Institut für Werkstoffanwendungen im Maschinenbau | RWTH AACHEN UNIVERSITY

Masterthesis

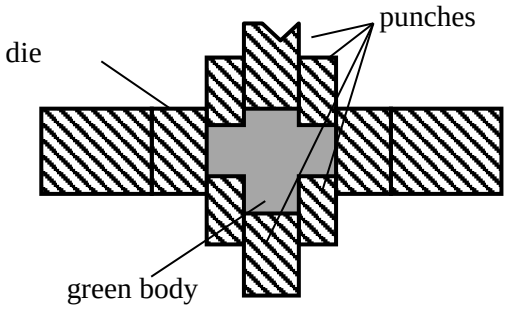
Numerical simulation of powder compaction

Project Description

The powder-metallurgical process chain offers the precise and economical production of complex components made of iron-based materials. By uniaxial compaction a so-called green body is produced, which is later on transformed into a ready-to-use component by a subsequent sintering process. The compaction process determines the geometrical shape as well as the density distribution in the component, which directly affects the mechanical properties. Finite element simulations can be used to predict the impact of process parameters on the properties of the component. These require experimental investigations to precisely describe the material behaviour.

Your Tasks

- Carry out mechanical tests and experimental investigations of the compaction process
- Derive material and model parameters from experiments
- Implement the Drucker Prager model to simulate the compaction process
- Simulation of the compaction process of simple geometries and validation by comparison of the predicted density distribution with micrographs



Your profile

- Ability to work autonomously
- Enjoy experimental work
- Basic knowledge of ABAQUS
- fluent english

What we offer

- a comprehensive introduction into the topic and support during your work
- a pleasant work atmosphere
- you will be supported to finish your thesis in a timely manner

Contact

Oliver Schenk, M. Sc.
Augustinerbach 4, Raum 107
52062 Aachen
Tel.: +49 241 80 95324
o.schenk@iwm.rwth-aachen.de
www.iwm.rwth-aachen.de