

Mini / Master Thesis

„Simulation of Grind-hardening of 100Cr6“

Project

In the scope of a research project at IWM, the residual stress state after grinding of the bearing steel 100Cr6 has to be described quantitatively. During grinding the surface layer of the work piece is exposed to a thermomechanical load spectrum that could further trigger metallurgical events i.e. phase transformations. Residual stresses arise as a result of coupled interactions between temperature distributions, local deformation and phase transformations.

Tasks

In this study, the modelling and simulation of residual stresses evolution during grinding has to be carried out in Abaqus. An existing model must be extended based on experimental studies. The focus of the investigations is the transformation behavior and the strength of the steel 100Cr6. In a first step experiments must be planned, conducted and evaluated. The findings are then implemented in the form of mathematical relationships in numerical modeling.

Requirements

- Student in Mechanical / Metallurgical Engineering or Material science
- Good knowledge of material science
- Good experience in Excel / Matlab / Abaqus
- Interest in experimental investigations

Contact

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