

## Success Story

Industry: Steel and Metals

Application: Continuous Annealing Process Line

**Cost Savings: \$399,296**

### Introduction

The continuous annealing process line at a steel works was experiencing unplanned downtime which was, on average, 17 hours per year at a cost of \$23,488 per hour. Stoppages required hiring of heavy lifting gear and increased maintenance personnel. NSK engineers performed analysis on the failed bearings and identified that both the bearing type and the sealing arrangement were inadequate for the application. The high load and low speed were major factors and the application of the multi row sealed cylindrical roller bearing (Crane Sheave) was an ideal solution.

### Key Facts

- Steel strip manufacturing process
- High load and slow speed application
- Inadequate bearing in use
- Contamination and improper lubrication
- Bearing failure resulted in 17 hours per year of lost production
- Multiple locations affected
- Original equipment design issue



↑ Continuous Annealing Process Line

### Value Proposals

- Failed bearing analysis showed significant fatigue on the existing ball bearing
- Crane Sheave Bearing Unit with integral sealing arrangement proposed
- Machine Design Support resulted in a revised housing design to accommodate bearing
- Bearing Condition Analysis performed mid trial demonstrating no signs of wear
- Post-trial review showed no significant bearing damage
- Bearing life was extended to over 3 years


## Product Features

- Improved contact seals
- High load rating
- Highly corrosion resistant phosphate coating
- Ease of re-lubrication due to inner and outer ring re-lubrication holes
- Bearings pre-greased with Lithium grease
- Can be fitted with DIN 471 snap rings
- Contact seals prevent ingress of foreign particles and water
- Increased radial and axial capability
- Re-lubrication holes for easy maintenance and grease replenishment
- Can be used in external environments due to coating
- Snap ring (DIN 471) can be applied to the outer ring



↑ Full complement Cylindrical Roller Bearings for Crane Sheaves

## Cost Saving Breakdown

Before	Cost p.a.	NSK Solution	Cost p.a.
 <p>Lost production costs: more than 119 hours over 7 years due to bearing failure. Annual downtime: 17 hours × \$23,488</p>	\$399,296	No lost production: Bearings in full operating condition after 3 years in service. Expected life time of the new NSK design: 5 years	\$0
<b>Total Costs</b>	<b>\$399,296</b>		<b>\$0</b>