System

Thordon Grade: ThorPlas-Blue

Date of Original Installation: July 2014

About:

Termo Electrica Barranquilla SA (TEBSA) is the largest thermal power plant in Colombia, with a net effective capacity of 918 MW that covers close to 12% of the national energy demand and 45% of the Caribbean demand. It is located on the north coast on the left bank of the Magdalena River, 21km (13mi) from the Caribbean Sea.

The plant is made up of a large, combined cycle block, which is made up of five gas turbines (GT11, GT12, GT13, GT21 and GT22). They operate with two steam turbines (ST14 and ST24), which has a power generation capacity of 791 MW. Additionally, the plant has two steam units that operate under a regenerative Rankine cycle. These units have a declared power generation capacity of 64 MW for Unit 3 and 63 MW for Unit 4.

The main fuel for the TEBSA units is natural gas (local or imported), both for the combined cycle block and for the TBQ3 and TBQ4 units.

Challenge:

As with all thermal power generation plants, TEBSA requires pumping systems that supply water to a cooling system. A sieve filter is installed for the water supply from the Magdalena River to the pump to remove abrasives from the water. The shaft that supports the load of the filter was fitted with two bronze bearings.

The system rotates at approximately 2 rpm and was operating with grease which was unfortunately susceptible to contamination from dust particles in the environment.

With the abrasives and grease combined, the bronze bearings were experiencing excessive and accelerated wear resulting in the bronze bearings needing to be replaced every three months.

Solution on page 2...



*Termo Electrica Barranquilla SA
(TEBSA), Colombia.*



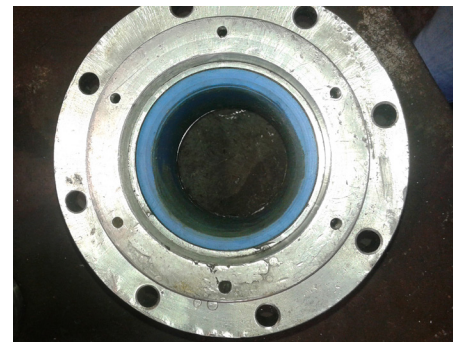
Strainer Filters



*Initial situation of bronze bearing
after 3 months of operation*

Solution:

Given the high costs to frequently replace the bearings, and the amount of downtime they were experiencing, TEBSA started to look for alternative solutions that were both efficient and reliable. When they contacted Thordon to ask about our robust bearing solutions, they were referred to our authorized distributor in Colombia, Delta Marine and River Services (DMARs). Representatives from DMARs visited the facility to analyze the bearing failure and to discuss the best solutions. They recommended Thordon's ThorPlas-Blue as it can tolerate the load required in this application and most importantly, it operates without grease and would therefore improve the system significantly.



ThorPlas-Blue bushing after 2.5 years of operation



ThorPlas-Blue bearing installed



ThorPlas-Blue bearing after installation

Result:

ThorPlas-Blue was installed in July 2014 and the system has been considerably more reliable since ThorPlas-Blue was fitted. Where the bronze bearings needed to be changed every three months, after two and a half years the ThorPlas-Blue bearings were still in amazing shape and showed only 1mm (0.039in) of wear. TEBSA also saved a significant amount of money by eliminating downtime associated with bearing failure.

TEBSA was highly satisfied with the performance and as a result consulted with DMARs on other equipment failures in their plant in pumps and sand traps. Due to the abrasives in the pumps DMARs recommended Thordon's Composite bearings. Based on that success TEBSA even requested that the pump OEM in Mexico specify Thordon Composite in two new pumps for their plant.



Field visit gathering information for bushing sizing