

## Comparability of the performance of in-line computer vision for geometrical verification of parts, produced by Additive Manufacturing - DTU Orbit (08/11/2017)

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The field of Additive Manufacturing is growing at an accelerated rate, as prototyping is left in favor of direct manufacturing of components for the industry and consumer. A consequence of masscustomization and component complexity is an adverse geometrical verification challenge. Mass-customized parts with narrow geometrical tolerances require individual verification whereas many hyper-complex parts simply cannot be measured by traditional means such as by optical or mechanical measurement tools. This paper address the challenge by detailing how in-line computer vision has been employed in order to verify geometrical tolerances, The paper addresses to which precision, tolerance verification has been achieved, by assessing the reconstruction capability against reference 3D scanning by a selected number of AM processes. Geometrical verification was achieved down to a precision of 20µm for ideal AM processes, whereas the thermally driven SLM due to thermal warpage, resulting in a reconstruction accuracy of 400 µm.

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