Performance Optimization Service for cold rolling mills
Turning insights in action
Customer need
In cold rolling, metals manufacturers need to consistently improve performance to remain competitive. Manual monitoring is unrealistic due to the large number of process variables and, though great advances have been made using conventional process automation and control technologies, more advanced tools that help us better understand the trends and inter-relations between process parameters that cause faults and failures are needed to unlock higher levels of optimization.

Digitalization brings new technologies that allow us to collect large volumes of process data to analyze and visualize operations in real-time, and provide key insights that can be used to predict operations and prevent critical failures. At ABB we understand that success in digital depends, not only on the technologies themselves, but also on the availability of process expertise in implementation, operation and maintenance of these tools, and we believe that a more collaborative approach is the way forward.

ABB solution
ABB Ability™ Performance Optimization Service for cold rolling mills combines digital solution employing process-specific algorithms with remote monitoring and support via ABB’s Collaborative Operations Centers, allowing metals manufacturers to leverage ABB’s domain, process and control philosophy expertise operationally to detect and analyze deviations, identify their root cause and use the insights to predict and prevent faults before they affect production.

The digital technology at the core of this service is also available as a stand-alone solution called ABB Ability™ Data Analytics for cold rolling mills.
Real-time visualization
Data is collected in real-time from data acquisition systems such as IBA, or from process controllers via OPC or Modbus/TCP, and is securely stored onsite at the customer facility using ABB Historian. Information is then visualized in intuitive dashboards which designated site and ABB personnel can access online 24/7.

Remote monitoring and support
Operations are monitored around the clock from ABB’s Collaborative Operations Centers, where experts alert designated onsite staff to process deviations and disturbances and, where appropriate, advise on corrective action, supporting faster, more data-driven decisions that will enhance process performance. To further facilitate continuous improvement ABB utilizes process insights to generate regular reports identifying focus areas and recommended actions.

Analysis from big data to individual coil
With the power to harness big data and the precision to trace KPI’s per individual coil or coil set, the ABB analytics engine’s modular design allows it to be tailored to customer needs. Advanced analytics provide meaningful analysis including KPI calculations, benchmark analysis comparing current operating conditions with agreed benchmarks and root cause of deviations. ABB experts support the site personnel in applying these insights to achieve and maintain optimal operations.

KPI’s are calculated for a variety of process health indicators including:
• Productivity
• Thickness quality
• Thickness yield
• Loop performance
• Correlation and frequency analysis for disturbances

Benchmark values are calculated for these KPI’s per product grade and gauge, and can be used as the basis of comprehensive analysis should a gap between benchmark and current operating conditions occur.

Root cause analysis
In the event of a fault or poor performance, correlation and frequency analyses based on process-specific algorithms are applied automatically to relevant plant and process variables to accurately identify the root cause so that it corrected for future production. Frequency analysis of exit thickness deviation can, for example, be used to ascertain possible roll eccentricity.

Benefits

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<tr>
<th>Benefits</th>
<th>Description</th>
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<td>Drive profitability</td>
<td>with faster, more data-driven decisions that improve accuracy and efficiency.</td>
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<td>Increase productivity</td>
<td>by predicting and preventing unscheduled downtime and reduce start-up time with root cause analysis.</td>
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<td>Improve yield and quality</td>
<td>by continuously monitoring critical process parameters, analyzing their performance and taking immediate corrective action.</td>
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<td>Optimize process performance</td>
<td>and reduce uncertainty by identifying and utilizing knowledge on benchmark and golden campaigns.</td>
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<td>Enhance operator effectiveness</td>
<td>by making use of proactive, expert support via ABB’s Collaborative Operations Centers.</td>
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<td>Leverage insights across your enterprise</td>
<td>by integrating multiple mills to identify and analyze trends that could be impacting performance at several sites.</td>
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