



Talent and Teamwork – Developing the new LaserBond® Cladding Cell

Over 25 years LaserBond has developed a unique team, skills and international reputation that has led to the successful design, development, manufacturing and shipping of our first customized turnkey laser cladding system. We expect this export to our partner in Mainland China to be the first of many over the coming years.

Technology Division was established in response to a number of international enquiries to license our laser cladding technologies. It capitalises on the company's unique knowhow around the application of very high-powered lasers to apply specialised surfaces to heavy machine parts, typical of the resources sector. The division offers tailored systems in custom hardware, software, and support packages.

The LaserBond turnkey package delivery starts with developing an understanding of our client's business model and technology requirements to satisfy its customer requirements. This involved Executive Director, Wayne Hooper, visiting their facilities to assess the technical and commercial specifications. Reciprocal visits to LaserBond facilities refines the specification and builds the necessary relationship for any strategic partnership.



LaserBond® Cladding Cell Ships

This export package was for an additive manufacturing - laser cladding cell tailored for initial surface engineering enhancement and remanufacturing of mineral processing crusher rollers, up to 2m dia x 5.5m long and a mass of 10 tonne.

All components except the 6-axis robot, 6kW laser diode power unit and the control hardware are designed, manufactured and integrated in LaserBond's Smeaton Grange workshops. Many parts and technologies are developed in-house for heavy industry and protected with patents (and applications).

Design Innovation

Wayne leads the Technology Division and describes the unique export opportunity LaserBond has created, "Cladding large mining industry components is unlike other laser applications, and our niche is at the heavy end. Many surface engineered products require extended running times at high power levels, some projects running 16 hours at maximum power. This comes with challenges that our team has met."

One proprietary development is the powder injection nozzle system; "We developed our own water-cooled, off-axis powder injection nozzle. This incorporates a rapidly replaceable powder injection tube and gas depressurized gravity-fed powder mixer to enable us to manage the intense heat accumulating in the laser head. Flowing on from that and the geometry of the part being processed led us to invest in our own control system development. We have a world class product."

Another is the work piece manipulators for heavy components up to 20 tonne. They are not commercially available, nor able to coordinate fine movements necessary for close positional control for laser focusing and power control required for consistent high quality additive manufacturing. LaserBond designs and builds units to handle high loading and high temperature (preheated) components that deliver precise relative movement control when integrated with the long reach robot head.



Pre Delivery Commissioning – Reviewing accuracy of movement available with the LaserBond 2-axis heavy component manipulator.



Pre Delivery Commissioning – Testing operation of 6-axis robot and 2-axis work piece manipulator.



Pre Delivery Commissioning – Reviewing controls within enclosure prefabricated with safety interlocks.



LaserBond® Cladding Cell Ships

Some high wear applications require variable and advanced metallurgy to apply engineered surfaces that accommodate differing multi-modal wear characteristics. Our R&D team based in Cavan, SA analyses these requirements and specifies system control parameters into the client project.

There is a lot of detail involved in delivering these projects; project management, mechanical engineering, machine design, manufacture, key component sourcing, system software design and integration, training manual preparation, then onsite installation commissioning and training. This is a unique accumulation of talent and experience that only LaserBond can offer our heavy industrial market.

As awareness of the application benefits of laser additive manufacturing and advanced metallurgy to heavy end of industry grows, we've received new licensing enquiries for other turnkey LaserBond cladding system packages.

This project generates new high skill jobs at LaserBond, plus others in local supply and contract services. Across its two facilities the company is working in addition R&D collaborations to develop a centre of excellence for surface engineered components for resource, infrastructure, defence and agricultural industries.

Project Management

Project management system underpins the planning, executing, controlling, and reporting progress of the team against contract milestones to achieve specific goals and meet agreed success criteria.

Training Program

Ongoing technical support is also part of the licence package. Secure connections within the control software allow clients to remotely connect their system to LaserBond's engineering and metallurgy team for cladding analysis, system parameter adjustments and operator training.

With the system fully tested and commissioned in LaserBond facilities, clients can undo hands-on training in operational conditions with full access to technical staff, classroom and testing laboratory.



Pre Delivery Commissioning - Testing the heavy-duty tailstock carriage mechanism developed by LaserBond.



Pre Delivery Commissioning – LaserBond developed integrated software package operator interface.



Training Program – Complete multi-level training package available within licence



Turnkey Shipping & Onsite Commissioning

Prior to shipping all components have finished paintwork and packed in containers for shipping to our client's facility.

LaserBond commissioning engineers meet the shipment to supervise unpacking and assembly.

Client's staff are fully involved in setting up and commissioning as part of their training. We stay on for some weeks to help all operators become proficient and productive.

Ongoing Support

An integral part of the licence package is ongoing support utilising remote links (with optional video) to connect to the technical support team.

LaserBond also offers regular – scheduled onsite visits for additional upgrade operator training and system support.

MORE INFORMATION

Further enquiries and information is available on request.

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Pre Shipping Finishing – Robot, stand and heavy-duty work piece manipulator.



Pre Shipping Inspection – 8m heavy-duty base frame that supports manipulator and work piece.



Pre Shipping Finishing – 2-axis Work Piece Manipulator.

