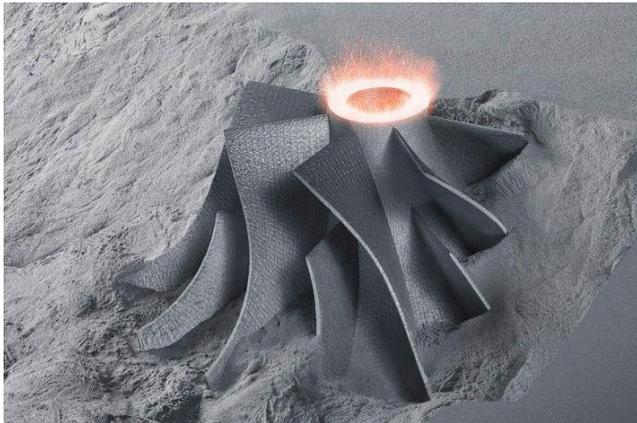


Bachelor or Master Thesis

Metal based additive Manufacturing of welding Jig elements



Selective laser melting and optimization of Topology, Image source: TRUMPF, COFFEE GmbH

Initial situation:

The automotive production, especially the body shop, is characterized by a high degree of automation. In order to be able to guarantee the required product and process quality in the large-scale production of vehicles, high variant specific investments are necessary. Changing market conditions lead to volatile demand that cannot be handled by the production facilities. In addition, an increasing number of variants of a vehicle type, global diversification and the ramp-up of electric mobility are increasing the need for a better flexibility in body production. Increased flexibility usually leads to exponentially rising investment costs due to the rigid, highly efficient line production. The use of metal 3D printing (selective laser melting or fused filament fabrication) for the manufacturing of flexible jigs and fixtures is a promising solution to gain flexibility without rising costs.

Your tasks:

- Analysis of the application of metal powder based additive manufacturing of jig elements and fixtures
- Analysis of the economic efficiency of metal 3D printed jig elements
- You design fixture elements and integrate them into a welding jig for a real application.
- To optimize material consumption, you perform a topology optimization. The material savings reduce manufacturing costs and process times
- Evaluation of the fixture system consisting out of topology-optimized and additive-manufactured metal components

Requirements:

- Mechanical Engineering, Production Engineering, Computational Engineering or similar program
- Design and CAD knowledge

- Knowledge of CAE/FEM simulation
- Motivation & Commitment
- Ability to communicate and work in a team
- Self-initiative
- Interest in the topics of electric vehicle production

What you get:

- Intensive support and interdisciplinary exchange
- Immediate start possible
- Fast processing

Have we piqued your interest?

Please send your current transcript of records, CV and certificates to the e-mail address below.

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