

Development of a New Aluminium Alloy for Additive Manufacturing

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Since Additive Manufacturing involves the process of melting and solidification, it is particularly suited to materials which are weldable and have good castability. Titanium alloys are readily weldable by fusion welding techniques. Therefore, in the majority of current activities, titanium is the material of choice. For applications in aerospace and space which require structural performance (high strength, toughness and/or damage tolerance), the preferred choice of material is aluminum. Unfortunately the majority of aluminum alloys are not recommended for fusion welding as they deliver welded joints which either have issues concerning the formation of defects (cracks, pores etc.) or have poor mechanical performance. A strong need therefore exists, to develop a new generation of advanced aluminum alloys which can take full advantage of the AM process whilst delivering the required high end structural performance. This tedious task can be achieved through a combination of alloy design, microstructural modelling, manufacturing of samples and testing. This presentation aims at introducing the preliminary results achieved on development of a new high strength aluminum alloy