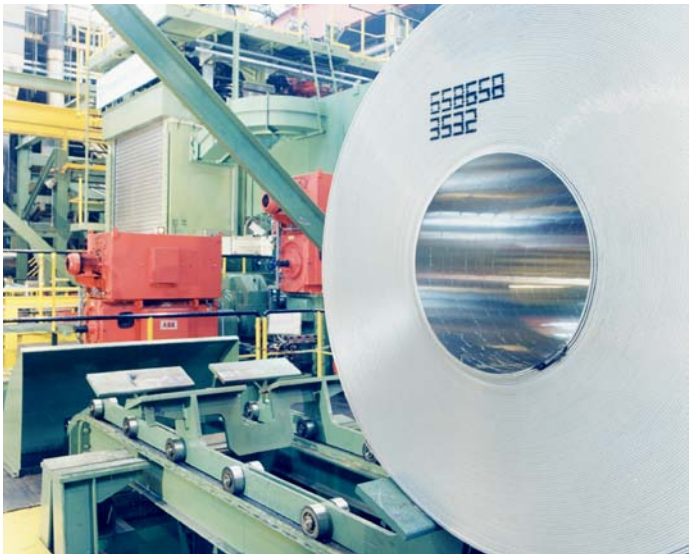
Solutions for cold rolling mills
Nonlinear simulation of cold rolling processes

The rolling of flat products is a complex and challenging process.

With the simulation tool for cold rolling mills, the complex rolling process can be precisely simulated, also for various production scenarios.

It helps to quickly identify quality problems or bottlenecks and to initiate effective processing improvements before the mill is build or revamped.



Physical-mathematical process model as basis

The simulation is based on advanced physical-mathematical process models developed by ABB. By using nonlinear process equations, this model provides a detailed, dynamic mirror of the production process.

Simulation for various production scenarios

After setting up and validation of the process model, cold rolling operations can be simulated for various production case scenarios. So different mill, drive and sensor constellations with different control strategies can be proven and compared even in critical states.

Weak-point analysis

In addition, dynamic simulation permits the analysis of customer-specific processing problems, which are directly related to product quality, such as strip oscillations during a processing run.

Customer Advantages

- Offers simulations for all single- and multi stand cold rolling mills
- Visualizes the causes behind quality problems, production bottlenecks and mill weaknesses
- Recognizes primary optimization factors
- Assistance for decision-making related to rolling mill performance and capacity improvements
- Compares potential solutions to identify cost-effective alternatives

For new mills or planed modernizations

- The simulation provides extensive information to evaluate cold rolling mill projects in the prestudy phase
- Optimizes mechanical and electrical designs (mechatronic)
- Validates new control strategies using advanced model-based simulations which enables a faster commissioning

Model-based simulation for cold rolling mills

Integration in Matlab/Simulink

The nonlinear simulation tool developed by ABB is based on physical-mathematical oriented process model and is integrated in Matlab/Simulink.

Additional functions

- Predefined parameter and control settings
- Integrated variable disturbance scenarios
- Analysis of simulation results
- Ready-to-use simulations with different control, material and variable disturbance scenarios
- Dynamic graphic presenting the selected control strategy

Integrated Control Methods

- Strip thickness monitoring control using a Smith-predictor
- Strip thickness and speed feed forward controls
- Mass flow control
- Decoupling control
- Strip tension control and feed forward controls
- Coiler eccentricity compensation
- Roll eccentricity compensation

For more information please contact:

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Graphical user interface