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Standard method for microCT-based additive manufacturing quality control 5: witness specimen analysis V.2

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We use this protocol and it's working

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Abstract

MicroCT is a well known technique and is often used for non-destructive analysis of parts produced by additive manufacturing. This is especially useful to inspect the parts for potential defects such as excessive porosity or layered defects due to imperfect powder levelling in individual layers. While various online monitoring methods are under development, there is currently not yet any accepted method to identify such defects during the building process. Post-production microCT of the entire part allows for the identification of such errors, but its limitation is the resolution which depends on part size. Hence a large part may have small but important porosities which may be missed by microCT. This can be overcome by using a witness specimen built in the same process, and analysing this smaller sample at a high resolution. The porosity information from the smaller part can be used to evaluate the acceptability of the entire build. The workflow presented here serves to standardize this process: with a simple process, a standard geometry witness specimen and hence standardized scan and analysis procedures. A layered stop-start flaw is shown in the witness specimen to demonstrate the ability to detect this type of flaw.

Attachments

PDF
Method for standard ...
975KB

FILE
05 Bracket witness s...
10.6MB

FILE
05 Bracket porosity ...
18.8MB

FILE
witness specimen.mp4
26.9MB