

Wind Turbine Repair

Wind turbine refurbishment is key to enhancing longevity and efficiency. Surface engineering techniques like LaserBond® Cladding[™] and LaserBond® Thermal Spraying are important for maintaining and extending the lifespan of turbine components.

Wind Turbine Maintenance

Scheduled wind turbine maintenance balances regular upkeep with challenges such as environmental, logistical, and technical factors. Unscheduled maintenance can be costly, and wind farms, often in remote areas, are hard to access, particularly in harsh weather.

The Importance of Sustainability

Wind turbine repairs focus on reducing environmental impact by using reusable materials and refurbishing parts like rotors and gearboxes. Sustainable practices and advanced technologies support long-term wind energy sustainability and lower greenhouse gas emissions.

Our Surface Engineering Capabilities Can Help

LaserBond has over 10 years of experience in the repair of wind turbine components including:

- ✤ Gearboxes
- Journals
- Housings
- Rotors
- Shafts

- ROLUIS
- Corrosion protection for external surfaces

About LaserBond[®] Cladding[™]

LaserBond's tried and tested surface engineering techniques focus on modifying the surface properties of materials to enhance performance, durability, and resistance to wear. Integrating surface engineering into the remanufacturing process of wind turbines is aligned with both, economic and environmental goals of wind energy. Techniques used in surface engineering for remanufacturing include:

- Thermal Spraying: High-Velocity-Oxy/Air Fuel spraying (HVOF/HVAF), Arc Spraying and Plasma Spraying to deposit metallic or ceramic coatings to enhance surface properties or rebuild a worn component. HVO/AF is especially suited to provide extreme wear and corrosion protection. Arc spraying is used for large area coatings like thermally sprayed Zinc and Aluminium based coatings for atmospheric corrosion protection (AS2312.3) and general repair. With plasma spraying ceramic coatings like aluminium and chromium oxide can be applied.
- LaserBond® Laser Cladding: Laser Cladding is in principle a deposition welding process using a laser as a heat source. Depending on the deposition material and thickness the added layer provides improved wear and corrosion properties to the part or restores dimension. Due to the extremely precise heat input Laser Cladding achieves metallurgical bonding of the coating with the following:
 - Small heat affected zone (HAZ)
 - Low dilution
 - No distortion
 - No change of microstructure in substrate material

Benefits of LaserBond® Surface Engineering:

\bigotimes	Enhanced Durability
	and Longevity

Cost-Effective Remanufacturing

Reduced maintenance and downtime

Pioneering Innovation in Laser Cladding and Remanufacturing

As an Australian company with the prestigious qualification of wind turbine shaft repair by General Electrics, we are proud to be the first company qualified in Australia for laser cladding as a remanufacturing process. We are pleased to have LaserBond[®] Cladding[™] qualified for shaft repair by a leading wind turbine manufacturer.

We specialise in advanced coatings and surface engineering, collaborating with customers to select the best materials for optimal performance.

Customers who have partnered with us for solutions to repair their wind turbine components.

- ✤ General Electrics
- Sulzer
- Flender (Moventas)
- Statewide Bearings
- EMACS

About LaserBond

We are a specialist surface engineering company, founded in 1992, that focuses on the development and application of materials, technologies and methodologies to increase operating performance and wear life of capital intensive machinery components. Our surface engineering technology has applications across many industries, such as resources and energy, agriculture, advanced manufacturing, defence and infrastructure construction.

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