Australian Industry WINS!

WTIA National Diffusion Networks Project (NDNP) funded by the Federal and State and Territory Governments and industry

SUCCESS STORY NUMBER BC01: SAVINGS IN WEAR REPAIR ON TOOLS - *Improved welding procedures ensures that Smorgon Steel's grinding media keeps rolling through.*

Introduction

Many processes in industry subject tools and equipment to extreme wear, and require expensive down-time for repair and maintenance, at considerable cost to the industry. The steel products industry is no exception.

Smorgon Steel Tube Mills, a member of the Building and Construction Industry Sectoral Project, is a major supplier of steel products to the Australian market. At their grinding media plant in Newcastle NSW, Smorgon produces grinding balls used to assist in the extraction process for many metals as well as for grinding coal in power stations, lime and clinker in the cement industries and base materials in the building products industry.

WTIA Technology Manager Glen Allan has been working with Smorgon staff to improve tool life and repair procedures in the plant. In turn, this keeps production at an optimum level by minimising repair down-time and maximises supply of steel product for the Australian building and construction sector.

Throughout NSW, the activities of the WTIA through the NDNP are supported by the Department of State and Regional Development and the Hon. David Campbell MP, Minister for Regional Development and Minister for Small Business.

The Issue

Various items of tooling in the grinding media plant are subjected to high wear rates due to high working temperatures, rapid thermal cycling and high forces associated with hot forging processes. Tooling is very expensive, so working surfaces are reclaimed many times during the life of a tool. Wear rates can be greatly reduced by application of highly specialised welded coatings.

The need to improve tool life led to a review of weld reclamation practices at the plant and some of the factors contributing to reduced service life were identified. Welding Procedure Specifications (WPSs) and work instructions were reviewed.

The revised WPSs required implementation of elements of a welding management system with changes such as:

- Drawings revised to include essential information
- Work instructions developed detailing welding management and process control
- Welding procedures reviewed with details added where required
- Introduction of Inspection & Test Plans providing accountability & assurance of quality at all stages of the reclamation process

Benefits

- A significant increase in the life of reclaimed tooling – in one example an increase from 3 hours to 3 days.
- A significant decrease in the rate of weld zone failures – i.e. tooling wearing out rather than breaking.
- Less maintenance downtime on the forging plant
- Improvement in OH&S for the plant operators and maintenance personnel

Overall, the project significantly improved tool life and reduced wear and tear on other components of the forging equipment. Thus potential constraints to production were controlled, and the plant was able to operate more efficiently, with less downtime and more cost effective maintenance procedures – and more grinding balls for industry.

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