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## Understanding and Overcoming the Challenges in the Welding of Additively Manufactured Aluminium Alloys Components

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Additive manufacturing (AM) technology has been developing steadily in the last few decades to overcome challenges, and operational and financial disadvantages related to conventional manufacturing processes. The Wire Arc Additive Manufacturing (WAAM or DED-Arc) and Laser Powder Bed Fusion (PBF-LB) technologies appear as very promising processes for manufacturing large and highly complex metallic components, respectively. However, even with the several advantages of AM technology, it's not realistic to imagine a final complex product produced entirely without conventional manufacturing processes. In this way, the ability to join conventionally to additively manufactured components or parts represents a crucial step toward the future of both technologies. Although there is an increasing interest in AM technology, there is still a significant lack of information related to the joining between conventionally to additively manufactured components. The current work proposes an assessment of the weldability of AM (in this case, WAAM and PBF-LB) Al alloys by fusion and solid-state welding processes. The work describes in depth the challenges to be overcome, as well as guidelines for the welding community on how to achieve the highest quality possible in the joining of AM Al-alloys.