



In May 1999, Jarvie Engineering introduced commercially applied LaserWeld® coatings to Australia. LaserWeld® coatings provides industry with new opportunities for combining the benefits of metallurgically bonded, high integrity alloys on both new and used machine components.

Lasers offer a unique tool for high quality surface modification. The objective of the LaserWeld® process is to fuse onto the substrate, a new material, having tailor designed metallurgical properties, better able to cope with the specific environment.

LaserWeld® coatings are designed to prolong the service life of engineering components exposed to extremely aggressive environments. This is achieved by introducing high power industrial lasers to strategically place a high performance coating in areas most subject to attack by wear and/or corrosion.

## WEAR

Wear can be defined as the progressive loss of material from the operating surface of a body, occurring as a result of relative motion of the surface with respect to another body. Abrasion, adhesion and contact fatigue are generally regarded as the three basic wear mechanisms that result in material being removed from a material surface.

## CORROSION

Corrosion of metals can be divided into two main categories: reactions with gases and reactions with liquids.

Gases that can corrode surfaces include oxygen, carbon dioxide, sulphur dioxide, chlorine and hydrogen sulphide. The underlying mechanism involves the metal forming positive ions, combining with the gas to form compounds.

Corrosion in liquids is electrochemical, and requires an anode, a cathode, and a conducting circuit. A single drop of conducting liquid on a metal surface is sufficient for a corrosive reaction to occur.

## LASERWELD® BENEFITS

LaserWeld® coatings offer significant benefits over competing coatings such as plasma spraying, arc welding, and electroplating. The process is especially suited to highly stressed alloy steel components that may be subject to rolling, bending, or impact stresses. Fully dense light or heavy build-ups can be deposited at temperatures designed to eliminate distortion. Very low dilution and porosity combine to produce a high integrity coating, with established, predictable qualities.

LaserWeld® deposits include austenitic, ferritic and martensitic stainless steels, manganese steel, tool steel, cobalt based alloys, tungsten carbide composites, copper and high nickel alloys.

Deposition is by 5-axis CNC Laser motion system, suited to shafts up to 1 metre diameter and 6 metres in length, as well as flat surfaces.



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