

Bachelor thesis, master thesis

Model Design for a geometry-optimized, inhomogeneous Heatup

In metal forming processes, high temperatures are required to facilitate plastic deformation. At the same time, these high temperatures negatively affect the energy balance and lead to secondary effects such as scale formation on the workpiece.

To improve the quality and stability of the forming process for steel parts in cross wedge rolling, this project investigates methods for a more energy-efficient process control. The results are intended to help small and medium-sized enterprises (SMEs) optimize their heating strategies for rolled parts, thereby saving energy and increasing process stability.

Your tasks

For geometry-adapted preform heating, a mathematical model will be developed based on existing data to determine the optimal temperature distribution.

Your specific tasks include:

- Research and familiarization with mathematical modeling methods
- Iteration and comparison of different modeling approaches (e.g., analytical, numerical, or data-driven)
- Possible use of optimization techniques to minimize energy consumption
- Validation and benchmarking of models using experimental or simulated data
- Sensitivity analysis of model parameters
- Implementation of the model in a software demonstrator
- Visualization and interpretation of the results
- Additional tasks as agreed upon

Your profile

You are studying one of the following subjects:

- Mechanical Engineering
- Production and Logistics
- Sustainable Engineering Sciences
- Computer Science
- Mathematics
- Forming or Materials Engineering

You have an interest in forming technology / measurement technology and simulation / automation.

In addition, you possess knowledge in materials engineering and mathematical modeling.

Good command of German, both written and spoken, is required.

Programming skills (Python, C++) are highly desirable.

The work can be carried out partly via remote work (telecommuting).

We offer

- Independent, responsible work
- Full supervision of your thesis/project work
- Flexible working hours
- Well equipped workstations
- Home office by arrangement
- Fully stocked kitchen with fruit basket
- Potential for long term collaboration



Bitte sende deine aussagekräftige Bewerbung in einer einzigen PDF-Datei an jobs@iph-hannover.de.

Die Bewerbung muss Anschreiben, Lebenslauf sowie Prüfungsleistungen des Studiums / Zeugnisse enthalten.

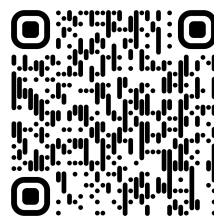
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