Geometry assurance of metal AM parts

Background
Additive manufacturing (AM) is a rapidly expanding technology in the manufacturing industry. It offers various advantages such as design freedom, weight reduction, nearly finished parts which allows faster development times and could prove economical. However, the physical phenomena of metal AM process is rather complex which affects the geometrical accuracy as well as the surface quality of the AM part. Specifically, the effect of process inputs such as laser scanning strategy (pattern type, size, orientation angle etc.), contouring strategy on part geometrical accuracy is not clearly established yet.

Tasks
- Performing literature studies to lay the theoretical foundation about the above mentioned parameters
- Experimental investigation to assess the effect of each parameter or their combination on geometrical accuracy and surface roughness

Goals
- Describe the effect and importance of above mentioned parameters on part geometrical accuracy
- Create guidelines on how to consider the above said parameters to minimize geometrical inaccuracies and surface roughness

Means
Office, computer, software and experimental facilities will be arranged by Chalmers and/or at RISE in Mölndal. This thesis work needs to be conducted by two students. Preliminary start is January, 2019.

Information
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