

Aerospace Additive Manufacturing AM Research Metal Additive Manufacturing

RUAG Australia leads exploration of laser metal deposition for military aircraft repair

The project is being undertaken in partnership with researchers from RMIT and IMCRC



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RUAG Australia, a subsidiary of technology company [RUAG](#), is teaming up with Australian research groups to explore the utilization of the laser metal deposition (LMD) process for aircraft repairs. The project, carried out in partnership with members of the Innovative Manufacturing Cooperative Research Centre (IMCRC) and RMIT University, will specifically look at using LMD to produce spare parts for aircraft using steel and titanium.

The LMD process explored in RUAG's research initiative is an additive manufacturing process that consists of depositing a metal powder through a laser onto a metallic substrate, creating a precise

“web-like” structure. The technique, described as a “very high-tech welding process” is capable of building up parts with very strong bonds, making it suitable for producing spare parts or even for repairing existing parts.

Presently, the technology is being explored for the purpose of repairing aircraft parts and specifically military aircraft systems. The researchers say that it could be applied to new systems in the Australian Air Force such as the F-35 fleet as well as older aircraft models.



One of the main draws of implementing the technology is cost, as it currently costs the Australian Air Force over \$230 million a year to replace damaged aircraft parts. By using LMD, RUAG believes the military could leverage local additive production to create parts on-demand and repair existing parts more cost-efficiently.

“Strategically speaking, a shift to LMD technology means less downtime for repairs and a dramatic increase in the availability and readiness of aircraft,” explained Neil Matthews, Senior Manager of Advanced Technology and Engineering Solutions, RUAG Australia. “Instead of waiting for spare parts to arrive from a warehouse, an effective solution will now be available locally.”

David Chuter, CEO and Managing Director of the IMCRC, added: “This technology could be applied in any industry where metal degradation or remanufacture of parts is an issue. The current project focuses on military aircraft and it is potentially transferable

to the civil aircraft, marine, rail, mining, and oil & gas industries. Australian industry stands to benefit significantly from this project.”

The collaborative additive manufacturing research project is currently operating on a two year schedule. In addition to the LMD-focused project, RUAG Australia is also leading development and application research of powder deposition technologies, such as cold spray (SPD) and laser assisted deposition (LAD) for the defence sector.

