ABB Ability™ Advanced Digital Services increase Indian paper mill's production and quality

ABB Ability™ Advanced Digital Services reduce sheet breaks and reduce product quality variability by up to 20%. To maximize production, quality and costs management, mill managers wanted to proactively find and correct control issues before they could negatively affect performance.

The challenge of maintaining quality

To avoid the negative impact that measurement and control problems can have on production, quality and costs, the managers at one of India's largest paper mills wanted to find and correct issues before they could affect performance. But achieving this goal proved to be elusive.

Plant managers at the integrated pulp and paper mill have worked closely with ABB for years. The mill relies on ABB Quality Control System (QCS), Distributed Control System (DCS) and drives to produce over 150,000 tons of product per year. When the mill's management learned that ABB offers services to proactively monitor quality control and distributed control system, they asked ABB to demonstrate how these solutions could maximize productivity and quality.

Challenge

- Find and correct automatic control problems before they negatively impact production
- Quickly identify opportunities to improve QCS performance to maximize quality
- Improve paper machine performance to ensure high availability

Solution

To begin addressing these problems proactively, the mill chose ABB Ability™ Performance Optimization for control loops service to manage 220 control loops on the stock preparation, wet-end and dry-end sections of one of their machines. Specifically, plant operators were looking to diagnose critical issues including control output saturation, over control, slow control, signal noise and process disturbances.

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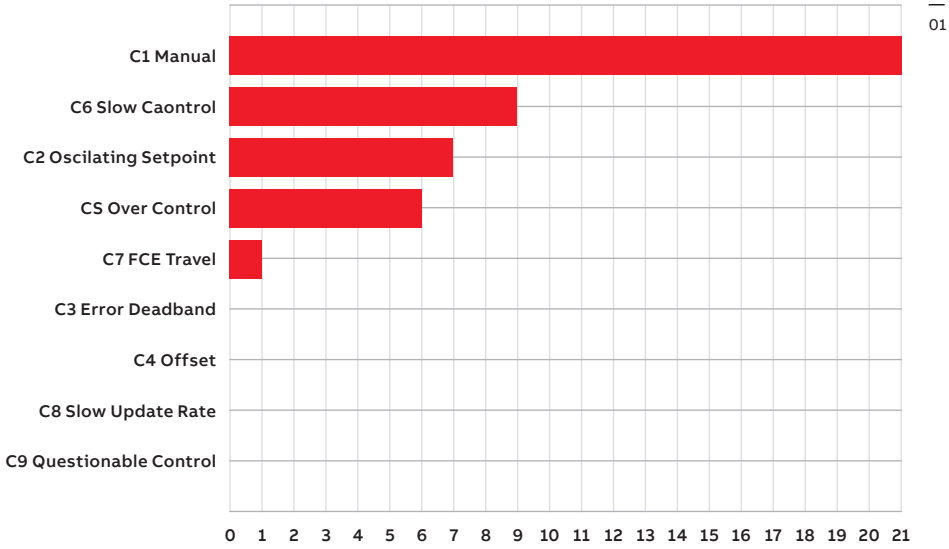
01 ABB Ability™ Performance Optimization for control loops service automatically gathers and analyzes data from control loops based on responses to control, process and signal conditioning key performance indicators (KPIs). Priorities are indicated by the size of the bar in the chart, with the longest (top-most) bar indicating the area of most concern. This allows service personnel to identify and fix high-priority issues faster.



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The periodic key performance indicator (KPI) analysis provided by Performance Optimization of control loops identifies, classifies and prioritizes issues based on severity, process area, criticality and financial impact so engineers can be alerted via email or text message to take action. Following implementation, ABB identified loops with problems. After these loops were tuned, process variability was reduced by as much as 67 percent.

To ensure that production meets specified quality requirements, mill managers also employed ABB Ability™ Performance Optimization for QCS service. After gathering and analyzing three months of reel data, engineers realized that the variability in the moisture content was high when compared to industry best practices and standards. To remedy this problem, ABB engineers recommended tuning the cross-direction basis weight controller and other control loops in the wet-end and stock preparation areas.

Performance Optimization for QCS service also indicated the zero gap of the caliper sensor and the measurements of the basis weight sensor were not in the expected range. Additionally, basis weight sensor noise had long-term drift. Mill personnel used this information to improve sensor stability and reduce process variability. This allowed them to establish a proactive system maintenance to avoid unplanned downtime and keep quality production high.

Results
By using both Performance Optimization for control loops and Performance Optimization for QCS services, the mill experienced fewer sheet breaks and lower grade recovery times that resulted in more product making it to market. The mill was able to reduce product quality variability by up to 20 percent. The mill will see gains of $75,000 to $150,000 per year through better operational performance and less product waste.

Benefits
- Quick diagnosis and problem resolution
- Increased production
- Improved product quality
- Significantly improved paper machine performance
- Increased equipment availability

Featured Solutions

ABB Ability™ Performance Optimization for control loops
Performance Optimization for control loops service simplifies control loop data analysis, eliminates bump tests and quickly identifies troublesome process control loops with the help of 24/7 remote monitoring and advisory capabilities.

ABB Ability™ Performance Optimization for QCS
Performance Optimization for QCS service identifies, classifies and helps prioritize opportunities to improve product quality, measurement and control health, and control utilization in your plant. Performance Optimization for QCS service uses non-stop data collection and analysis to transform raw data into actionable information, quickly pinpointing issues so you can ensure optimal performance of equipment and systems.

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