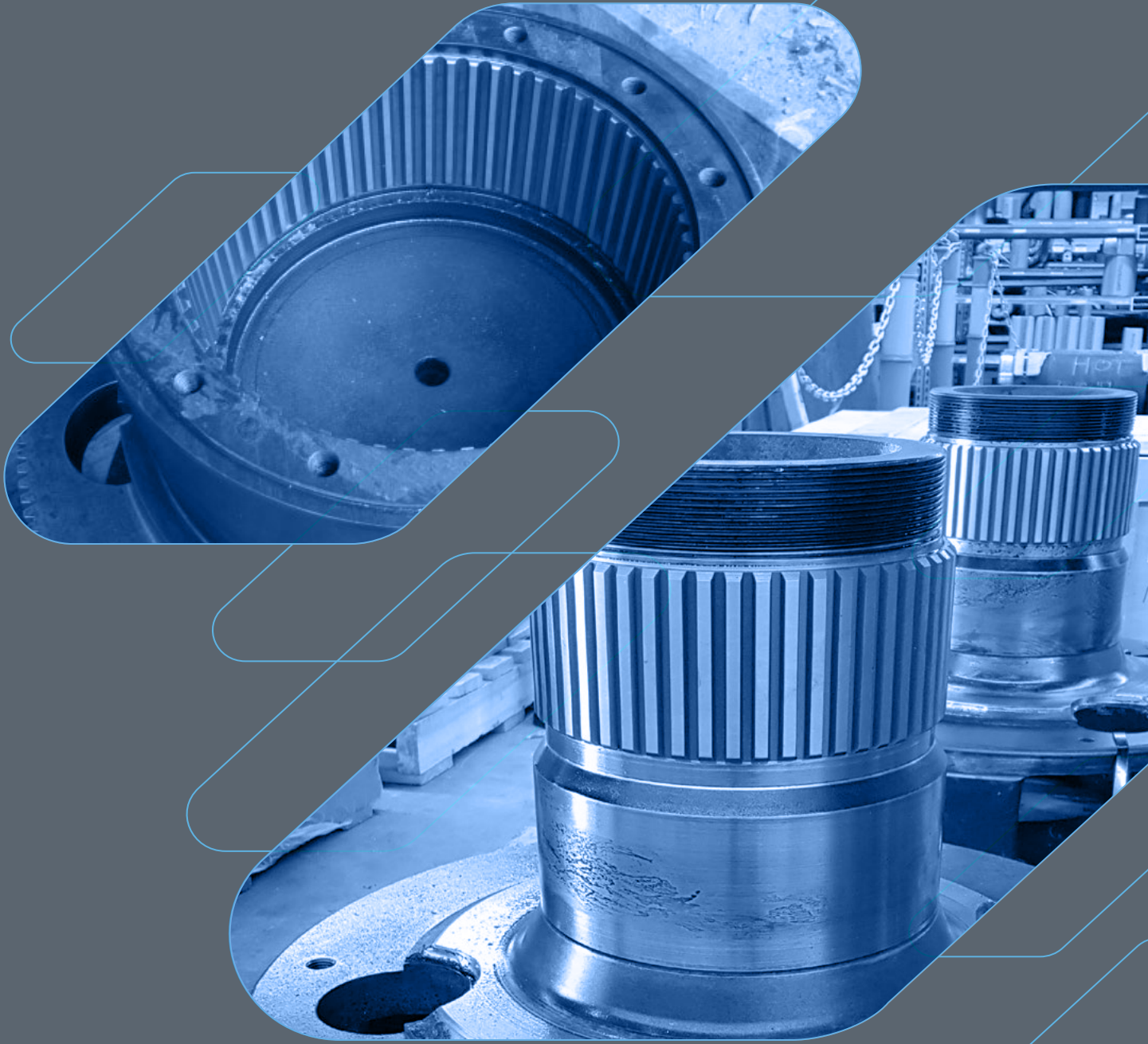
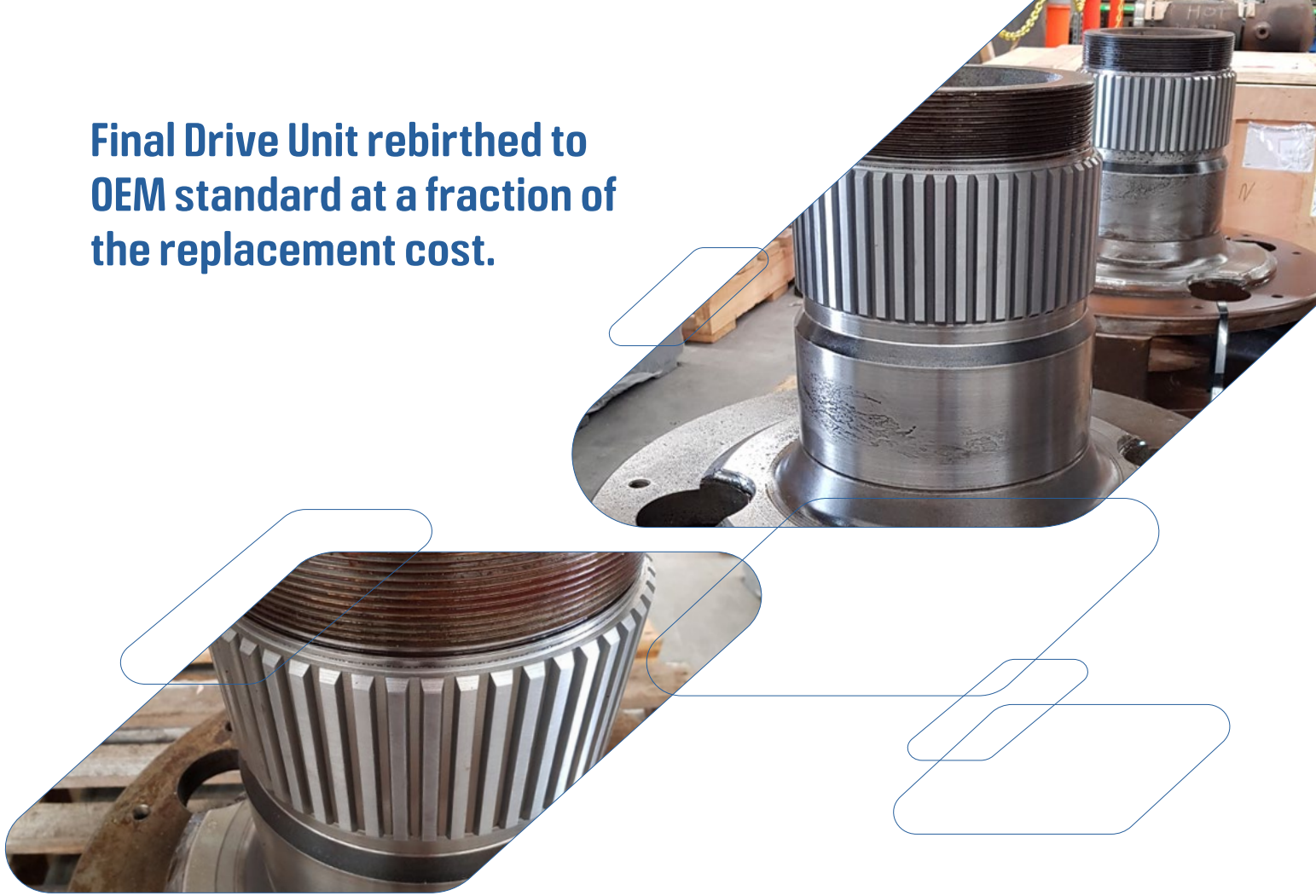




CASE STUDY - LCMEPM2018

Final Drive Unit Mining Excavator

Final Drive Unit rebirthed to OEM standard at a fraction of the replacement cost.



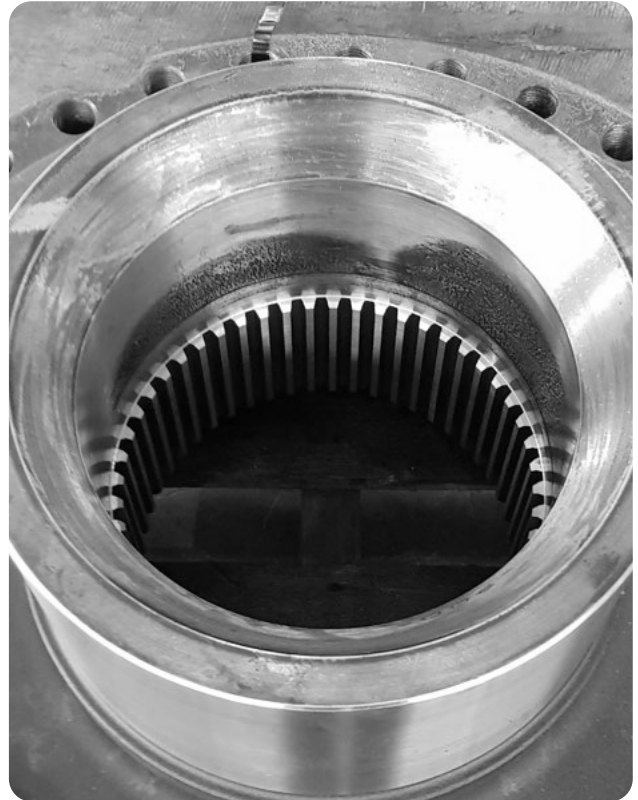
The customer, a major mining contractor, was faced with replacing a final drive unit in a Hitachi EX1900 due to corrosion. They approached Laserbond to investigate whether it could be repaired to an as new/OEM standard. Repair instead of replacement would save the contractor tens of thousands of dollars and avoiding excessive OEM replacement part lead times.

The Problem

When installed, the oil level on these Final Drive units comes up to the centreline, only covering half the splines. During normal running conditions the oil becomes warm. When the excavator stands idle the difference in temperature between the warm oil and outside air creates condensation inside the void above the oil line. This condensation causes serious corrosion on 1800 of the splines, above the oil level, eventually rendering this Final Drive Unit (Hub and Spindle) unserviceable.

The Company looked for Laserbond to provide a surface engineering solution to the Final Drive Unit primarily to resist corrosion, whilst continuing to operate to OEM standard. Laserbond commenced an extensive investigation, firstly through a metallurgical analysis to ascertain the parent material of the hub and spindles, followed by a hardness test. Based on the report, combined with Laserbond's 20 years of laser cladding experience, an alloy applied by Laserbond® Laser Cladding was selected to give superior corrosion resistance combined with optimal strength and hardness. Laserbond® Laser Cladding was selected, enabling the deposition of a metallic or metal matrix composite overlays with a full metallurgical bond over the base material. The accurately focused and infinitely controllable high power laser beam results in minimal heat affects to both the overlay and base substrate, while the fully programmable robotics system allows for accurate deposition dimensions.

After Benefits and Feedback



The Solution

With the overlay alloy and deposition method selected, Laserbond removed the splines for remanufacture and then the Splines were fully rebuilt with the selected alloy. The fully clad area then had new Splines re-cut to exacting OEM measurements. This process was replicated for both the Hub and Spindle splines. The Laserbond® Laser Cladding process minimised stress and heat input and ensured no under-bead cracking on the part. The selected alloy utilised is highly corrosion resistant thereby negating the opportunity for the material to be compromised again when returned to service.

Key Benefits

- Significant operating cost savings – the repair cost was substantially less than new replacement
- Less time out of service, with the repair lead time being less than new purchase lead time improving business economics
- A reduced carbon footprint due to not having to replace the Final Drive Unit

The Outcome

Customer Feedback Customer written endorsement:

'The excavator, with the enhanced repaired components was seamlessly placed back into operation with expected operational life improvement for the future.'

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.



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