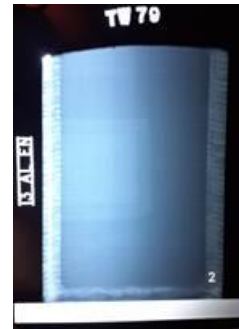



LORTEK is investigating different alternatives to manufacture high strength aluminium parts by Wire and Arc Additive Manufacturing (WAAM) to meet the most demanding aeronautical specifications

Alternatives include the testing of **new aluminium wires** containing nanoparticles, the in-situ alloying of commercial wires to produce hot cracking resistant and high strength deposits and different single wire and multi-wire processes with 2XXX series filler metals. The goal is to **print parts with 400 MPa yield stress, 500 MPa tensile strength, 10% elongation and reduced anisotropy (<10%)**. These mechanical properties are comparable to the wrought and rolled high strength aluminium alloy that are used in subtractive manufacturing process of aircraft structures. The proposed approach based on **WAAM** will allow to reduce waste material from **current 140 Kg to 6 Kg** in real part manufactured by AEROTECNIC company.






Several of the tested alternatives were successful in printing high quality parts with **minimum overall porosity (<1%)** and **small pores (50 microns)** that was the **first quality milestone**. Currently heat treatments are being optimized to reach the aimed property target, before starting a comprehensive material testing campaign which includes low cycle fatigue and fracture toughness tests.





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