

SA

Theoretical Study

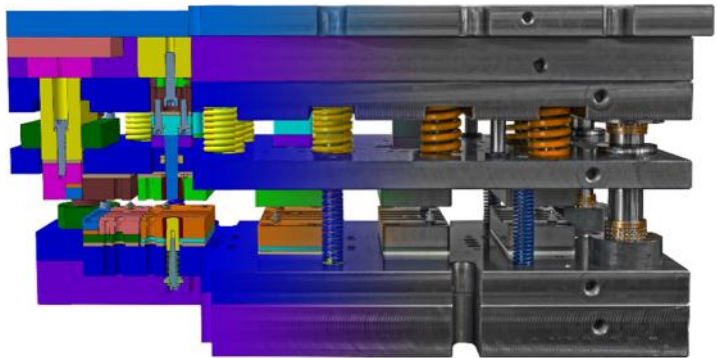
Design of a tool-integrated cooling system for the study of shear blanking at low temperatures

Motivation

High-speed shear blanking (HSB) can be used to create cutting surfaces that have exceptional properties in terms of wear, corrosion and fatigue behaviour and can therefore be used directly as functional surfaces.

However, the generation of comparable cutting surface properties is usually associated with high cutting speeds, which require specific machine and tool conditions. For this reason, a cooling system is to be designed for integration into an existing shear cutting tool in order to investigate whether a targeted reduction of the tool and workpiece temperature can induce earlier material fracture and thus enable a cutting surface similar to HSB at low cutting speeds.

The cooling system is to be developed with regard to its integration into the existing tool concept and its applicability on conventional mechanical presses.



Range of tasks

- Research on possible tool-cooling concepts
- Design of the tool-cooling system
- Design of critical components
- Preparations for tool production (technical drawings, etc.)

It is possible to adapt the focus of the work to individual interests. Research work can be partially conducted remotely.

Prerequisites

- Independent and structured way of working
- Creativity and motivation for learning
- Experience with designing software (SolidWorks, CATIA, etc.)
- Initial experience with tool design and/or construction will be an advantage
- Initial experience with Abaqus CAE software will be an advantage

Contact

Lysimachi Iona, M.Sc.

lysimachi.iona@tum.de
089 / 289-13804

German or English

Start immediately