

Density Verification of Cubes Produced by Direkt Metall Laser Schmelzen (DMLS)

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Abstract:

The advantages of metal additive manufacturing (AM) make it an attractive alternative to conventional processing techniques when intricate parts are needed. Scaling AM to a production capacity comes with unique challenges. One of which is the need for density verification of printed parts which is often done with the use of density cubes. These cubes (typically 10x10x10mm) act as coupons for printed parts. In research and development of new printed materials, it's important to check these density cubes for excess porosity via image analysis. However, in a production climate, this slows down production due to the need for sample preparation. This paper explores the option of using Archimedes density for density verification of metal additive manufactured parts produced via selective laser melting (SLM). 316L and CX stainless steel materials were used for the investigation.