




**Novel Voronoi-based
Scanning Strategies
Combined with Field-driven
Geometry Analysis**



**Professur für
Virtuelle Produktentwicklung**

This paper presents an approach for a software-based process chain in Laser Powder Bed Fusion (LPBF). Based on a comprehensive geometry analysis of the part to be manufactured, relevant control parameters are calculated and used as decision criteria for subsequent process steps in the process data generation for adaptive design of key parameters. These include parameters of the scanning strategy such as the hatch pattern and specific sub-parameters (e.g., hatching pattern sub-area sizes, azimuthal alignment of exposure vectors, hatch spacing). The goals are to improve the manufacturability of overhang surfaces while minimizing the use of supports and to enable more homogeneous thermal conditions throughout the fabrication process. The article shows examples of individual components of this software process chain. In addition, this approach is coupled with a Voronoi-based scanning strategy to allow greater design freedom in the geometric design of the hatching. Finally, experimental studies based on this software process chain are presented.

More information at the FhG forum:

-  Donnerstag, 16. Mai 2024
-  11:35 - 12:05
-  CongressCenter, Panoramasaal, 3 OG

Contact:

Thomas Töppel
thomas.töppel@iwu.fraunhofer.de

