control and cyberphysical systems

Job description

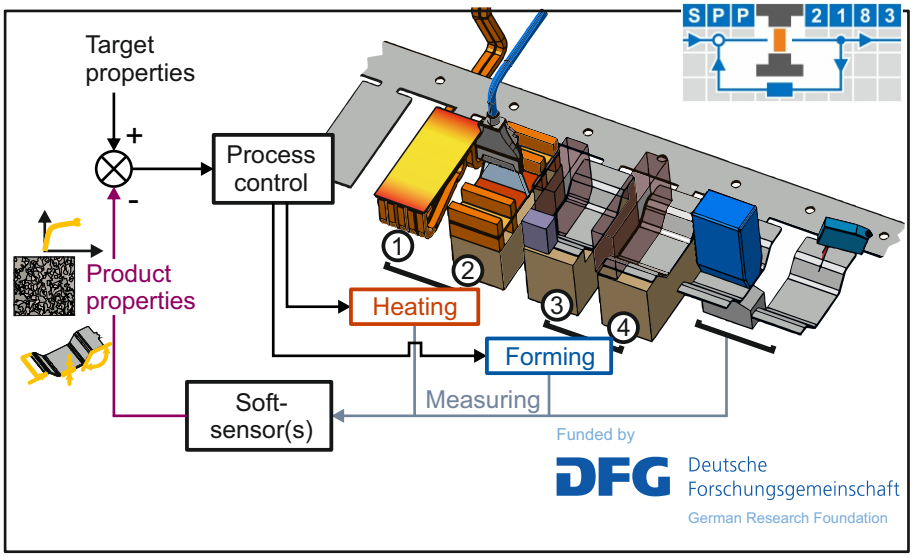
ACon Automation and Control Group

IUL Institut für Umformtechnik und Leichtbau

Development of a control approach for multi-stage press hardening

Multi-stage press hardening enables the production of complex formed press-hardened components at high stroke rates. So far, the production methods have been limited to special applications due to the partially unknown and difficult to predict interactions in the interplay of thermal and mechanical influences throughout the process chain. To deal with these limitations and to improve the quality of the products temperature measurements are installed and a process control will be implemented.

The aim of the master thesis is to develop an approach to control the product properties and to implement it simulatively as well as experimentally (fundamentally).The software of choice for the implementation will be LabVIEW.



What are the possible tasks?

- Understand the fundamentals of the process and the associated mathematical model
- Develop a closed-loop control strategy including an observer design
- Set up the control loop in LabVIEW
- Realize your own ideas

Your profile

You are ambitious and like to learn new things about control theory and metal forming? Perfect! Ideally (not necessary), your expertise encompasses some of these fields

- Control theory (state space representation, stability analysis, linear algebra, …)
- Coding (Python or Matlab)
- Visual programming (LabVIEW)

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