Advanced Cooling Approach Combined with AI-Supported Material Simulation

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The article illustrates advances in water box design. Especially in contrast to existing ones, this new design offers increased flexibility as well as high-precision cooling in combination with a new automation and control concept.

Furthermore this contribution will show how the use of advanced cooling nozzles results in cooling to a required temperature by optimally controlling the temperature. Hereby, extremely homogeneous technological material properties can be guaranteed especially for thicker dimensions of the rolled product.

Realistic material simulation is becoming increasingly important in the mapping of rolling and cooling processes. The more accurate the material data and models are, the better the match between the simulation and the results of the production process will be. The paper demonstrates the use of AI in the form of neural networks for the simulation of phase transformation processes in steels during cooling from the forming heat.

Examples show the influence on the development of microstructures in long products.