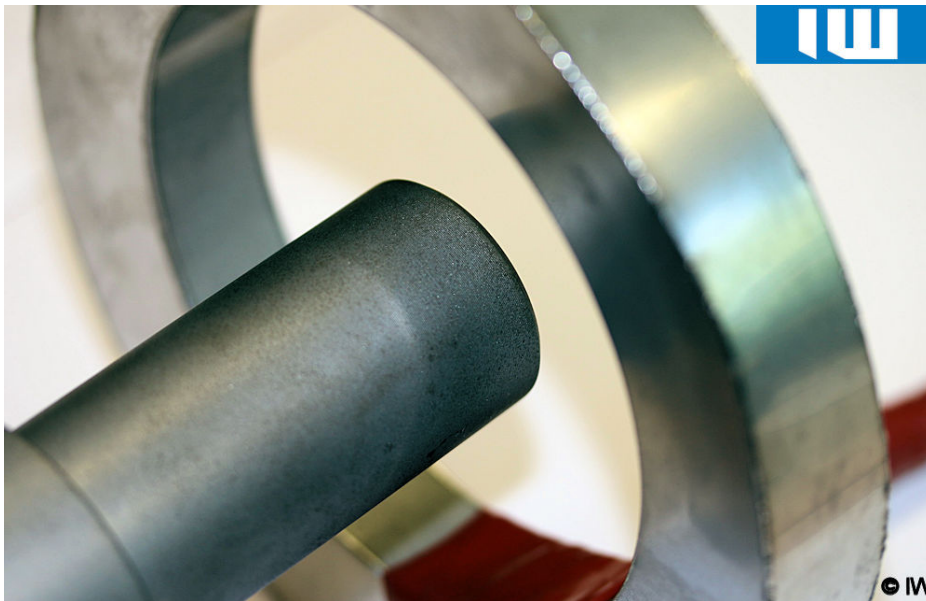


## Process-reliable definition of subsurface properties



### Auf einen Blick

- Definition of subsurface properties in high-strength, ductile steels
- Characterization of microstructures based on eddy-current testing throughout the whole process
- Machine learning model for production parameter control

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**IW/IFW | The quality of a component is dependent on its subsurface properties. However, their process-reliable definition can only be reached by component-specific production control. By the use of soft sensors and a learning process model, the production system shall modify process parameters autonomously.**

In a joint project, the Institute of Materials Science (IW) and the Institute of Production Engineering and Machine Tools (IFW) are developing a method to define subsurface properties of high-strength and ductile steels in a self-adapting production system. The process-reliable definition of subsurface properties is only possible by component-specific control of the production parameters. For this purpose, the component is monitored by soft sensors based on eddy-current testing throughout the whole production process. The measured values are compared with simulation data generated parallel to the process, in order to identify deviations from the calculated production conditions. Data input through testing technology advances the simulation towards a self-learning model, enabling the production system to modify process parameters and define subsurface properties immediately and on its own.

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