

Schaeffler Global Technology Solutions

Raw material extraction and processing

Increased Performance at a Copper Mine

The customer is an international mining company, one of the top three extraction businesses in the world. In addition to iron ore, gold, diamonds and raw materials for energy generation, copper mining is one of the main business arms of the company. This includes one of the largest copper mines in the USA, which employs approximately 2 400 people and supplies almost one quarter of copper demand in the American market.

Challenge for Schaeffler

At the copper mine, a complex conveying system transports enormous quantities of crushed ore. Day after day, the overland conveyor system transports 150 000 tons of ore per hour over a distance of eight kilometres. The customer was planning to increase the throughput (speed) of the system by 50 percent, without making any changes to overall structure, framework, foundation or footprint. The key challenge was to find bearings that would not only fit the existing housings but also withstand the new, extreme loads and still have acceptable bearing life. Furthermore, the system was experiencing frequent failures of the tension/take-up pulleys even at the existing performance rate, so improved bearings and housings were necessary also for those locations.

Schaeffler Solution

The relevant sales engineer contacted the Schaeffler Technology Center in Danbury, USA. Following thorough analysis, the engineer here determined that upgrading the existing bearings to the new E1 X-life version was the best solution for the new requirements. The problem that this version was not yet in production was discussed with the relevant product line in Germany. It was possible to bring forward the start of production by more than one year in order to fulfill the delivery requirements of the customer. At the same time, an expert from Schaeffler Canada was able to resolve the problem with the take-up pulleys. He designed a special housing that would accommodate a larger shaft size and bearing but maintain all critical dimension. So no changes were needed to existing mounts.



Technical Information about the Plant

Overland conveyor system

Speed:

274 metres per minute

Distance:

8 km

Volume:

150 000 tons per hour





Shaft failure on tension/take-up pulley



Complete head pulley assembly prior to being belivered to mine site



X-life bearings allow higher operating loads and service life

Customer Benefit

Schaeffler offered the customer the optimum solution for its requirements. Thanks to the new X-life bearings and the special housing, it was possible to increase the output of the system by 50 percent without the need for high levels of investment in modifying the existing system. The problems affecting the take-up pulleys – which led to frequent failures – were resolved and higher plant availability was achieved as a result.

What's special

The cooperation in the project gives a detailed description of how the Global Technology Network is actively applied at Schaeffler. Thanks to the local competence at the Schaeffler Technology Center and networking with experts worldwide, the optimum solution could rapidly be found for the customer. At the same time, the good cooperation that had existed for years between the sales engineer and customer was crucial in Schaeffler receiving the order.

Technical Information about the Solution

Bearing type:

FAG X-life spherical roller bearing
23192-E1A-K-MB