Innovative solution for metal transformation

THERMOMECHANICAL ROLLING

Setforge

EFFICIENCY

In line with new environmental requirements thanks to a better energy efficiency of the process.

PRODUCTIVITY

Bar production time is reduced. **Simplification of the manufacturing process.**

OPTIMISATION

Finished parts less expensive due to lower machining costs.

Thermomechanical rolling can replace steel bar annealing by a controlled cooling at the end of the rolling operation when necessary. This treatment can be used on all rolled steels that need an annealing operation in the steel mill in order to prepare them for cutting or cold forging deformation.

This process doesn't change the mechanical properties required for the application.

Prérequis

Small diameter bars (<50 mm)

Low alloy steels as Mn5 or MnCr5 range
16 to 27 CrMo4 range to be check case by case

Thermomechanical rolling is completely suitable for cold forged steels used in Automotive and Off-highways sectors.

Cold forged automotive components

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THERMOMECHANICAL ROLLING

EXISTING SOLUTIONS ON THE MARKET

Setforge is working in close collaboration with **the most innovative steelmakers on the market to develop the solutions of tomorrow.** Our purchasing and engineering teams are at your disposal in order to assess the potential metalurgical and economic gains of these solutions for your business.

GMH GRUPPE

Temperature Controlled Rolling means…

- Material specific controlling of rolling parameters (mainly rolling temperature, forming degree, rolling speed, cooling rate) when needed in combination with a following heat treatment

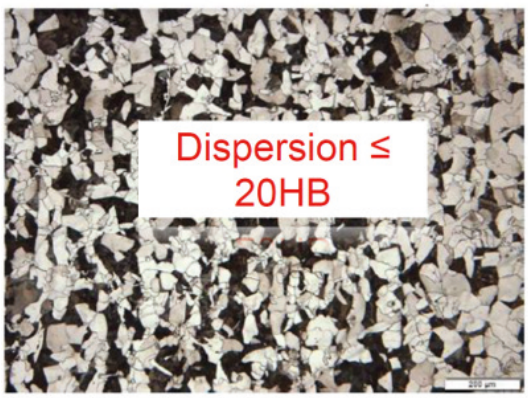
Benefit…

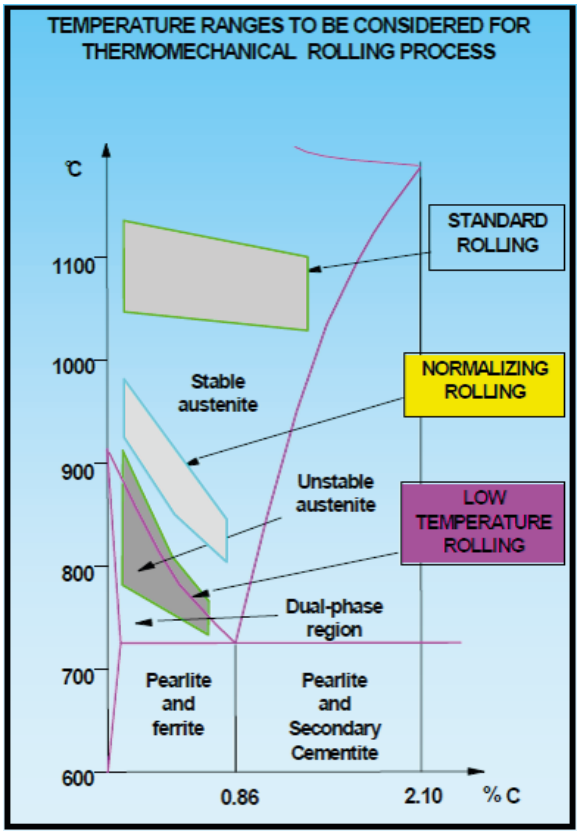
- Optimized microstructure with outstanding mechanical-technological properties for cold forming
- Optimized heat treatment

Temperature Controlled Rolling at GMH…

- Decreasing of the **final rolling temperature** via intermediate/final **water cooling lines**
- The final rolling of steel bar occurs in a temperature region between unstable and stable austenite (**normalizing- and low temperature rolling**, see image); rolling in dual-phase region isn't possible currently
- Microstructure evolution/mechanical-technological properties depends significantly on **chemical composition and bar diameter** → rolling experiments are needed to check the success
- Combination of **temperature controlled rolling** by followed optimized **heat treatment** leads to **excellent processing properties**

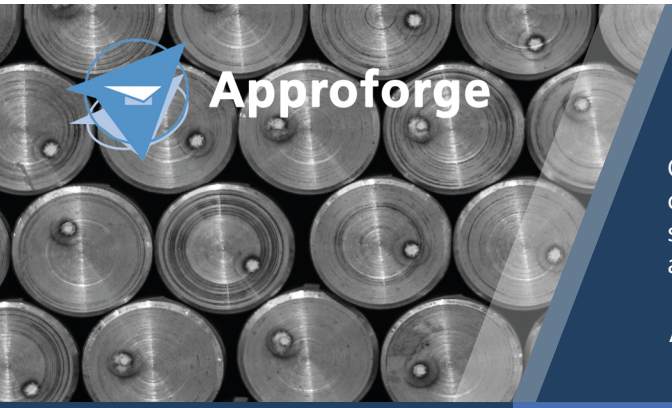
10. Dezember 2019





source: Kocks, M. Kruse

The last rolling operation is performed as a lower temperature than usual («standart rolling») between «Normalizing rolling» and «Low temperature rolling».



Approforge

FOCUS ON INNOVATION

APPROFORGE, purchasing specialist of raw materials for Setforge Group, one of the leading group in Europe in the production of forged components, has set-up a co-development team to provide innovative solutions to their customers in order to bring them a competitive advantage by reducing the overall cost of acquisition of their parts.

Ask for more : **innovation.approforge@setforge.net**