Robotic Laser Additive Manufacturing

AT CSIRO CLAYTON

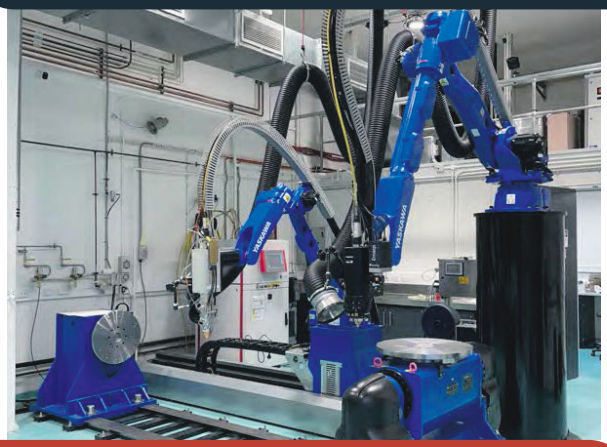
DEFENCE TRAILBLAZER
A COLLABORATIVE PARTNERSHIP BETWEEN
THE UNIVERSITY of ADELAIDE | UNSW
CSIRO

Offering a state-of-the-art manufacturing facilities as part of the Defence Trailblazer Proto-Lab Network, the CSIRO Robotic Laser Additive Manufacturing facility offers large-format additive manufacturing applications and prototyping, using multi-material inputs with wire and powder feedstock.

Printable materials include iron, nickel and cobalt-based alloys, and Metal Matrix Composites (MMCs). With the robotic arms and multiple axes, the build can be accessed and worked on from various angles to produce large complex structures which can subsequently be coated with functional materials or gradients, transitioning from one material to another.

The facility includes two industrial 6-axis robots, a dual axis manipulator, tail stock and a linear track, which are integrated with 4kW lasers, dual hopper powder feeder, laser coaxial wire and powder zoom optics deposition heads to deliver additively manufactured components and coatings.

Robotic Laser Additive Manufacturing Cell



KEY FEATURES

- 3200 x 1200 x 1200 mm build volume
- 1000kg capcity
- 4 kW laser power
- Wire & powder feedstock
- Iron, nickel & cobalt based alloys
- Metal matrix composites (MMC's)
- Deposition rates up to 2.5 kg/hr
- Tool path generation using CSIRO proprietary software

Laser Powder Zoom Optics Deposition Head

KEY FEATURES

- Functional coatings & gradients
- Multi-resolution printing
- Welding
- Variable laser spot size
- Coaxial multi-jet nozzle
- Closed loop process control
- 45-150 µm particle size

Laser Coaxial Wire Deposition Head

KEY FEATURES

- Large format printing
- Complex geometries
- Coaxial wire
- 3 beam focusing laser
- Cold & hot wire feed
- Closed loop process control
- 100% deposition efficiency
- Ø 1.0, 1.2 & 1.6 mm wire

Available through the Defence Trailblazer Proto-Lab Network
For more information visit our website: **dtb.solutions/pln**