



# NSK

NSK CASE STUDY

INDUSTRY  
**STEEL AND METALS**

APPLICATION  
**PILGER MILL**

**COST SAVINGS: \$171,419**

A steel mill customer was experiencing regular failures on bearings in their Pilger Mill. NSK investigated the application and found that severe operating conditions including high loads and inadequate lubrication were causing the failures. NSK proposed a special Spherical Roller Bearing with optimized internal design and Super Tough (STF) steel. A trial demonstrated performance improvements of dramatically longer bearing life and a corresponding reduction in maintenance costs.

### KEY FACTS

- › Pilger Mill application
- › Premature bearing failure as a result of heavy loads and severe operating conditions
- › NSK solution: special Spherical Roller Bearings made with STF steel
- › Bearings achieved 2 times longer operating life than conventional design employed previously
- › Reduced maintenance and plant stoppage

### VALUE PROPOSALS

- › NSK Engineering performed an application review
- › Proposal to adopt Super-TF steel
- › Bearing operating life increased twofold
- › Reduction in maintenance hours, with elimination of unexpected bearing failures and unplanned downtime

Seamless  
Stainless Steel  
Pipe and Tubes





**PRODUCT FEATURES**

- › Advanced Super-TF material composition containing appropriate levels of chrome and molybdenum for increased hardness
- › Innovative heat treatment technology to optimize retained austenite and formation of finer carbide and carbonitride particles
- › Significantly outperforms standard bearing steel
- › Up to 10 times service life with contaminated lubrication; 2 times in clean lubrication
- › Up to 4 times the service life at 160°C/320°F
- › Less than one-third the rate of wear
- › 40% improvement in seizure resistance



Spherical Roller Bearings of STF steel composition

**COST-SAVING BREAKDOWN**

BEFORE	COST	NSK SOLUTION	COST
 Bearing replacement	\$23,357	Bearing replacement	\$9,433
 Lost production: 2 hours x \$2,412/hr x 52/year	\$250,848	Lost production: 2 hours x \$2,412/hr x 21/year	\$101,304
 Labor: \$33/hr x 2 hrs x 2 persons x 52/year	\$6,864	Labor: \$33/hr x 2 hrs x 2 persons x 21/year	\$2,772
 Other material replacement	\$4,288	Other material replacement	\$429
<b>TOTAL COSTS</b>	<b>\$285,357</b>		<b>\$113,938</b>

**YOUR PARTNER FOR MACHINE OPTIMIZATION**

Our AIP Added Value Program is based around a simple proposition: ‘improvement pays’. By working with you throughout the AIP Value Cycle, we will help you achieve improvements in machine reliability, productivity and performance, all of which carry a tangible and measurable cost benefit – and we have the tools to prove it! That’s what we mean by **improvement pays**.

