Geometry Adaptive Scan Strategies

Enabling Industries Through Scan Strategies with Improved Quality and Productivity

Motivation and Relevance

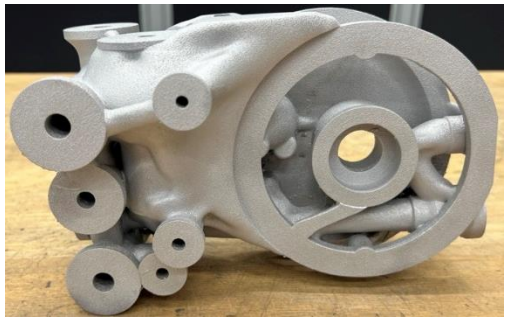
- The PBF-LB/M scan strategy includes the arrangement of scan vectors and laser parameters (e.g., power)
- The scanning strategy affects quality and productivity
- Laser parameters are already tailored to part & material, but the spatial and temporal order of scan vectors are often overlooked. Conventional strategies lead to heat peaks and distortion.

Approach

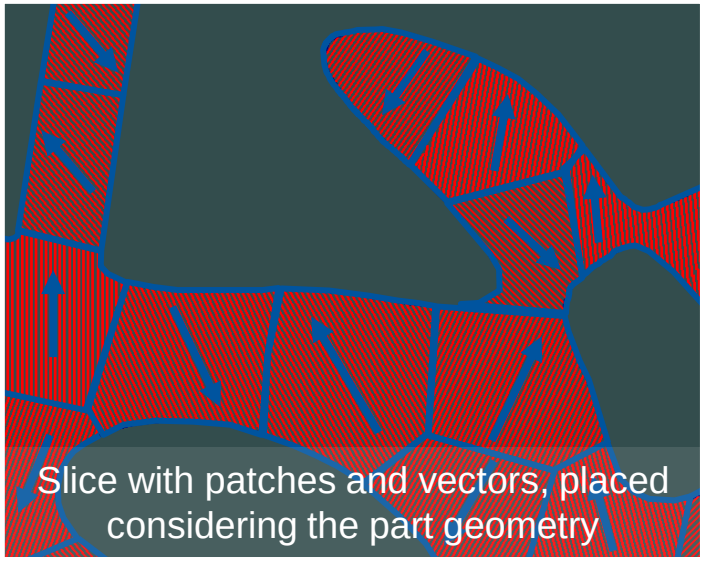
- Creation of an algorithm that creates geometry adaptive scan vectors
- Validation of quality, productivity, and sustainability improvement by comparison with standard stripes strategy using a complex demonstrator part

Research Area

- PBF-LB/M
- Data Preparation



Picture



Slice with patches and vectors, placed considering the part geometry

Results

- Parameterizable algorithm (e.g., patch geometry, vector orientation) for geometry-adaptive configuration of scan strategies
- Complex parts were printed successfully

Quality ★★★★★

Productivity ★★★★☆

Sustainability ★★★★☆

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