**Topic:** Development of a high performance solid state cooling system for advanced metal additive manufacturing

**Betreuer:**

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**Art der Arbeit:**

Bachelorthesis  x  Experimental  x  
Projectthesis  Construction  x  
Other  Theoretical  x  
Masterthesis  x  Literature

**Start:** Now

**Specialist field:** Mechanical engineering

**Previous knowledge:** Basics of construction engineering

**Description of the task:**

Wire and arc additive manufacturing (WAAM) is one of the most promising processes for 3D printing of large-volume components and is currently under intensive research. The development of new welding processes in the field of regulated short arc processes opens up the possibility of establishing a generative manufacturing process, which combines the previous contradictions of high flexibility / component complexity and high melting performance / process speed. The ISF is constantly working on improved processes for the analysis and control of WAAM. One project is the development of advanced cooling methods for the printing process for the production of large metallic components. At the ISF a novel solid state cooling system Is being developed, which shall significantly increase the manufacturing efficiency of the WAAM process. Your job would be to develop a test bench for comparing the cooling system with established cooling methods like aerosol, high pressure air or water bath cooling. In experiments you shall evaluate the cooling performance and further improve the system. You will gain deep knowledge in WAAM and welding, as well as robot programming. We offer you a nice working atmosphere and flexibility in terms of working time. High motivation and independent working are required.

Please note, that we cannot offer you a hiwi job for the thesis.