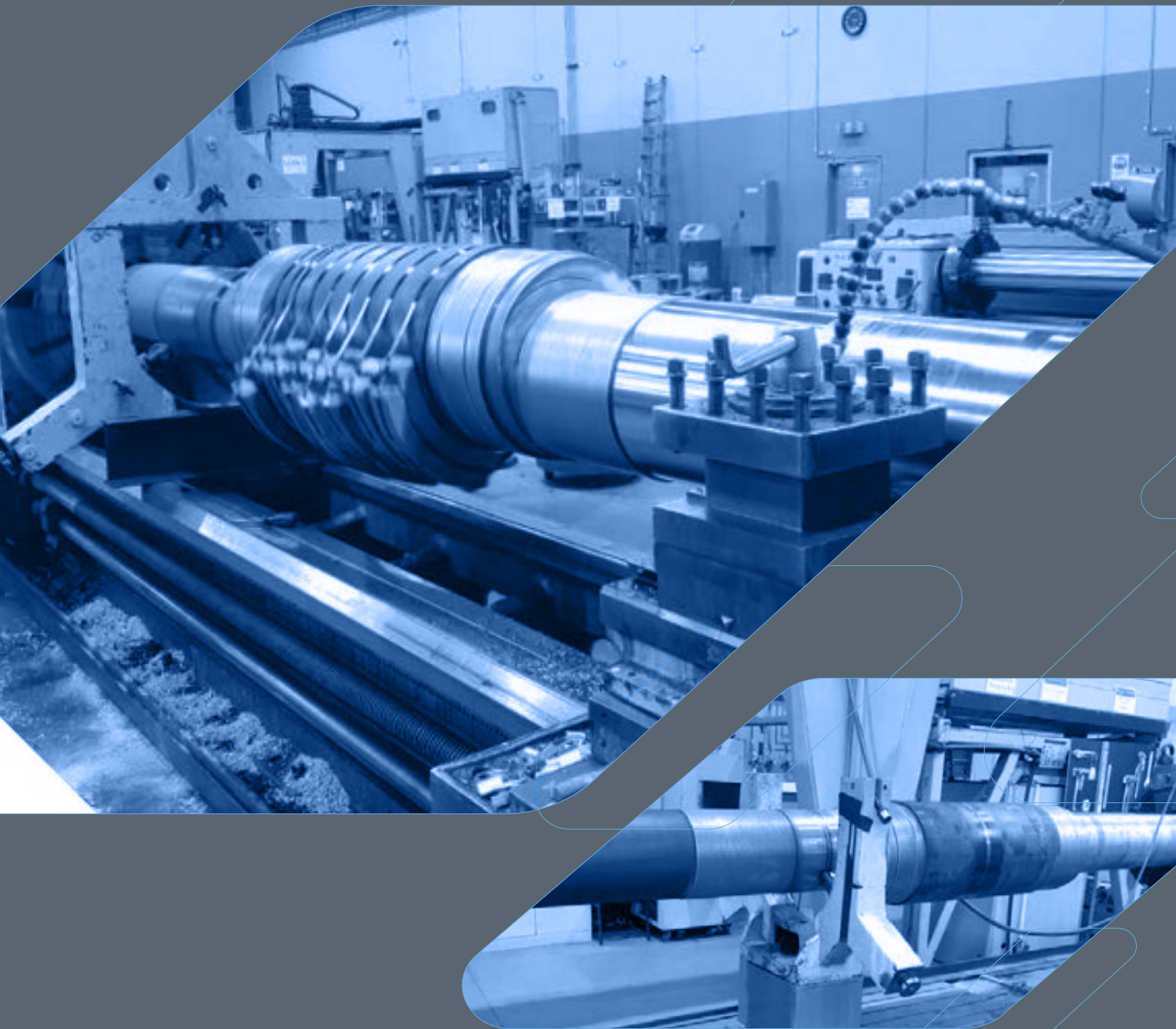




CASE STUDY - LCMEPM2018

Eccentric Pitman Shaft (VR60)

VR60 Double Toggle Pitman Jaw Crusher Shaft restored to OEM standard, at a fraction of the replacement cost.

The Jaw Crusher Shaft was used in equipment to process rock for copper refining West of Sydney. The operating company, a mining major, processes over 1.1 million tonnes of copper ore per annum; producing more than 185,000 tonnes of copper concentrate



The Problem

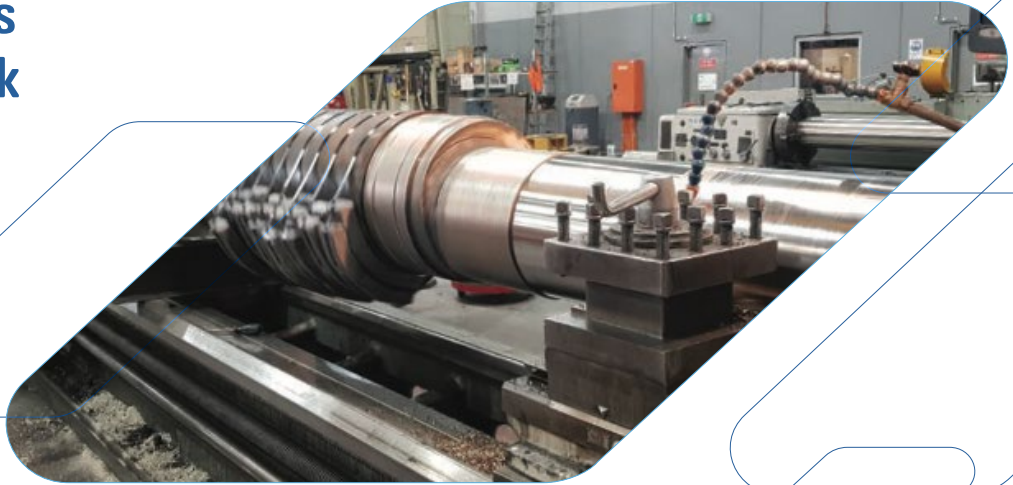
The Jaw Crusher Shaft had been in service for approximately 12 years. The journals had worn and were now undersized leading to a reduction in the quality of ore produced. The shaft either needed to be remediated back to OEM standard or replaced.

Our customer approached us to provide a surface engineering solution to remediate the Jaw Crusher Shaft, primarily to resist wear, and reset the quality of ore captured back to OEM standard.

We commenced an extensive investigation, firstly through metallurgical analysis to ascertain the parent material of the shaft, followed by a hardness test.

Based on the findings of these tests, Laser cladding was recommended as the most appropriate application for the job. Laserbond® cladding would enable the deposition of a metallic or metal matrix composite overlay with a full metallurgical bond over the base material. The accurately focused and infinitely controllable high power laser beam would result in minimal heat affects to both the overlay and base substrate, while the fully programmable robotics system would allow for accurate deposition dimensions. The Laserbond® cladding process would also minimize stress and heat input to ensure no under-bead cracking of the shaft. The metallic or metal matrix composite overlay could be customized to deliver the best performance outcomes considering the operating environment. In this case an overlay for the shaft was chosen for strong wear resistance, combined with optimal strength and hardness.

After Benefits and Feedback



The Solution

Initially the shaft was pre-machined all of the worn diameters. We then Laserbond® clad the journals to a slight oversize as per the drawing dimensions. The shaft was then machined back to finished drawing tolerances. The finished shaft was assessed under the quality procedures of the Metrology department to confirm it was fit for purpose, structurally and dimensionally sound and ready to go back into operation.

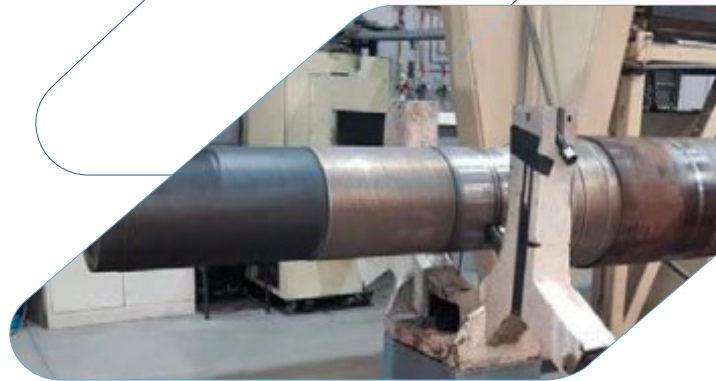
Key Benefits

- Significant operating cost savings – the repair cost was substantially less than new replacement cost
- Less time out of service, with the repair lead time being less than new purchase lead time
- A reduced carbon footprint due to not having to the replace and dispose of the worn Jaw Crusher Shaft

The Outcome

Customer Feedback Customer written endorsement:

“The Jaw Crusher has now been back in operation for 3 years and no wear is evident on the shaft. The end customer currently expects the shaft to meet or exceed its original operating life of approximately 12 years”.



About Laserbond

We are a specialist surface engineering company, founded in 1992, that focuses on the development and application of materials, technologies and methodologies to increase operating performance and wear life of capital intensive machinery components. Our surface engineering technology has applications across many industries, such as resources and energy, agriculture, advanced manufacturing, defence and infrastructure construction.



Laserbond
info@laserbond.com.au
laserbond.com

Sydney
2/57 Anderson Road
Smeaton Grange NSW 2567
+61 2 4631 4500

Brisbane
74 High Road
Bethania QLD 4205
+61 7 3200 9733

Adelaide
112 Levels Road
Cavan SA 5094
+61 8 8262 2289

Melbourne
26-32 Aberdeen Road
Altona VIC 3018
+61 3 9398 5925