Weight Virtual Measurement
ABB Ability™ Performance Service for paper mills

Profits are lost due to sheet breaks effecting downtime and quality losses. ABB Weight Virtual Measurement is a digital solution that can provide online measurement when the QCS is not available. By providing auto-correlating calculations for online conditioned weight measurement, mills can increase production throughput and reduce quality losses by getting on-spec faster during sheet break and start-up events.

Overview

ABB Weight Virtual Measurement improves mill profitability by providing continuous measurements when the QCS weight sensor is not available, helping keep weight on target and reducing sheet break recovery time, while ultimately decreasing downtime with less threading time during a sheet break. This is accomplished through a three-step process that helps maintain target weight while the paper machine is starting up.

First, an initial static conditioned weight model is created using historical machine data to establish an initial expectation of the accuracy of the calculated conditioned weight.

Once the accuracy of an initial model is confirmed, an online calculated weight measurement (also known as a soft sensor) is implemented by leveraging the ABB Ability™ digital platform. The weight calculation is further improved by gaining a better understanding of machine operation, systematic model refinement, and the implementation of alerts to suspend measurement during periods of un-modeled machine operation.

The third step is on-going performance monitoring and optimization tasks to maintain and improve the conditioned weight calculation by compensating for any machine changes or implementing on-going solution improvement updates. Periodically, the soft sensor calculation model will be refined to maintain an optimized calculated measurement.

Features

• Automatic, non-invasive data gathering with ABB's proprietary data collection tools
• Online measurement of conditioned weight when QCS sensor is not available
• Auto-correlating calculations based on lab and online inputs
• Operator alerts and alarms to drive action
• Performance monitoring and periodic model updates
• Easily connects to existing ABB or third-party systems

Benefits

• Decreases sheet break recovery time
• Reduces off-spec paper after sheet break and when experiencing long transport delays
• Decreases downtime due to sheet breaks
• Improves runnability
• Enables faster grade changes
• Increases mill profitability
Online performance indicators
- Deviation between virtual measurement and scanner reference
- Time out of spec – virtual measurement
- Time out of spec – scanner reference measurement

Offline performance tracking
- Reject reduction
- Sheet break recovery improvement
- Start-up time reduction
- Weight measurement downtime reduction

Digital platform
Pulp and paper companies are looking to digital solutions for new ways to automate and optimize their mills. ABB Ability™ is a unified, digital platform that extends from device to edge to cloud. It securely collects data from devices at mills, applies advanced analytics, generates actionable insights and provides advanced automation for customer operations at all levels of the enterprise.

Delivery model
Collaborative Operations, an ABB Ability™ offering, connects services that leverage the availability and transparency of data from the Ability platform into a data ecosystem. By connecting ABB and customer experts to actionable data, advanced analytics tools and predictive monitoring in a collaborative environment, advanced automation solutions can be implemented and optimized. Problems can also be quickly diagnosed and corrective actions implemented, with continuous improvement efforts prioritized.

Digital services available for delivery under this model, such as Weight Virtual Measurement, focus on maximizing equipment and process performance to ensure efficient operations. The Ability™ platform enables structured modeling, monitoring and analysis of the online calculated weight and its impact on quality and runnability.

With periodic reviews by ABB experts, optimization actions are implemented when identified to improve both the accuracy and robustness of the online weight calculation.

Our ABB Ability™ solutions enable mills to know more, do more, do better, together.

Requirements
- 24/7 Internet connectivity
- ABB Ability™-enabled data collection for performance monitoring