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Application Profile

High Production Gold Mine Looks to Flexco CoreTech™ Nylon Rollers to Reduce Downtime

Industry
Gold mining

Application
Underground hard rock mining

Product
CoreTech™ Nylon Conveyor Rollers

Objective
Reduce roller failure, decrease downtime, increase productivity

Conveyor Detail
- Main Portal Conveyor: 1050mm ST5500 Steel Cord Belt running at 4.5 m/s
- Three trunk Conveyors: 1050mm ST2500 Steel Cord Belt running at 4.5 m/s
- Transfer Conveyor: 1200mm EP1000 Fabric Belt running at 3.8 m/s

Problem:
At a NSW Gold Mine approximately 250km west of Sydney, conveyor roller failure generally occurs due to advanced wearing of the steel shell. This creates further issues as failed rollers can potentially cause extreme damage to the conveyor belt, generally the most expensive component on the system. The originally installed 5mm steel V-Return rollers on the mine's portal and trunk conveyors continually failed in between planned shutdowns. The steel rollers were lasting as little as one month in the worst areas, and an average of three to six months. Significant carryback was building on the rollers, which rapidly increased shell wear and caused extensive roller failure and time lost on unscheduled shutdowns for maintenance and repairs. The mine was operating at 10 to 11 planned shutdowns per year, with bulk changes of rollers at three-to-six month intervals. Unfortunately, the steel rollers continued to fail in the high wear areas in between planned shutdowns, making the cost of bulk changeouts expensive and causing considerable downtime.

Solution:
Site management discussed their problems with Cardinal Conveyors who suggested the site trial Heavy-Duty CoreTech™ Nylon Conveyor Rollers from Flexco. Site management were initially sceptical of the durability and wear life of the nylon material, however, they agreed to trial CoreTech Nylon V-Return Rollers. Six heavy-duty CoreTech Nylon Conveyor Rollers were installed on the mine's Trunk 2 conveyor, chosen specifically as it was the worst area on the conveyor. Due to the uncertainty of the new product, the CoreTech rollers were initially periodically inspected every six hours by visual and temperature means. However, after the rollers had been in operation successfully for more than 24 hours, confidence was restored and inspection intervals returned to normal routine inspections of the conveyor.

Result:
After the rollers had been in service for six months, the shells were tested for lineal wear rates which showed the CoreTech rollers lasted four times that of the steel rollers. Starting at 16mm, after 28 weeks of operation, the nylon shell thickness was 9.2mm at the thinnest point of the most worn roller. Based on this data, if lineal wear is seen, the mine would still gain a minimum of 12 months of life from CoreTech Nylon Rollers in the most extreme areas on the conveyor. Site downtime due to roller shell failure improved by four times, and bulk roller changes were pushed out to 12-month intervals. CoreTech rollers are made of high strength, corrosion- and abrasion-resistant composite materials; feature lightweight construction; and emit less noise than their steel counterparts. The lighter weight rollers are made for quicker and less-costly installation and reduce the risk of worker injury. The mine has already begun the process of upgrading their system to CoreTech rollers.

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