The Power of Knowledge Engineering

Drawing on five areas of competence and application-specific expertise amassed over more than 100 years, SKF brings innovative solutions to OEMs and production facilities in every major industry worldwide. These five competence areas include bearings and units, seals, lubrication systems, mechatronics (combining mechanics and electronics into intelligent systems), and a wide range of services, from 3-D computer modelling to advanced condition monitoring and reliability and asset management services. A global presence provides SKF customers uniform quality standards and worldwide product availability.

SKF conveyor solutions – boosting performance and reliability for operators worldwide

**SKF sealed spherical roller bearings for head and tail pulleys**

A worldwide processor of industrial sand and minerals was experiencing bearing failures across 11 horizontal and 11 vertical conveyors. Each used 4 open spherical roller bearings in the head and tail pulleys – 88 total positions. Exposure to sand, dust and grit was damaging the housing seals, forcing operators to replace bearings every nine months and housings every 18.

SKF suggested a test to compare the open bearing the mine was using, an open bearing with a taconite seal, and an SKF sealed spherical roller bearing. The open bearings kept failing every nine months. The open, taconite-seal bearing and the SKF sealed spherical roller bearing never failed during the 24-month test. But the SKF sealed solution helped cut costs because of the lower demand for re-lubrication.

**SKF alignment solutions for conveyor belt systems**

The conveyor belt at a green fields mining operation was tracking substantially off course whilst feeding the belt through the idler system for completion of the conveyor installation. The poor tracking was as a result of either substantial structural irregularities or poor pre-alignment of the pulleys and idlers.

SKF assisted with geometric alignment of the entire conveyor assembly, including drive trains, pulleys and idlers. Precision conveyor alignment was achieved using a combination of techniques and several laser alignment tools ranging from advanced geometric alignment to basic belt alignment lasers.

As a result of the precision geometric alignment by SKF, conveyor belt commissioning times were reduced considerably when compared to conventional methods of belt tracking where idlers have to be adjusted continuously in order to train the belt along its pathway.

The benefit to the customer after the alignment process was a very smooth start-up with only minor adjustments needed in order to be fully productive. The precision alignment also resulted in a greatly reduced risk of belt damage during the commissioning and training period. Further expected benefits are longer operational life of the idlers and pulleys, as unnecessary stresses have been removed from these components prior to full production operation.

**Centralized lubrication for a high-altitude mine**

It is not only the lubricant itself that matters; choosing the appropriate lubrication system can have a direct impact on the profitability of business operations. One bulk conveyor user who has realized the benefits of a central lubrication system installed the compact SKF MultiLube pump unit with dual-line SGA dosers to the tension roll with doser monitoring components. With built-in heating and all relevant components and functions such as control unit, pump, reservoir, directional valve and pressure monitoring integrated into the modular pumping unit, it enables operation under demanding and cold conditions.

The customer’s conveyor is remotely located at very high altitude with temperatures down to -30 °C, so the outdoor temperature and accessibility presented a challenging set of conditions. The solution to the customer’s needs was to place the heated pumping unit in a steel cabinet to avoid it being damaged by stones falling from the conveyor and to insulate and pre-heat all pipes and dosers. In the mine today, there are approximately 30 installations of similar lubrication systems and all of them are equipped with SMS functionality that alert the maintenance staff when the equipment needs checking. This functionality makes it possible to reduce routine manual maintenance and grease handling costs as well as help ensure reliable conveyor performance.
Are your conveyors keeping up with market and maintenance demands?

Abrasive coal, metals and cements. Dusty grains, starches and wood chips. Corrosive garbage and biomass streams. Today’s bulk conveyors are moving a more punishing mix of raw materials, into more places, than ever before.

Construction and infrastructure growth worldwide is driving demand for cement and rare earth extraction from mines across the globe. Increasing consumption patterns, particularly in developing countries, is driving the growth of waste handling facilities. Rising power demands are increasing the need for both traditional coal-fired and biomass-based energy. And bulk port operators must offload cargo quickly to stay on schedule and keep harbour costs low.

Between markets and materials, bulk conveyors are critical links being pushed to the limits of speed and throughput. To compensate, conveyor operators are looking for ways to reduce the high costs of unplanned downtime, maintenance and energy. To meet these demands, conveyor OEMs are looking for ways to optimize design, development and production.

Drawing on decades of material handling experience, SKF can help OEMs and operators alike.

**Solutions for OEMs**

For OEMs, SKF can provide engineering consultancy services and solutions that optimize designs to help meet end user requirements for extended conveyor service life, reduced maintenance and more. SKF can also help design engineers innovate solutions, and simplify development and testing by designing in solutions that meet speed and load ratings requirements, and by delivering cost effective solutions with specified brands.

**Solutions for operators**

From high quality components to automatic lubrication systems and advanced condition monitoring technologies, SKF solutions can help operators handle reliability and throughput issues that affect pulleys, idler rollers and more throughout the conveyor life cycle.

**Solutions for all**

From design engineering studios to remote conveyor locations, SKF offers advanced solutions for every stage of the conveyor life cycle, helping manufacturers and operators:

- Increase throughput and service life
- Reduce maintenance in remote locations
- Enhance worker health and safety
- Reduce idler/belt friction for lower power consumption
- Reduce noise pollution in urban locations
- Protect against contaminants in the toughest conditions
SKF conveyor capabilities

**Pulley needs and solutions**
In addition to supporting conveyors when it comes to contaminants, maintenance washdowns and outdoor conditions, SKF can help OEMs meet operators needs to reduce grease consumption and extend both bearing service life and mean time between failures. SKF sealed spherical roller and solid oil bearings offer robust protection from dirt ingress even in the worst operating conditions. In addition, SKF housings have been proven to tolerate misalignment, dissipate heat to prolong bearing life, and withstand shock loads from transported material – all of which helps to reduce manual maintenance.

**Service needs and solutions**
SKF can help meet conveyor operator service needs with a range of world-class solutions. The SKF Idler Sound Monitor (ISM) kit can help prevent belt damage and costly downtime. Our belt alignment tools can help correct misalignment and prevent belt damage as well. SKF taconite seals employ a labyrinth seal design and can be relubricated to help prevent bearing contamination. Additionally, our bearing mounting and dismounting tools can simplify mounting and extend bearing service life by helping to ensure mounting and dismounting is done correctly.
Idler roller needs and solutions

Heavy loads and a range of harsh conditions including exposure to contaminants can result in failed seals, shortened grease life and eventually bearing failures in idler rollers. Poorly functioning idler rollers can also drive energy costs and noise levels.

Facilitating easy mounting in the roller tube, SKF unitized idler roller bearings prevent dirt ingress, helping to extend bearing life and keeping idler rollers moving longer and quieter.

Additional solutions include seize-resistant bearings that reduce risk of fires in dusty and combustible environments, SKF energy efficient bearings that can reduce energy consumption by the idler roller, and our ISM kit, which can help detect early signs of idler roller failure, reduce belt damage, and enable more cost effective maintenance planning.
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