

CASE STUDY

Mining Conveyor Pulley – NSK Sealed Spherical Roller Bearings Solution

History

At a Pilbara Iron Ore Port Facility, a bend pulley on a ship loading conveyor was determined to have only 6 months operating life before change out was determined to be necessary, due to heavy Iron Ore particle ingress and water contamination in the lubricant leading to short operating life. This required regular and costly maintenance in both man hours and lost production.



Actual Cost Saving

(AUD) 177,918

Cost Saving Description

Long Life	<input checked="" type="checkbox"/>
Material Substitution	<input checked="" type="checkbox"/>
Productivity Improvement	<input checked="" type="checkbox"/>
Reduced Maintenance	<input checked="" type="checkbox"/>
Value-Added Service	<input checked="" type="checkbox"/>

Corrective Measures

NSK Engineering designed a Sealed Spherical Roller Bearing for the ship loading conveyor application that offered the 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.

NSK proven removable garter sprung seals provided mining end user;

- Ability to check Radial Internal Clearance during fitting using feeler gauges,
- Seal wear compensation by sprung lip,
- Peripheral bead to reliably secure seal in place, and
- Lip contact pressure maintained under misalignment.

The NSK Sealed Spherical Roller bearings were installed and achieved an additional 12 months operational life.

Cost Saving Breakdown

23144CAMKE4C3		HTF220SLE316AGDD2KE4C3	
Old bearings x 3 sets (x2 / pulley)	\$5,352	New bearings x 1 set (x2 / pulley)	\$4,684
Production Cost (total 36 hrs (3x12hr) @ \$ 3,600 / hr	\$129,600	Production Cost (total 12 hrs (1x12hr) @ \$ 3,600 / hr	\$43,200
Maintenance Cost	\$46,650	Maintenance Cost	\$15,800
Total Cost 18 Months	(AUD) 181,602	Total Cost 18 Months	(AUD) 63,684