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Case Study: Garlock KLOZURE® Bearing Isolators Keep the Mill Line Flowing at the Steel Mill

CASE STUDY : Industry relies on Garlock KLOZURE® products to keep the uptime of their rotating equipment. The GUARDIAN® bearing isolator helps keep contamination out of the bearings while keeping lubrication in, extending the life of electric motors. The result is a decrease in unplanned downtime and maintenance costs over the life of the run-out table motor in the steel making industry.

INDUSTRY:

Primary Metals - Steel Mill

BACKGROUND:

In the production of long steel products, it is often required to cool the newly rolled steel in an even and controlled method. A common solution is to allow the steel to roll through an open air liquid cooling system on long run-out tables. As the steel rolls across hundreds of rollers, a cooling system is sprayed onto the steel. The combination of controlled cooling and properly spaced rollers allow the steel to cool evenly and prevents physical distortion of the finished product.

OBSERVATION:

During the cooling process, power transmission systems are often exposed to airborne contamination and oftentimes corrosive cooling solutions. The power transmission system, in this example, consists of hundreds of rolling elements driven by variable speed electric motors (Figure 1). The electric motors were utilizing standard OEM labyrinth seals, but were failing to provide adequate ingress protection and were failing prematurely due to contamination ingress. The corrosive cooling solutions and slags from the hot steel once entering the bearing chamber will deteriorate the lubrication or attack the bearing directly, resulting in premature bearing failure (Figure 2). This leads to costly repair and downtime of the mill line. Once it was determined that the original equipment labyrinth seals were not providing IP65 or better, a flange mounted GUARDIAN®, IP66 rated bearing isolator was installed on each electric motor. The upgrade of the original equipment labyrinth seal to an IP66 rated bearing isolator solved the problem. It effectively prevents the ingress of the corrosive cooling solutions and any small particles from entering into the bearing chamber. The reliability team was impressed with the results and has decided to upgrade all the seals on the electric motors with GUARDIAN® Bearing Isolators. Once all electric motors were upgraded, the run-out table was no longer a production issue or causing production downtime.

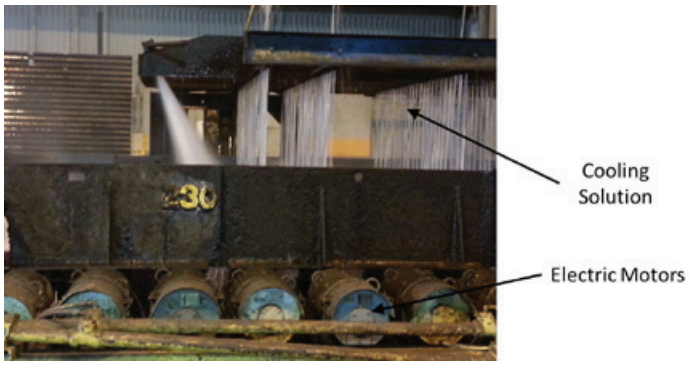

Figure 1: Run-out Table Overview

Figure 2: Damaged bearing in the electric motor from ingress of cooling solution

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