

THE INFLUENCE OF DEFECTS ON THE STRUCTURAL BEHAVIOR OF ADDITIVELY MANUFACTURED SS 316L AND ALSI10MG COMPONENTS

SPEAKER: BENJAMIN SMITH

Additive manufacturing (AM) is becoming increasingly popular in automotive, aerospace, energy and healthcare industries. Standards for critical defect sizes and porosity levels in AM materials have not been established. A critical porosity manufactured defect relationship which can qualify components for safe use needs to be developed. Defects including quarter crack, internal void, and through-hole were intentionally manufactured into SS 316L and AlSi10Mg AM tubular tensile specimens. Levels of porosity were introduced by reduced laser power in the AlSi10Mg specimens. This study helps define the relationship between defects, porosity, and ductility of AM SS316L and AlSi10Mg and compare this relationship to conventional metals.

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