

Location:
North America-based Steel Plant

Application:
Steel

Problem:
The plant experienced continuous bearing failure and problems that prolonged downtime and added to repair costs.

Solution:
Rex 6000 Series SHURLOK Adapter Mounted Bearings

Results:
A switch in products addressed tough issues in a caustic environment.

Summary:
The change in product has extended bearing life, simplified removal and replacement, and cut repair costs.

Rex 6000 Series SHURLOK Adapter Mounted Bearings Beat Tough Application at Steel Plant

A change in bearings on a galvanizing line at an Indiana steel plant has extended bearing life, simplified removal and replacement, and cut repair costs.

The bearings at the plant support large, heavy rollers on process equipment, where they are exposed to a caustic environment and must be removed and replaced periodically.

The plant produces carbon steel sheet in hot rolled, cold rolled, pickled, floor plate and galvanized coils. It also produces stainless steel sheet in hot rolled, cold rolled and pickled coils. The galvanizing line had experienced continued bearing failures and related problems that prolonged downtime and added to repair costs.

The troublesome bearings were primarily in two locations. One set was on the wringer side of the alkaline bath line, where the environment is extremely caustic. The other set was on the wringer of the washdown side of the galvanizing line, which is downstream from the alkaline bath line. Here, the bearings support the shaft of a rubber-coated roller measuring approximately six feet long and about 10 inches in circumference, which was used to remove excess alkaline solution and water from the steel. Fixed bearings were used on the drive side and floating bearings on the non-drive side.

Several recurring problems led to a search for new bearings. The roller shaft was slipping because of the tremendous thrust load it handled. The previous bearings used a set-screw collar mounting, which failed to grip the shaft strongly enough to prevent it from slipping. As the bearings slipped, they would mar the shafts, making it necessary to have

them repaired or replaced. In addition, the caustic liquid and vapors penetrated the seals of the bearings, reducing the life of the lubricant.

As part of the line's routine maintenance, the rubber-coated rollers were removed and sent to an outside vendor to be refurbished every three to nine weeks. However, the previous bearings were not well suited for repeated removal and reinstallation. The set screws would wear out, and the mountings would need to be replaced. This added to repair costs, since the customer had to pay for repairing the mountings or purchase new bearings.

A foreign-sourced roller bearing with a steel housing was tried in an attempt to solve the problems caused by the thrust loads. It used thin snap rings to hold the bearing element in place inside the housing, but the thrust loads it encountered in operation caused the snap rings to break and the bearings to fail.



Bearings on wringer side of the alkaline bath in the customer's galvanizing line operate in an extremely caustic environment. Previous bearings shown here had set screw mountings that loosened and damaged shafts, as well as seals that allowed the caustic solution into the bearings, which decreased bearing and lubricant life.

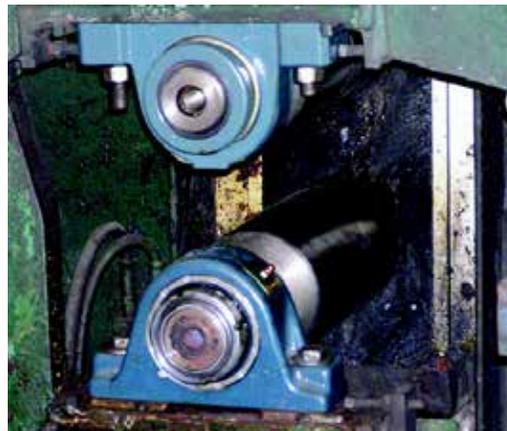
New Bearings Handle Application Demands

To meet the demanding conditions, the customer installed Rex® 6000 SHURLOK® Adapter Mounted Roller Bearings (models MA6203 and MAS6203). Instead of set screws, bearings are held to the shaft by a tapered adapter sleeve assembly. The tapered adapter sleeve assembly provides up to 25 percent greater shaft grip and eliminates the shaft damage caused by the loose bearing mountings. In addition, they are easy to remove from the shaft without causing shaft or bearing damage, which saves downtime and repair costs.

The SHURLOK Bearings eliminate damage to the shaft and bearing caused by improper tightening during bearing installation. They also allow the bearing's adapter sleeve and mounting collar to be reused multiple times, since they are not damaged during operation or removal. The superior sealing qualities of the "M" heavy contact seal keep the caustic solutions and vapors that permeate the area out of the bearing, which extends both lubricant and bearing life and reduces bearing replacement costs.



Rex 6000 SHURLOK Adapter Mounted Roller Bearings are held to the shaft by a patented locking system instead of set screws.



Rex Bearings are also used on the wringer roll shafts in the washdown side of the galvanizing line.