

Product: Robotic Cladding

Industries: Various Industries

General Overview: Recently upgraded robotic cladding & hardfacing capacity comprising 2 x 40kg 2.7m reach ABB 6-axis robots together on a 10m long track working with 2 x 2-axis 5 tonne robotic positioners.

Expected life extension: 1-10+ times

These two robots can operate individually on different jobs or with co-ordinated motion on one job, depending on size and complexity.

The system is specifically designed for high speed automated cladding/rebuilding of worn and new parts with a wide variety of hardfacing alloys. End result is to not only bring the worn part back to new but significantly extend the life when compared to OEM replacement components.



In addition, we are currently upgrading our existing gantry robotic facility with the same robot as above. As well as increasing the capacity this will ensure ease of operation and programming with all our cladding systems being based on ABB robots.

As well as the above we have installed two smaller ABB robots with “multimove” software for cladding and hardfacing of smaller jobs such as automatic tig welding and for various R&D projects.

Product:	Laser Cladding
Industries:	Various Industries
General Overview:	Robotic Laser Cladding applies metallurgically bonded coating to almost any substrate to increase resistance to wear or corrosion
Expected life extension:	1-10+ times

In late 2020 Awweld have commissioned our brand new robotic laser cladding system. The high-powered Coherent 10kW direct diode D-series laser unit is the latest and most powerful laser cladding system of its type in Australia. The robotic cell includes capacity for welding 30 tonne jobs, up to 3m diameter and 10m long.

What is laser cladding?

Laser cladding utilises a high-powered energy source to melt an additive stock material and weld it to the substrate, providing the advantageous properties of the additive material to the surface. Because the laser energy is so concentrated, it allows for the cladding material to have a full metallurgical bond, without the disadvantages of typical welding processes by minimising heat affected zone (HAZ), dilution and distortion.

Laser cladding is primarily used to apply coatings to parts which are subject to the individual or combined effects of erosion, abrasion, corrosion, or high temperature. It can also be used to dimensionally restore worn components. Common cladding materials include Tungsten Carbide, Nickel and Cobalt Alloys (such as Stellite, Inconel, Hastelloy), Stainless Steel, Iron-Based Hardfacing.



Product:	Laser Cladding
Industries:	Various Industries
General Overview:	Robotic Laser Cladding applies metallurgically bonded coating to almost any substrate to increase resistance to wear or corrosion
Expected life extension:	1-10+ times

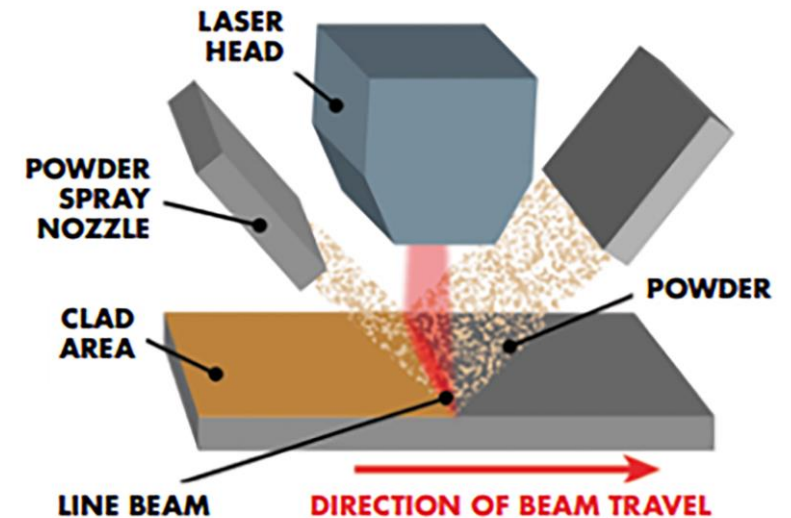
	HVOF	PTA	Laser Cladding
Heat Source	Gas Flame	Plasma/Electric Arc	Laser Beam
Coating Thickness	0.05-0.5mm	0.5-5mm	0.1-10mm
Deposition Rates	1-9 kg/h	1-5kg/h	up to 30kg/h
Dilution	0%	5-15%	1-5%
Bond Type	Mechanical	Metallurgical	Metallurgical
Bond Strength	< 80MPa	< 800MPa	< 800MPa
Heat Input	Low	High	Medium
Porosity	>5%	100% dense	100% dense



Laser Cladding Advantages:

- Metallurgical bond vs. mechanical bond
- Low dilution => 1 – 5% typical (~ 1/3 dilution of PTA process)
- Highly controllable/repeatable and efficient process
- Smooth clad = less post machining
- Small heat effected zone = removes need for post weld heat treatment or stress relief

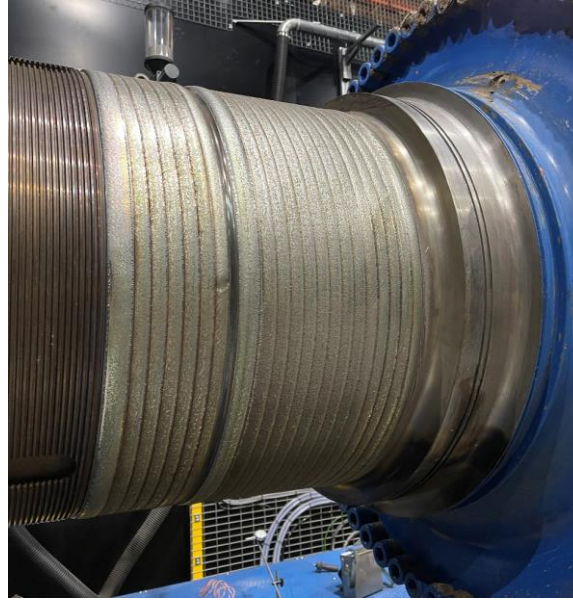
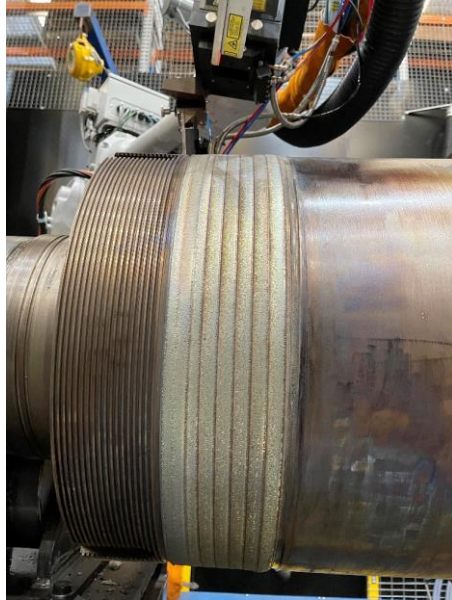
HIGH POWER DIODE LASER POWDER CLADDING



- High quench rates => finer grain structure => higher corrosion potentials
- High deposit speed compared to thermal spray or PTA.
- High deposit efficiency (>80%)

Product:	Laser Cladding
Industries:	Paper Mills
General Overview:	Robotic Laser Cladding applies metallurgically bonded coating to almost any substrate to increase resistance to wear or corrosion
Expected life extension:	1-10+ times

Our laser applied cladding on paper making rollers will provide you with the ultimate in roller service life.



Press/Size Press Rollers:-
Roll Types: Hard Press, Centre Press, Hard Size Press & Breaker Stacks

Non Press/Size Press Rollers:-
Roll Types: Table, wire, felt, table, paper and breast rolls



Our cladding has been specifically developed to provide several specific/tailored benefits such as:-

- Individually selected material types for specific environments
- Welded bond to roller shell, no possibility of delamination/bond failure
- Excellent Doctorability
- Leading Abrasion Resistance
- Elimination of moisture ingress at coating ends

- Material specifically chosen to provide chemical resistance requirements
- No possibility of temperature related cover failures
- Excellent profile retention, greatly increasing the duration between regrinds
- Cladding thickness allows regrinds & repairs should they be necessary
- Our cladding delivers the durability, versatility & machinability for all applications
- Providing longer life for the softer mating rolls, whether rubber or polyurethane