

A Procedure for Crack Detection in Forming Processes Based on Acoustic Emission Analysis

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In modern metal forming processes parts with complex geometries are manufactured in great quantities. Due to a forming on the material load capacity threshold microscopic and macroscopic cracks can occur. In this paper a new procedure based on Acoustic Emission analysis is introduced which can automatically detect such kind of cracks.

Starting from Rayleigh-Lamb-Theory typical crack characteristics are recognized by experimental simulation and test series. These characteristics are verified for dynamic industrial forming. The results lead to a procedure which is suitable for crack detection in processes with high forming dynamics and noise intensity.

The procedure was integrated in an industrial forming process and tested under mass production conditions. The results are presented.