



Road headers are flexible rock cutting machines which are used to cut soft to medium rock formations. The basic machine may be configured with a range of cutting heads to suit the application.

Road header mining boom reclamation with LaserBond® cladding

Road headers are flexible rock cutting machines widely used in mining, tunnelling and civil applications to cut soft to medium rock formations. The basic machine may be configured with a range of cutting heads to suit the application. Within the boom a large diameter hollow hydraulic ram supports the rotating head, contains the driveline, and provides the thrust that keeps the cutters advancing into the rock face. Damage to the hard chrome arises from impact abrasion and corrosion. Internal bearing surfaces wear with contamination of dust particles. This results in oil seal failure, machine downtime and lost productivity. LaserBond® cladding with advanced materials returned the ram to better than OEM standard at less cost.

The Problem:

It is very difficult to protect the hard chrome surface of the ram from rock cuttings and fine abrasive particles. Impacts can dent the surface and chip the hard chrome which is a porous coating. In wet environments the moisture initiates rusting of the substrate steel, which results in delamination of the chrome coating. The nature of use often localises the wear into a narrow band so internal driveline bearing surfaces wear and fail. Wear and damage to the ram surface causes damage to the oil seal and when damaged oil seals leak performance deteriorates and oil is a pollutant.



Ram component showing the high wear area to be machined, clad and superfinished.

After benefits and feedback

The Solution

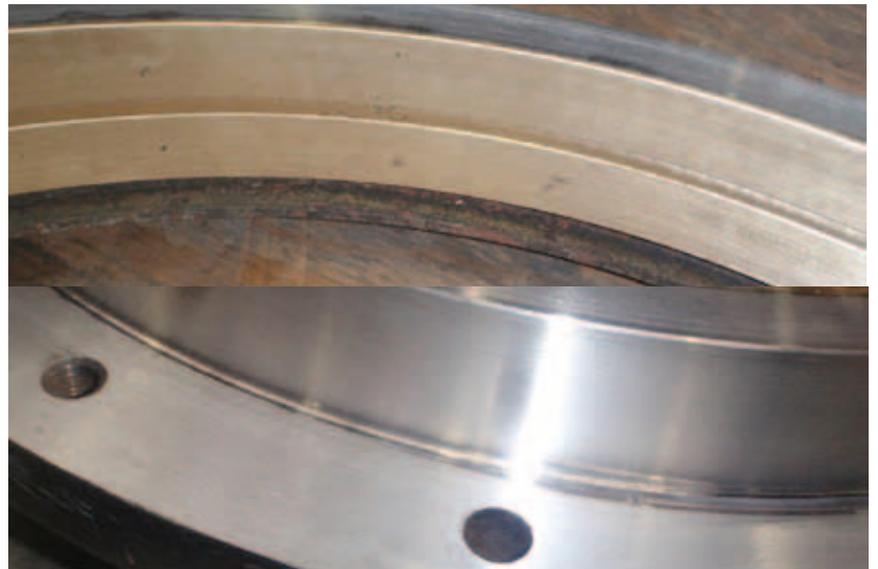
Hard chrome was machined from a 300mm section of the damaged ram to prepare a clean substrate for the subsequent the LaserBond® cladding process. This internal machining prepares the surface for cladding. The actual cladding material was selected to suit the application's primary failure mechanism, in this case corrosion and impact resistance. Internal bearing surfaces are clad with different metallurgy. After LaserBond® cladding the ram is machined in high capacity lathes and borer machines to restore OEM dimensions. The corresponding boom guide ring was also refurbished by machining, cladding and resurfacing.



Cutter boom ram finished after LaserBond® cladding, machining and blending a superfinished surface over a 300mm area.

Key Benefits

- Higher impact resistance and corrosion proof surface.
- Road headers can be worked harder for longer.
- Less downtime and maintenance costs.



Boom guide ring inner and outer surfaces after machining.

Feedback

Feedback on return to operation was “the quality of this rebuild provided us with a us with a better than new refurbished ram at far lower costs than an OEM replacement which reduced our long-term unit operating costs”

About LaserBond

LaserBond Limited is an Australian engineering company specialising in surface reclamation and engineering, precision machining and fabrication. LaserBond manufactures, repairs, reclaims and enhances the performance of high wear, critical metal components in a range of capital intensive industries including mining, minerals processing, energy, agricultural, transport, steel, aluminium, marine and manufacturing sectors.