RUAG Australia proves the use of SPD for restoring aircraft skin structures

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RUAG Australia has proven that the use of Supersonic Particle Deposition (SPD), an additive metal manufacturing technology, is a reliable solution for restoring full structural functionality to maritime and military aircraft skin structures.

This process was set forth in the ***Best Written Paper*** winning entry at the 18th Australian International Aerospace Congress (AIAC). Entitled “Additive Metal Solutions to Aircraft Skin Corrosion”, the paper was presented by RUAG Australia.

The findings in the RUAG Australia paper reveal that SPD repairs to skin corrosion restore the stress field in the structure and ensure that the load carrying capability of the repaired structure is above proof load. This makes the technology particularly applicable to maritime and military aircraft, whose regular operating conditions include high stress performance and harsh environmental factors.

The research results also show that SPD technology has the potential to reduce the costs and replacement times associated with traditional approaches to aircraft skin corrosion repairs. In fact, the incidence of component repair, or replacement, is a critical issue for this category of aircraft. The associated costs are seen to rise in conjunction with the

intensity of the damage, the industry-accepted repair method and/or the turnaround times for accessing spares, when repair has been generally viewed as a non-viable solution.

“SPD offers highly reliable, cost effective and time-sensitive repair solutions to complex skin corrosion issues,” states Neil Mathews, Senior Manager Advanced Technology and Engineering Solutions, RUAG Australia, and presenter of the Best Written Paper. “As our research continues to progress, and advancements in the scope of SPD applications expand, additive metal technology proves its very real advantages over traditional repair methods,” he adds.

The paper is the outcome of collaborative research with Monash University and is co-funded by the US Navy, Naval Air Systems Command (NASC).

RUAG Australia is a major industry research center for the development and application of Powder Deposition Technologies focusing on both SPD, sometimes referred to as Cold Spray, and Laser Assisted Deposition (LAD) for defense applications. These technologies offer a number of exciting and cost-effective outcomes, particularly in the areas of geometry restoration and corrosion protection. In addition, these technologies enable the restoration of corroded / damaged metallic components / structures to an acceptable level of structural integrity and functionality. RUAG Australia maintains and operates a fixed and mobile SPD capability as well as a fixed LAD capability.