Fatigue assessment of as-built and heat treated Inconel 718 specimens produced by additive manufacturing including notch effects

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Abstract

The fatigue behaviour of notched and unnotched specimens produced by additively manufactured Inconel 718 are analysed in the as-built and heat-treated conditions. The surfaces display high roughness and defects acting as fatigue initiation sites. In the as-built condition, fine sub-grains were found, while in the heat-treated state, the sub-grains were removed and the dislocation density recovered. SN-curves are predicted based on tensile properties, hardness and defects obtained by fractography, using the [?]area-method.

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