1.9.30. METHOD FOR THE EVALUATION OF AUTOMATIC POROSITY DETECTION FOR CT-DATA

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The demand of computed tomography has been increasing in the field of non-destructive testing during the last few years; therefore the methods of data analysis for CT-data need to be constantly developed further in order to fulfill the requirements posed by the industry. Although the evaluation of porosity within a given component part is a fundamental task in many industrial sectors, there are difficulties choosing correct analysis parameters. CT-data permit accessing the full three-dimensional properties of the object under examination with non-destructive means. The computed tomography is an ideal tool for 3D-porosity evaluation and therefore is a valuable non-destructive supplement to traditional metallographic examination which lead to very good results for individual slices of the corresponding component part.

The accuracy of automatic porosity detection for CT-data strongly depends on the choice of appropriate parameters. Improperly chosen parameters result in incorrect coverage of the volume deficits within the CT-volume, i.e. over – or underestimation of the sizes of volume deficits, omitting small volume deficits other features. In addition to this appropriate data-sets with sufficient spatial resolution and grey-value contrast are needed. Therefore the conditions during the CT-scan need to be optimized with respect to the particular object and the expected pore sizes.

Evaluation of the exactness of automatic defect detections is a challenging task since in general the defect volume and the distribution of volume deficits within the CT-dataset is unknown and therefore an exact reference for the porosity detection is not available. This paper presents an innovative method to investigate the exactness of automatic porosity detection using well-defined reference bodies. First results will be presented which clearly demonstrate the benefits of this approach.