



TU BERGAKADEMIE FREIBERG

Die Ressourcenuniversität. Seit 1765.

Fakultät für Werkstoffwissenschaft und Werkstofftechnologie

Institut für Metallformung

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Master Thesis / Diplomarbeit

Title: Experimental and simulative investigations on transverse extrusion

Transverse extrusion is one of the most recent extrusion processes in which the direction of material flow is transverse to the main movement of the die. However, to date there is no ready analytical solution for quantifying the process to determine the degree of deformation in the flange area of the sample. Against this background, after a detailed literature evaluation on the above-mentioned topic, experimental investigations on steel for simple transverse extrusion including their validation in ABAQUS are to be carried out within the scope of this thesis. A variation of geometric parameters of the initial sample as well as of the tool shall underpin the stability of the calculations. A subsequent implementation of a fracture criterion in the calculation is to predict the damage by making the degree of fracture deformation, the force-displacement curve, and the forming work quantifiable.

Focus of work:

- Literature research on transverse extrusion
- Experimental investigations on the transverse extrusion of simple geometries
- Validation calculations with ABAQUS
- Derivation of finished analytical solutions

Reviewer: Prof. Ulrich Prahl, Dr. Sergey Guk

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Duration: 6 Months

Hinweis: *Die Bearbeitung des Themas ist auch auf Deutsch möglich.*