

PULP AND PAPER

Quality Data Management

ABB Ability™ Manufacturing Execution System for pulp and paper



Reduce quality-related claims and costs in real-time while ensuring quality specifications are always being met with Quality Data Management, part of ABB Ability™ Manufacturing Execution System (MES) for pulp and paper. The module provides genealogical quality measurement, tracking and tracing during the entire production cycle for raw materials, bales, mill process areas, jumbo reels, rolls and pallets, either automatically or manually.

Quality challenges that papermakers face

Both paper mills and end-customers want assurances that the promised and expected quality will be delivered and on time. Unfortunately, unnecessarily high quality reject rates sometimes occur because of inadequate quality insight during production. This can be due to a combination of items, such as lack of early detection and alerts about quality deviations, limited traceability/visibility, or uncertainty regarding lab testing device reliability.

The real-time solution

ABB's Quality Data Management (QDM) solves these challenges by collecting all quality-related data in one interface to provide real-time assurances that both the product quality standards and the customer-specific requirements are being met. The system immediately identifies any non-conformance in quality of specific rolls or sheets and provides mill operators with actionable information for effective process control to get quality back in spec.

QDM also enables automatic reclassification based on the measured quality and customer requirements and can store quality values for years.

QDM is a cross-functional platform that centralizes, standardizes, and streamlines management of all quality data from numerous input sources to improve quality planning, assurance and control practices. Ultimately, this helps to better meet both customer requirements and mill profitability targets. The module presents visual, consolidated quality-related data from various sources to identify quality non-conformance. When issues are found, the system sends alerts for the operators to adjust the process. The alarm log documents deviations and actions taken in case deeper analysis is needed.

The QDM system gives paper mills greater power to reduce production losses and claims caused by off-quality product, thus delivering consistently high quality for increased customer satisfaction.

Features

- Proactive quality control detects changes in the process even before the specification limits are reached, alerting operators to react and avoid quality problems and losses in production
- Real-time quality status, assurance and traceability from raw material to finished goods for production units like jumbo reel, roll, etc. including analysis before and after cutting
- Color Map, Defect Map, Set Profile and Set Defect modules help highlight poor quality spots
- Statistical analysis of quality control data and process capabilities with deviation graphs and profiles
- Monitors laboratory device test and calibration cycles with alarms when schedules are not followed
- Automated data gathering via interfaces with measuring devices
- Enables correlation monitoring between online, inline and laboratory measurements
- Long data histories easily accessible for process development purposes
- Confirmation of customer quality requirements for every shipped roll
- Quality Certificate reports (Certificate of Analysis)

Benefits

- Prevents quality-related costs and losses with early detection and correction of quality deviations, reducing rejects, rework and waste
- Minimizes customer quality complaints, as well as costs in both manpower and compensation arising from customer claims
- Streamlines quality operations by visualizing and consolidating quality-related data from various sources like enterprise-level, automation, and quality control systems - including third-parties
- Provides end-to-end visibility for proactive actions to meet quality standards, reducing both inspection time and manpower
- Enables continuous quality improvements using a quality-data-driven approach to meet customer standards

Tools within Quality Data Management

- Roll set analysis: Combines profiles, profile scans, defect information and laboratory test results with the cutting plan and wound trim pattern of the jumbo reel. It calculates roll-specific quality values for each critical property. Roll quality is compared to customer specific quality standards, and based on the analysis, the system is able to automatically classify the rolls even before the jumbo reel is cut at the winder. This ensures that customer requirements are fully met in every roll, and additionally, in case of poor quality, it gives the operator a chance to re-trim the jumbo reel in order to cut out problem areas.
- Traceability: Tracks paper reels, rolls, and sheet pallets and their quality levels. Customer service personnel can easily track delivered units starting from an order code or package number, for example. The search returns relevant production information such as the production stages and times/dates, together with quality measurements originating from the automation systems and laboratory tests.
- Measurement validation: Ensures devices are tested and calibrated according to schedule. This tool can also follow difference between online, inline and lab test results to test for accuracy of instruments.
- Statistical Quality Control (SQC): Continuously analyzes selected quality variables from long-term information stored in the quality database. With reliable reference material for statistical analysis, this tool recognizes changes in quality and process conditions, determines the ability of a process to produce within specification limits, and provides limit, trend and zone alarms with logs. This kind of proactive quality control detects changes in the process even before the specification limits are reached and alerts the operators to react in order to avoid quality problems and losses in production.

Interfaces

Quality Data Management is fully integrated with the Production Management module and is typically integrated with the automation and quality control systems. This provides transparency in production and ensures that all relevant quality data is available in one, comprehensive system. Other available integration possibilities are:

- Interfaces to laboratory measuring devices
- Interface to Process Historian Advanced reporting through the MES Decision Support application

About ABB Ability™ Manufacturing Execution System

Based on decades of experience in supplying information and operational technology to the sector, ABB Ability™ MES for pulp and paper consists of integrated enterprise software modules that bring together business and manufacturing information to help papermakers make decisions based on the financial impacts of production choices. ABB's modular and flexible MES applications cover all core functionalities, from order through to invoicing.

These modules work seamlessly together and can be further enhanced with other ABB Ability™ applications for pulp and paper to help you achieve new, higher levels of operational efficiency.



A quality data management solution purpose-built for the lab

ABB's L&W Lab Management System is a software-based quality data management system that helps cut lab procedure time in half with accurate, automated result reporting from lab equipment.

By replacing manual result data entries with automated routines, the Lab Management System improves speed, efficiency and correctness of lab results to eliminate errors and allow faster process corrections.