

# Master Thesis

## Effect of build orientation on fatigue properties and damage evolution mechanism of additively manufactured steel 1.2709

Additive Manufacturing (AM) is a state of the art process that enables fabrication of complex geometries which are difficult or impossible to build using traditional manufacturing. Similar to many other mechanical components, most of the components made of this technique undergo cyclic loading throughout their service life, therefore, understanding their fatigue behaviour is essential to be able to widely adopt the technique in different industries.

In this thesis, influence of sample geometry, build orientation, defects and microstructure on the fatigue behaviour of the additively manufactured steel 1.2709 produced by L-PBF (Laser-powder bed fusion) should be investigated. The experimental investigations comprise offline/online investigation of quasi-static and fatigue properties, fractography, metallography as well as non-destructive methods such as Barkhausen Noise Analysis.

### More Information:

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