

WINS!

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



SUCCESS STORY NUMBER M07: NETWORK BRINGS EXPERTS TOGETHER FOR MINING REPAIR – *Welding keeps largest NSW gold producer on target*

In 2004, Newcrest Mining Ltd's Cadia Hill mine moved a massive 76.6 million tonnes of material in order to produce 244,261 ounces of gold and 37,380 tonnes of copper from its open cut mines near Orange rural NSW.

Cadia Valley Operations is the largest gold and copper producer in New South Wales and one of Australia's largest gold producers. The operations comprise a large low grade Cadia Hill open pit mine and the higher grade Ridgeway underground mine. The two concentrators are located adjacent to each other and share a number of infrastructure facilities and services. This enables the two concentrators to be efficiently operated as a single complex.

The Project

Cadia Hill, a member of the WTIA's NDNP Mining Industry Sectoral Project, approached WTIA to consult on repairs to a MP1000 crusher cone head being carried out for them by Camco Engineering in Perth, WA. With Welding Engineers based around Australia, WTIA was well placed to be able to offer the expertise.

Camco is well-respected for their services to the mining and resources, mineral processing, power generation and oil and gas sectors, and has extensive experience in the repair of crushing and mining equipment. The cone head was shipped from NSW to WA to take advantage of this expertise and to ensure an effective repair.

Major Fatigue Crack

The cone head was found to have a major fatigue crack in the head of the casting, as well as general wear and several internal fatigue cracks.

The major concern was the extent of the fatigue crack in the casting. Spectrographic analysis carried out by Camco Engineering found the material of the casting to be equivalent to AS 2074 C4-2. Due to the configuration of the casting, ultrasonic testing could not be utilised to determine its full extent and orientation.

One section of the crack was excavated to 50% of its length, where it was found the crack then ran out at various angles and eventually through the full depth of the unit. It was established that the crack was in fact over 800 mm long.

There was evidence of a defect in the body of the casting that was believed to be the likely cause of the fatigue crack. The challenge was to execute an effective, reliable and cost efficient repair to the unit, and to get it back into service.



Detail of fatigue crack in the cone head

The solution

Working with Camco staff, a welding procedure was developed for the repair of the major crack as well as the smaller radiating ones. Considering the size of the crack, it was necessary to conduct post weld heat treatment (PWHT), especially as pad welding would be required after the initial repair. Pad welding is used to build up a component back to its original thickness and integrity. Further PWHT was conducted after the pad welding, and the final inspection and testing of the repair show that it had been completely successful.

The outcome

John Lo Grande of Cadia Hill commented that the teaming of the experience and expertise of Camco and the WTIA through the technology network created by the NDNP had helped the company put the crusher back on line quickly and with confidence in the integrity of the repairs.

Fully restored cone head



For further information contact: The Technology Transfer Coordinator, WTIA PO Box 6165 SILVERWATER NSW 1811 Tel: 02 9748 4443 Fax: 02 9748 2858 Email info@wtia.com.au