

Quality Control System Performance Fingerprint

Improve measurement and control utilization

The QCS Performance Fingerprint measures Quality Control System (QCS) performance and provides a basis for evaluating and identifying opportunities to improve measurement and control utilization. The resulting diagnostic report compares performance indicators with industry standards, defines an improvement plan, and estimates return on investment (ROI).



Benefits

- Potential for higher QCS utilization
- Basis to realize return on QCS investment
- Understanding the value of accurate process measurement
- Understanding the capabilities of automatic process control
- Foundation for higher availability, production and quality

Features

- Non-invasive data-gathering techniques
- Proven tools to measure and analyze QCS performance
- Applied knowledge of process measurement and control
- Benchmarking of data to best-in-class global performance
- Detailed report outlining improvement opportunities

Overview

The QCS Performance Fingerprint is ABB's diagnostic service for QCS. The QCS Performance Fingerprint generates a benchmark, an improvement plan, and an economic benefit projection. This service is non-invasive, utilizes proven data analysis methods, and is executed with ABB's advanced technical tools. A QCS that is under-utilized impedes production and quality improvement. The QCS Performance Fingerprint is designed to quickly identify obstacles to improved measurement and control, and provides clear guidance to ensure that papermakers can make more of a better product at less cost.

Key Performance Indicators

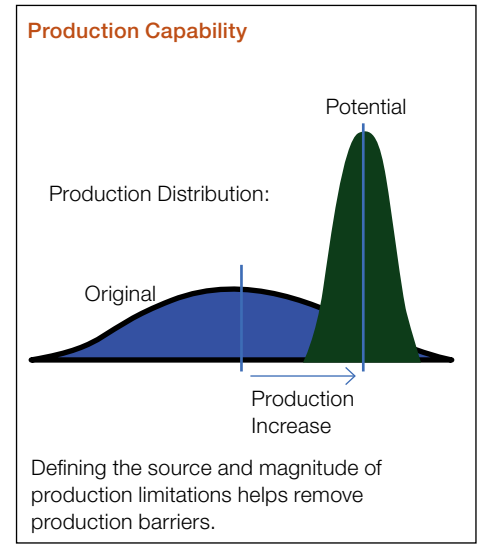
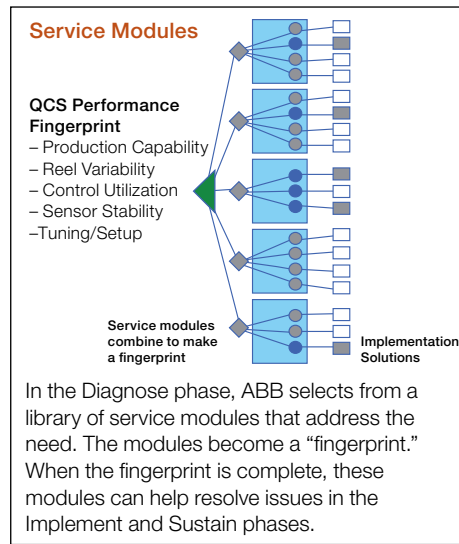
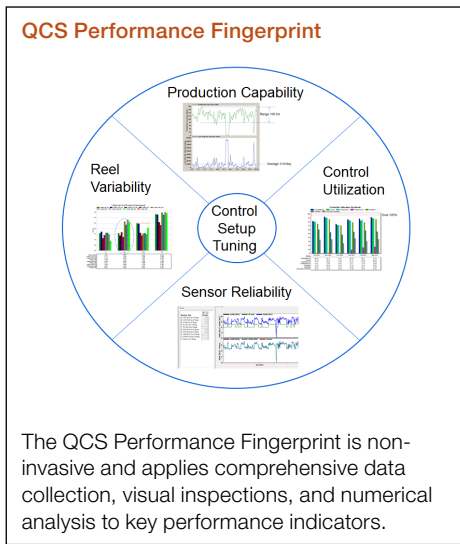
The QCS Performance Fingerprint applies comprehensive data collection, visual inspections, and numerical analysis of the following key performance indicators:

- Production Capability
- Control Utilization
- Reel Variability
- Sensor Stability
- Control Tuning / Setup Analysis

These key performance indicators are analyzed through the following service modules.

Production Capability Module

Variability in daily production is an indication of poor machine utilization. This module evaluates 30 to 90 days of standard QCS Shift/Day Reports to quantify daily production trends, variability, and span. Once variability standards are measured, steps can be taken to reduce daily production variations, automatically increase production and improve machine utilization. This module also correlates production trends related to shift operations, control utilization and loss time. The output of this module defines how much more sellable product can be made by reducing daily production variability.

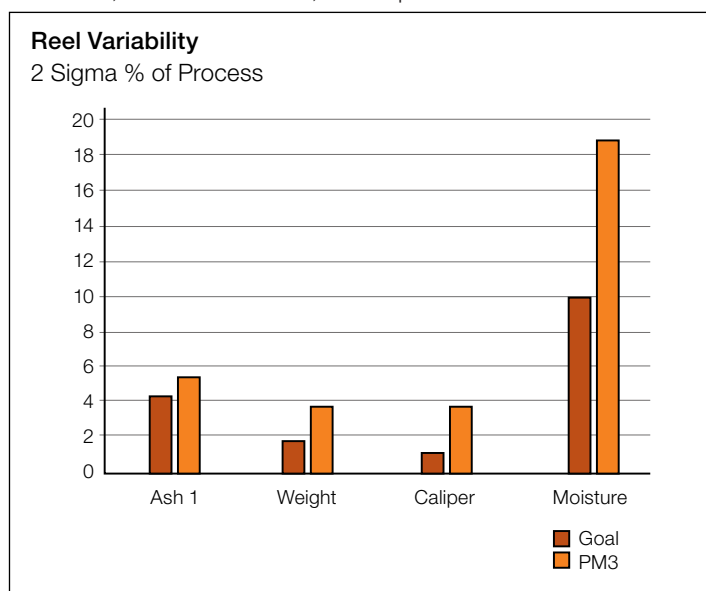


Control Utilization Module

Operators don't turn off features that make better paper. A direct correlation exists between the amount of time automatic controls are used and the confidence operators have in the QCS. This module evaluates standard QCS Shift/Day reports and measures the percentage of time each machine direction control and profile control is used per shift. Low control utilization can indicate physical problems on the machine; average utilization can indicate training or tuning issues; and high utilization indicates the need for invasive testing to further tune control performance.

Reel Variability Module

At each reel turn up, the QCS generates a reel report with statistics. This is also known as Variation Partition Analysis (VPA). This module analyzes 30 to 90 days of reel report information, defines performance and compares it with industry standards for total roll variability, as well as energy distribution in a reel of paper. This analysis defines the improvement opportunities related to one or more issues, including measurement utilization, control utilization, or the process itself.



Graphic representation of reel variability analysis

Sensor Stability Module

The cornerstone of the QCS is sensor technology. Repeatability, reliability, and accuracy of measurements are crucial to quality and production improvements. This module evaluates 30 to 90 days of standard ABB reports that define Standardize Values. By applying numerical methods to this data, sensor performance can be defined and quantified. If sensors are not being utilized, or if they are not properly calibrated, then the QCS will not function correctly. To fully utilize the QCS, sensors must be calibrated and operated correctly.

Control Tuning / Setup Cluster Analysis Module

Many tuning and setup parameters exist that enable the QCS to be flexible and uniquely optimal depending on production needs. However, over time, with changes in production, instrumentation, actuators, and operators, these numbers can change in small ways that can lead to poor system utilization. This module uses standard QCS displays to indicate accuracy based on years of expert feedback on QCS application settings. This analysis helps determine if controls are in acceptable ranges.

QCS Performance Fingerprint Delivery Schedule

Data Collection

[Project introduction meeting](#)

[Collect 30 to 90 days of QCS Reports \(Day/Shift, Standardize, and \(VPA\)\)](#)

[Record QCS tuning and setup information](#)

Analysis

[Complete analysis of collected data](#)

[Production Capability, Control Utilization, Reel \(VPA\) Variability](#)

[Sensor Stability, Control Setup and Tuning](#)

Generate Reports

[Complete Executive and Technical reports](#)

[Review meeting to discuss report findings](#)

Communication with the mill precedes scheduled activities to ensure coordination with ongoing mill activities. A daily activity list includes items completed during the day, a summary of findings, and a plan for the following day.

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