

NSK CASE STUDY



INDUSTRY

STEEL AND METALS

APPLICATION

DUST EXTRACTION FAN

COST SAVINGS: \$38,582

A steel manufacturer was experiencing frequent failures within its Ore Preparation Plant (OPP). The plant utilized housed bearing units installed on a 60 mm shaft running at approximately 1485 rpm. NSK was requested to perform a vibration analysis on the current condition within the application. An ISO14836-2 qualified condition monitoring engineer visited the site to make an assessment. Upon replacement of the bearings, initial readings were taken by NSK and subsequent readings were then taken within the following weeks to trend the condition and predict where failures may occur.

KEY FACTS

- › Dust Extraction Fan
- › Electric motor coupled to a belt drive delivering output speed of 1485 rpm
- › Housed bearing failures
- › NSK Solutions: Condition Monitoring Service (CMS) with vibration analysis on three separate occasions: with the initial bearings, after replacement bearings, and one month in service
- › After bearing replacement, vibration analysis detected an imbalance due to a rotation detection arm added to the end of the shaft. The imbalance would have created additional load and reduce bearing and component life. It was corrected by the customer and checked by NSK during follow-up

VALUE PROPOSALS

- › NSK Condition Monitoring Service analyzed the current condition to assist and reduce the number of unplanned failures. A bearing problem was detected and bearing replacement was suggested
- › After one month, a second visit revealed the bearing condition was acceptable, but some imbalance was present within the application. This was to be corrected by the customer and checked at a third visit a month later
- › Upon third visit, NSK Condition Monitoring Service detected the imbalance was greatly reduced, but still present. The analysis detected some structural resonance from the base
- › This was due to the belt tension acting upon the structure revealing a loose bolt on the motor base. The customer adjusted the motor, but did not secure all four bolts correctly
- › The customer corrected the loose bolts and the application ran without any further problems

SERVICE FEATURES

- › Live assessment of a machine's condition while machine is in operation
- › Predicted life of the critical components inside a machine allowing the customer to plan maintenance more accurately
- › Early warning of problems occurring in machinery- Condition Monitoring is the most sensitive and long-reaching method of detecting the signs of machine wear
- › On-site support from NSK Engineers
- › Assurance that NSK as a full range supplier can help with the provision of critical bearing and linear motion spares
- › Performance improvements with additional operational cost savings



Condition Monitoring Service (CMS)

COST-SAVING BREAKDOWN

| BEFORE | COST | NSK SOLUTION | COST |
|---|-----------------|--|------------|
|  <p>Replacement and lost productivity for bearing failure and imbalancing issues. Vibration analysis indicated an additional bearing failure over predicted two-year lifetime.</p> | \$38,582 | Resolution and elimination of additional failure | \$0 |
| TOTAL COSTS | \$38,582 | | \$0 |

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**.

