Removing a major uptime constraint in mining

Like many other industries, the mining industry is looking to boost operating efficiencies and increase margins. Those who continuously modernize their operations have the chance to grow and flourish, while those who lag behind risk not reaching business targets for throughput due to breakdown or plant availability below competition.

"Conveyors are the most problematic asset in most mines and pulley bearings are often the root cause. The harsh and punishing conditions of mining put bearing technology to a real test," says Daniel Agnemar, Senior Business Developer, Mining at SKF.

In a survey presented at an SKF Life Cycle Management Conference 2018 in the US, 44% of mining operators ranked conveyors as the most problematic asset in terms of reliability followed by 17% for mobile equipment and 11% for grinding mills.

An in-depth analysis of two years' online monitoring of a conveyor system at an iron ore mine in Sweden revealed that bearing damage in the end pulley and drive pulley is the chief cause of conveyor breakdowns.

44%	Conveyors
17%	Mobile equipment
11%	Grinding mills
11%	Crushers
6%	HPGR/Roller presses
6%	Fans
6%	Pumps
0%	Vibrating screens

The most problematic assets of the mining, mineral processing and cement industries.

Still few measures have been deployed to ensure that pulley bearings, and conveyors, last longer. In fact, many mine operators expect bearing failure, and use frequent and excessive maintenance to deal with the problem. But with upgraded bearing technology, there is a way to remove this bottleneck in reliability.

Sealed bearings

Mining conveyors traditionally use open bearings because they are less expensive. An audit including visual inspection of 11 conveyors at a major iron ore mine in Australia including 39 pulleys with 78 bearing housings in total revealed that contamination and improper lubrication are the main issues in breakdowns of conventional open pulley bearings.

However, by upgrading to sealed bearings, mine operators can simply remove pulley bearings as their major reliability headache.

Engineered to minimize maintenance

Three-barrier solutions developed by SKF combine a mining-specific sealed housing with both a grease barrier and a sealed bearing inside. This effectively ensures that punishing conditions, such as dust, dirt, vibration and rigorous washdown procedures, do not cause any ingress of dirt or the escape of vital lubricant. Field experience during the past few years shows that the pulley bearing will keep on working with an average service life of three times that of a conventional open bearing.

Minimize maintenance stops

With the extended service life of SKF Three-barrier solutions, preventive replacement of pulley bearings can often be timed with major conveyor lagging maintenance. This means that time-consuming intermediate pulley bearing exchanges or repairs can be skipped altogether, providing a significant boost to conveyor uptime.

In addition, as lubricant is sealed within the bearing, it needs only one-tenth of the relubrication interval, enabling significant savings in daily preventive maintenance. Grease consumption is also reduced by 95% on average, creating substantial savings in grease purchase and destruction costs, as well as clearly reducing the environmental footprint.