



## Capability Statement

**Laserbond Limited**

ABN 24 057 636 692



- 2 Capability information
- 4 Surface engineering
- 5 Products, technology and training
- 6 Track record and safety
- 7 Environment, risk and quality
- 8 Communication and reporting
- 9 Innovation and collaboration
- Back cover - Contact details

## Contents



Rebuilding bearing surface of mining drum

Gear tooth inspection after laser repair

Internal laser repair

Replacement of hard chrome with laser cladding and super finishing

In situ thermal spray cladding of mill roller

**LaserBond Limited** is an Australian surface engineering company specialising in 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. These industries include mining, minerals processing, power generation, transport and marine, metal making, plant and machinery, manufacturing, fluid handling and agricultural sectors. Using advanced surface engineering through LaserBond® cladding including HP-HVOF (High Pressure High Velocity Oxy Fuel) and other thermal spray systems, LaserBond enhances the service life and performance of metal components thereby allowing industry to dramatically reduce the cost of down-time and replacement parts. LaserBond Limited operates under an independently certified PAS 99 Certification for its integrated management system incorporating Quality, Environment and Workplace Health & Safety systems. The company has been a winner in the Innovation category of the NSW Government's Western Sydney Industry Awards. LaserBond Limited is a public listed company, ASX:LBL

**Principal activities are:**

- Surface reclamation & engineering of high wear metal components.
- Dimensional restoration of worn components.
- R&D for enhancement of surface property for extended service life.
- Manufacture of wear resistant consumable components.

- Licencing of surface engineering systems and technology.
- Shutdown support to local industries.

**Products and services include:**

- LaserBond® cladding
  - High pressure HVOF thermal spraying
  - Plasma thermal spraying
  - Arc Spraying and other thermal spraying systems
  - CNC turning, vertical machining, boring, horizontal machining
  - Large capacity vertical and horizontal boring and turning
  - Cylindrical, surface and internal grinding
  - Superfinishing
  - General machine shop services
  - Specialised welding
  - Metallographic laboratory investigations
  - Research & development including product development
- Working closely with customers, LaserBond can reclaim fatigued and worn industrial parts at a fraction of the cost, and usually in less time, than a replacement can be sourced. In addition, improved resistance to wear and corrosion along with dramatically increased reliability and service life is usually achieved. New components and replacement parts can also be designed, manufactured and surface engineered to provide improved service life in a range of challenging environments and applications.

**Cladding and thermal spray surfacing materials:**

- Tungsten carbide, chrome carbide and other cemented carbides
- Stainless steels – Martensitic, Austenitic, Duplex & Precipitation hardened
- Nickel alloys such as Inconel, Hastelloy C and Ni Cr alloys
- Cobalt alloys such as Stellite and Triballoy
- Bronzes and other copper alloys e.g. aluminium bronze
- Tools steels – H13, M2 and Vanadium steels
- Borides
- Cermets
- Ceramics such as chrome oxide, zirconia, aluminium oxide, titanium dioxide and blends

**Examples of our work:**

- LaserBond® cladding
  - Valves and seats
  - Pump shafts, shaft sleeves and packing glands
  - Conveyor shafts
  - Drilling equipment
  - Steel mill rollers
  - Bearing and seal journals
  - DTH Hammers manufacture
- High Pressure HVOF
  - Pump bodies
  - Hydraulic cylinder rods

- Industry rollers
- Drilling equipment
- CNC manufacture (incorporating surface engineering)
  - Pump sleeves
  - Pump valves
  - Bushes
  - Shafts
  - Various drilling components
  - Mining & mineral process equipment

**Equipment:**

- Machining/grinding/finishing:
- 5 x CNC lathes up to 650 dia. x 1300mm between centres.
  - 12 x conventional centre lathes to 1600 dia. x 5000mm between centres
  - 3 x horizontal machining centres including CNC horizontal boring & facing to 4000 x 2300 x 2300mm
  - 2 x CNC milling machines to 3000 x 900 x 900mm
  - 5 x cylindrical grinders to 600mm dia. x 3300mm between centres
  - 3 x surface grinders to 1200 x 600mm
  - Internal and planetary grinders
  - Superfinishing to mirror finish on cylindrically ground components

# Capability information



In-house metallographic laboratory



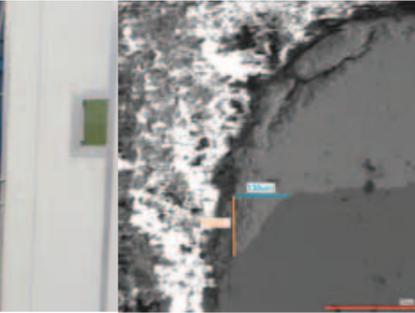
Differing materials



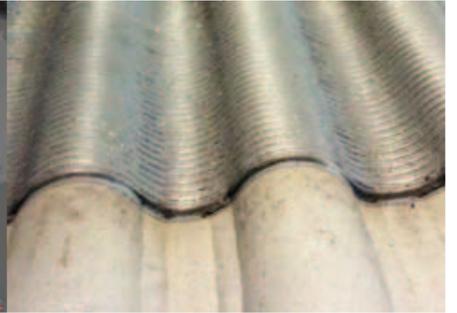
Cost effective HP-HVOF cladding for low impact loading



Advanced 8-axis robotic laser equipment



Scanning electron microscope image



Laser clad boiler tubes

**A wealth of experience** – 13 years for laser cladding and 21 years for thermal spraying – makes LaserBond the go-to specialists in surface engineering for capital intensive industries. The company has developed their patented LaserBond® deposition and HP-HVOF processes which offer unique surface characteristics and metallurgy. Processes are supported by large capacity CNC machining equipment, knowledgeable staff, proactive customer service and quality workmanship.

There is a wide variety of repair and refurbishment options on offer as well as the ability to analyse, design and manufacture components to original equipment manufacturer (OEM) standards, frequently with improved wear-life characteristics.

**• LaserBond® cladding**

A range of high power flexible laser systems allowing processing of very small components and large components up to 2100 dia. x 6100 mm length (includes a 8 Axis Robotic System).

- 2 x 6kW CO2 lasers with integrated robotic 6 axis work processing centres
- 1 x 8kW diode laser with integrated robotic 8 axis robotic work processing centre capable of cladding complex geometries and internal bores.
- Internal cladding head capable of internal diameters of 75 mm ID @ 50 mm depth, to 270 ID at 500 mm depth.

**• Thermal spraying**

3 x booths equipped with robotics and component manipulation up to 1600 dia. x 4000 mm length. HP HVOF (x3), arc spray (x3), air plasma spray, combustion wire and combustion powder spray systems. HP HVOF (3), arc spray (3), air plasma spray, combustion wire and combustion powder spray systems.

**• Heat treatment**

3 x Abar-Ipsen positive pressure quenching vacuum furnaces provide 'state of the art' heat treatment for air hardening materials to 1300 deg C. Cooling pressure levels vary from 5" HG Vac to 6 Bar, capacity 600 x 600 x 900 mm. (available 2016).

**• Metallographic laboratory**

Equipped and staffed to carry out testing and examinations, including metallographic characterisation and chemical analysis.

- Scanning Electron Microscope (SEM) with Energy Dispersive X-Ray Spectroscopy (EDS) and Wavelength Dispersive X-Ray Spectroscopy (WDS).
- Optical microscopes, macro and micro hardness testing and sample preparation equipment.
- FARO portable coordinate measuring machine for precise measurements and reverse engineering restoration projects.

**Manufactured products:**

LaserBond researches, designs, develops and manufactures specialised long wear life/high performance consumables that contain its patent technology. Current products include Down-The-Hole hammers for the drilling industry. Other products are in R&D phase.

**Proprietary technology licensing:**

LaserBond® cladding or HVOF systems licensing can be acquired from LaserBond via tailored equipment, software, training and support packages. Licensing offers a range of complete multi-component turnkey solutions to OEM's and service providers seeking to incorporate an industry specific system. Tailored packages typically include LaserBond® or HP-HVOF hardware/software integration supported by the necessary know-how, training, installation, onsite commissioning and ongoing technical support. The LaserBond option provides fully configured "production ready" systems and open access to many years of the exacting and unique experience and support required to deliver the shortest possible timeline from equipment purchase to return on investment.

**LaserBond staff qualifications:**

LaserBond Limited is staffed by highly trained and experienced personnel. The company is proud of the knowledge, experience and the high qualifications of its staff members. Certificates and

qualifications include, but are not limited to:

- An independently certified PAS 99 Integrated management system, incorporating ISO 9001-2008 Quality, ISO 14001:2004 - Environment and ISO 4801:2001 - Health & Safety Management
- Welding and machining trade certificates
- Masters degree of business administration
- Degrees in mechanical and electrical engineering

**Software:**

IT systems are used to manage and track jobs, accounts, quotes, orders and other important information. Project documentation and correct invoicing are vital to the smooth running of any project. LaserBond Limited's software includes, but is not limited to:

- M1 Enterprise Resource Planning (ERP) and Customer Relationship Management (CRM) System
- Access to experienced Mastercam and AutoCAD operators
- Microsoft Office programs

**Training and skills:**

- LaserBond has a commitment to staff training and up-skilling.
- Staff are highly talented and multi skilled from administration to the workshop floor.
- An apprentice training program with annual intakes is maintained.
- Trade assistants (TA's) are also encouraged to become fully certified trades people.

## Surface engineering

## Products, technology and training



Underground mining machine rebuild

Advanced CNC machining centres

Clad, ground and super finished cylinders

Coal wash baskets clad for long wear life

Precision repairs to turbine rotor

Quality assurance officer inspection

**Leading projects completed and major clients:**

- Weir Minerals Australia – OEM supplier – design, manufacture and LaserBond® cladding of wear components in Warman slurry pumps
- Joy Mining Machinery - refurbishing and LaserBond™ cladding of wear components in mining equipment such as cutter drums, gear cases etc
- Androck Engineering and Mining – refurbishing and LaserBond® cladding of wear components in mining equipment
- Sandvik Australia – Refurbishing and LaserBond® cladding of wear components in mining equipment
- Bluescope Steel – Reclamation and LaserBond® cladding of mill rollers, stripper mill rollers, Port Kembla plant
- Queensland Alumina – Preferred supplier of HP HVOF and LaserBond® cladding hard facing applications
- Aurizon Holdings –Machining and LaserBond® cladding of wear components such as shafts and pins.

**Delivery performance and reliability:**

LaserBond's focus is always to 'Deliver in full, on time and in specification'. The company has a track record of good performance, reliability and timeliness. Supervisors work closely with Lean Manufacturing professionals, an excellent Quality Assurance System and an ERP system with Risk Management. Large projects move through their processes efficiently and reliably.

**Safety management system:**

LaserBond is committed to "Zero Harm". It is understood that safety is a key component of performance for clients and major project supply chains. LaserBond systems integrate with site and customer safety requirements. A disciplined approach to risk management and effective safety leadership is rewarded by continuous improvements in safety performance records. The system includes:

- Published health and safety policy (see website).
- Certified workplace health & safety (BS OHSAS 18001 & AS/NZS 4801:2001) PAS 99 integrated management system.
- Senior manager responsible for safety management
- Trained First Aid officers
- Ability to track and report on safety statistics
- Health & Safety representatives

**Lean manufacturing:**

Our facilities are designed to meet the standards of Lean 5S manufacturing, a methodical team-based approach to organising the work space which ensures the process is arranged ergonomically, efficiently and is capable of repeatable, quality output. Strict process controls deliver measurable improvements in quality, on-time delivery, waste and organisation culture. Lean 5S is applied throughout the company from the front desk to the despatch dock.

**Environment management system**

Environment protection is extremely important at LaserBond. Efficient internal processes, monitored utilities usage and waste management are fundamental principles to internal operations. Customers also benefit from this. It takes approximately 30 gigajoules of energy to produce 1 tonne of steel. LaserBond can typically reclaim that 1 tonne of steel using only 1 gigajoule of energy, ensuring reclaiming and remanufacturing are cost effective and also good for the environment. The system includes:

- Environmental and safety policy statement policy (see website).
- Certified Environment (ISO 14001:2004) PAS 99 integrated management system.
- A senior manager responsible for the environmental management

**Risk management**

This system includes:

- Risk management matrix to identify and assess potential risks
- Risk management system and procedures to manage the actual risk e.g. risk assessment procedures for work on site or at customers' premises
- The company is compliant with local, state and federal regulations

**Insurances**

- \$20,000,000 public liability insurance

- \$20,000,000 product liability insurance
- Workers compensation
- Industrial special risks/Business interruption insurance

**Manufacturing management systems**

The M1 ERP system effectively documents

- Quote requests
- Job cards
- Quotes
- Non conformance records
- Purchase orders
- Drawing register
- Invoices
- Material certificates

**Quality Management**

Robust quality assurance systems are fundamental for LaserBond and its customers. For capital intensive industries where downtime and throughput have significant cost implications it is clearly understood that products and services must meet or exceed specifications. The system includes:

- Published quality policy (website)
- Independently certified Quality (ISO 9001:2008) PAS 99 integrated management system.
- Test inspections and test plan
- A senior manager responsible for quality management
- Procedures for assessing and approving the quality systems of subcontractors

**Track record and safety**

**Environment, risk and quality**



In-house scanning electron microscope

Remanufactured mining machine

High capacity machining facilities

Super finishing hydraulic rams

Automated thermal spray systems

Contract manufacture of specialised wear parts

**Capacity levels:**

- Employee base between 40 - 60
  - Company revenue approx. \$10M - \$13M p.a.
  - LaserBond facilities have the ability to scale up workforce levels to handle large projects and handle additional shift work when applicable.
- Preferred maximum value of work per job or contract: \$5,000,000

**Area of operation and supply:**

Australia, with the ability to export globally, (LaserBond is currently exporting to North and South America as well as Europe).

**Proactive reporting**

Consistent customer service is a high priority. Effective proactive reporting occurs via their M1 Enterprise Resource Planning system, whereby all shopfloor, supervision and management staff can monitor electronic job status reports in real-time - even remotely - from a customer site.

Face to face weekly toolbox, production and sales meetings ensure any delays, changes or issues affecting delivery are swiftly communicated to clients.

**Relationships**

LaserBond has developed a number of quality long term relationships through collaboration and development of innovative solutions with leading firms. Some of these are:

- Weir Minerals
- Flowserve Pump Division
- Caterpillar Global Mining
- Westrac
- Androck Engineering
- Joy Mining
- Gearhart United
- Bluescope Steel
- Queensland Alumina
- Cement Australia

**Responsiveness**

As a medium sized company, LaserBond Limited has the ability to respond quickly to customer requests. Due to their proficient systems in place LaserBond Limited can give clients quick responses to quote requests and work status updates. Clients have access to their after hours contact details and there are staff on hand to handle emergency and breakdown work 24 hours a day.

**Industry leadership**

LaserBond has held an industry leadership reputation since the early days of metal reclamation processes. From 1993 it was for thermal spray. Then in 1999 they introduced laser cladding. Surface engineering is 'in their DNA'. High Pressure HVOF and LaserBond® cladding are relatively young so new applications continue to be researched and developed.

**R&D team**

LaserBond's surface engineering innovations have resulted in the development of new processes, equipment and patents. Our R&D team is fully equipped with their own in-house laboratory to carry out testing and examination including metallographic characterisation, hardness testing and chemical analysis. One of the main tools for this research is the in-house SEM – Scanning Electron Microscope. This allows for investigation of coatings and metallurgy down to the nano scale. Laserbond's lab is routinely used for the optimisation of coatings and overlays, quality control of incoming materials, reports to clients on new applications and materials and failure analysis as required. Examination of the effects on substrate metallurgy of the coating and cladding operation is routinely performed to ensure component integrity or structural properties are not compromised.

**Industry and customer collaboration**

The company is exposed to a wide range of wear-life and performance problems, mostly associated with the impact of corrosion, abrasion and erosion of capital-intensive equipment. They believe collaboration is the key to developing beneficial outcomes.

**Industry Associations**

- WTIA Welding Technology Institute
- AIG Australian Industry Group
- AIDN Australian Industry Defence Network
- ASM American Society of Materials
- LIA Laser Institute of America
- AustMine

**Industry presenters and exhibitors**

- QME - Queensland Mining Expo, QLD
- AIMEX - Asia Pacific's International Mining Exhibition, NSW
- SACOME - South Australian Chamber of Mining and Engineering, SA
- Drill & Blast – Drilling Industry Conference, QLD

**Communication and reporting**

**Innovation and collaboration**

**Facilities:**

*Head Office:*

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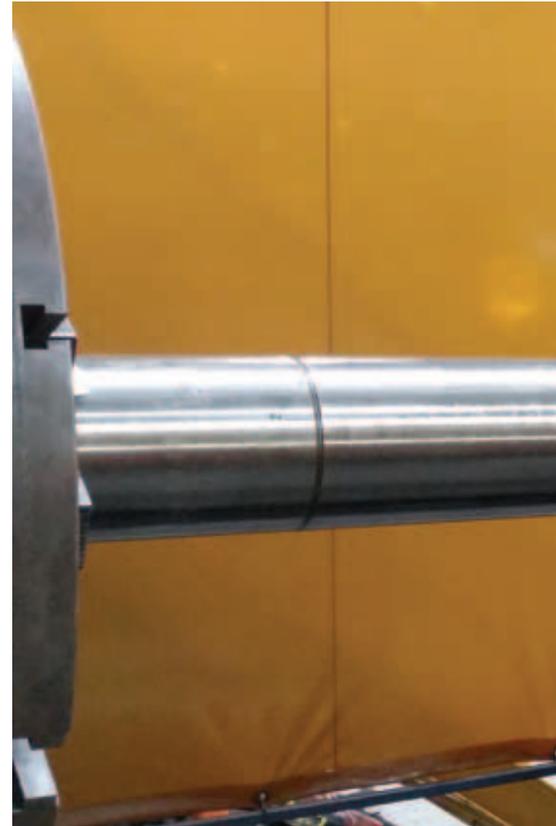
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ASX:LBL



*Using advanced surface engineering, through LaserBond® cladding, HP HVOF (High Pressure High Velocity Oxy Fuel) and other thermal spray systems, LaserBond enhances the service of metal components which dramatically reduces the cost of down-time and replacement parts.*