MOTION & CONTROL NSK

CASE STUDY

Mining Conveyor Pulley – NSK Sealed Spherical Roller Bearings Solution

History

At a Pilbara Iron Ore Mine, a bend pulley on a critical conveyor was determined to have only 12 months operating life before change out was determined to be necessary, due to heavy ingress of Iron Ore in the lubricant leading to severe bearing material wear. This short operating life required regular and costly maintenance in both man hours and lost production.

Actual Cost Saving

(AUD) 140,328

Cost Saving Description

Long Life	☑
Material Substitution	☑
Productivity Improvement	☑
Reduced Maintenance	☑
Value-Added Service	☑

Corrective Measures

NSK Engineering designed a Sealed Spherical Roller Bearing for the Conveyor application that offered a Hi Tough™ material solution and removable nitrile (HNBR) garter sprung seals to extend the operating life. Tough Steel™ is an effective countermeasure to the wear commonly found on the outer ring raceway, where the fixed load zone material wears under fine particle ingress.

At 9 months of operation the pulley lagging failed resulting in the pulley being removed from service. Under normal pulley repair procedures, the pulley is removed from site and overhauled with new bearings and sleeves. With the use of NSK proven removable garter sprung seals, it enables pulley repairers to inspect the bearings, and with consultation with NSK Australia, the bearings were deemed to be suitable for reuse. The bearings were reinstalled and have returned to service for an additional 2 years operation. The material substitution and additional removable garter sprung seals has currently increased the operating life by 21 months.

Cost Saving Breakdown

23164CAMKE4C3		HTF320SLE316AGDD2KE4C3	
Old bearings x 3 sets (x2 / pulley)	$19,710	**New bearings** x 1 set (x2 / pulley)	$11,082
Production Cost (total 36 hrs (3x12hr) @ $ 3,600 / hr	$129,600	**Production Cost** (total 12 hrs (1x12hr) @ $ 3,600 / hr	$43,200
Maintenance Cost	$136,650	**Maintenance Cost**	$91,350
Total Cost 33 Months	**(AUD) 285,960**	**Total Cost 33 Months**	**(AUD) 145,632**