



Additive manufacturing

As a manufacturing technology, additive manufacturing of metallic materials is a powerful technique capable of producing geometries not possible with conventional subtractive manufacturing technologies. It also enables the creation of new materials through rapid solidification rates and complex thermal histories. Unlocking this potential requires new modelling tools and regulations that can adapt to meet the flexibility offered by additive manufacturing.

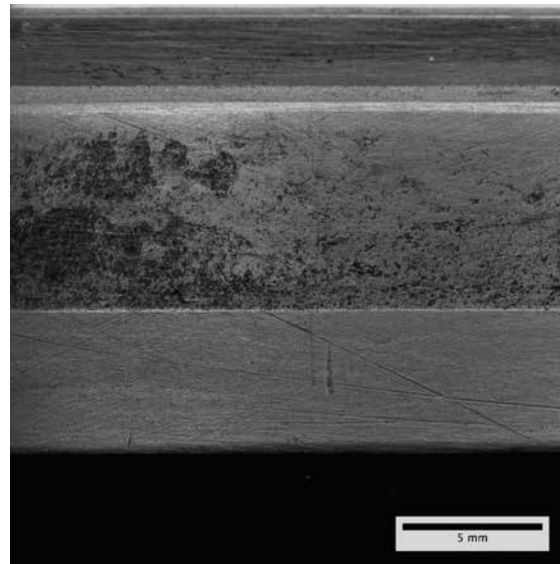
DST has been applying this game-changing technology to the repair and manufacture of Defence components.

Direct Metal Deposition has been applied to repair the rudder anti-rotation bracket on the F/A-18 aircraft and the C-130 landing gear shelf bracket. These have been transitioned through to full design acceptance and certification for flight.

DST has also been involved in the design of new and replacement Defence components that are lighter, stiffer and more efficient structures, incorporating organic design and topology optimisation.

It has been identified that conventional aerospace certification methods might not apply to additive manufactured components. Extensive international efforts are currently underway to develop a certification model for additive manufacturing in order to streamline the manufacture of parts for the industry.

With industry partners, DST is advancing additive manufacturing certification through the development of a real-time, integrated, comprehensive, physics-based model to describe the important relationships that will ensure reliable and predictable manufacturing outcomes. This rapid certification path will ensure additive manufacturing equipment can operate with expanded design boundaries and material types.



Damaged C-130J bracket

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