

Success Story

Industry: Steel and Metals

Application: Continuous Annealing Process Line

Cost Savings: € 372 555

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 €21.915 per hour. Plant stoppages resulted in the requirement for hiring heavy lifting gear as well as 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 ideal to solve this problem.

Key Facts

- Steel strip manufacturing process
- High load and slow speed application
- Inadequate bearing in-situ
- Contamination and lubrication problems
- Bearing collapse resulted in 17 hours per year 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 and bearing life was extended to over 3 years

Product Features

- Improved contact seals
- High load rating
- Highly corrosion resistant phosphate coating
- Easier grease 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 or 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 accumulator's sheave bearing failure. Annual downtime: 17 hours × € 21.915</p>	€372.555	No lost production: Bearings in full operational condition after 3 years service. Expected life time of the new NSK design: 5 years	€0
Total Costs	€ 372 555		€ 0