

Control Tuning and Optimization Services for Experion MX, MXProLine, and DaVinci Quality Control Systems

Service Note

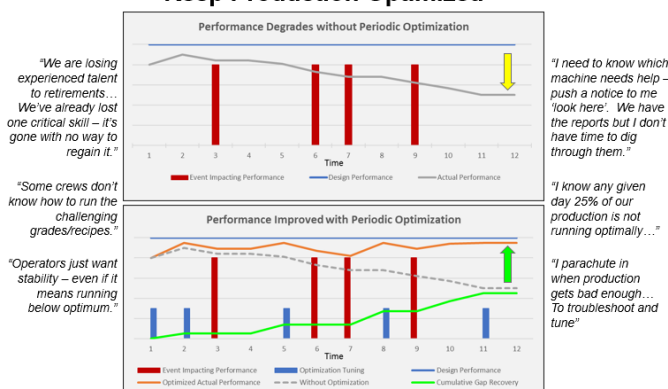
Production yield and quality can decline over time due to equipment or process changes, product mix or recipe variation, seasonal or supplier raw materials variation, operating in manual, changes in performance targets, or maintenance issues. Higher energy and raw materials costs, downgraded or reject production, and late shipments can result in significant financial performance gaps and customer complaints.

Optimization services define objectives, assess performance, identify issues, and recommend improvements. Expert-guided tuning and optimization returns machine performance to peak production capacity and quality.

Objective

- Operate the machine at or near optimal design specifications while minimizing process upsets and off-spec production.
- Restore tuning and optimization control strategies that have been modified or degraded over time due to production issues.
- Product mix and production schedule changes may require updates to the configured control strategies, grades, and grade groups in the Quality Control System.
- Paper Machine mechanical systems may introduce production variability that interferes with the control strategies and tuning.
- Dispatching an expert to site is costly and often inefficient due to long cycle time between grades. The expert may need to depart before all tuning and optimization is completed and validated.

Keep Production Optimized



Control performance degrades over time and requires control strategy evaluation, performance data analysis, and tuning constant updates.

Challenge

- Site resources may not have the training, experience, or confidence to perform Cross-Direction, Machine Direction, or Grade Change tuning and optimization.
- Production objectives, fiber supply, energy constraints, quality expectations, and operator experience may change over time, requiring improved control strategies and tuning parameters.

Solution

Expert-guided tuning and optimization utilizes globally-located Honeywell MD/CD and Grade Change consultants to engage and guide the improvement cycle.

Tuning follows the normal production cycle with no travel or on-site dead-time between grade changes.

Multiple remote support technologies can be used to connect the expert to the site resources. A connection speeds the process for each grade/grade group and is recommended.

A collaborative approach ensures that the site resource follows best practices regardless of skill level.



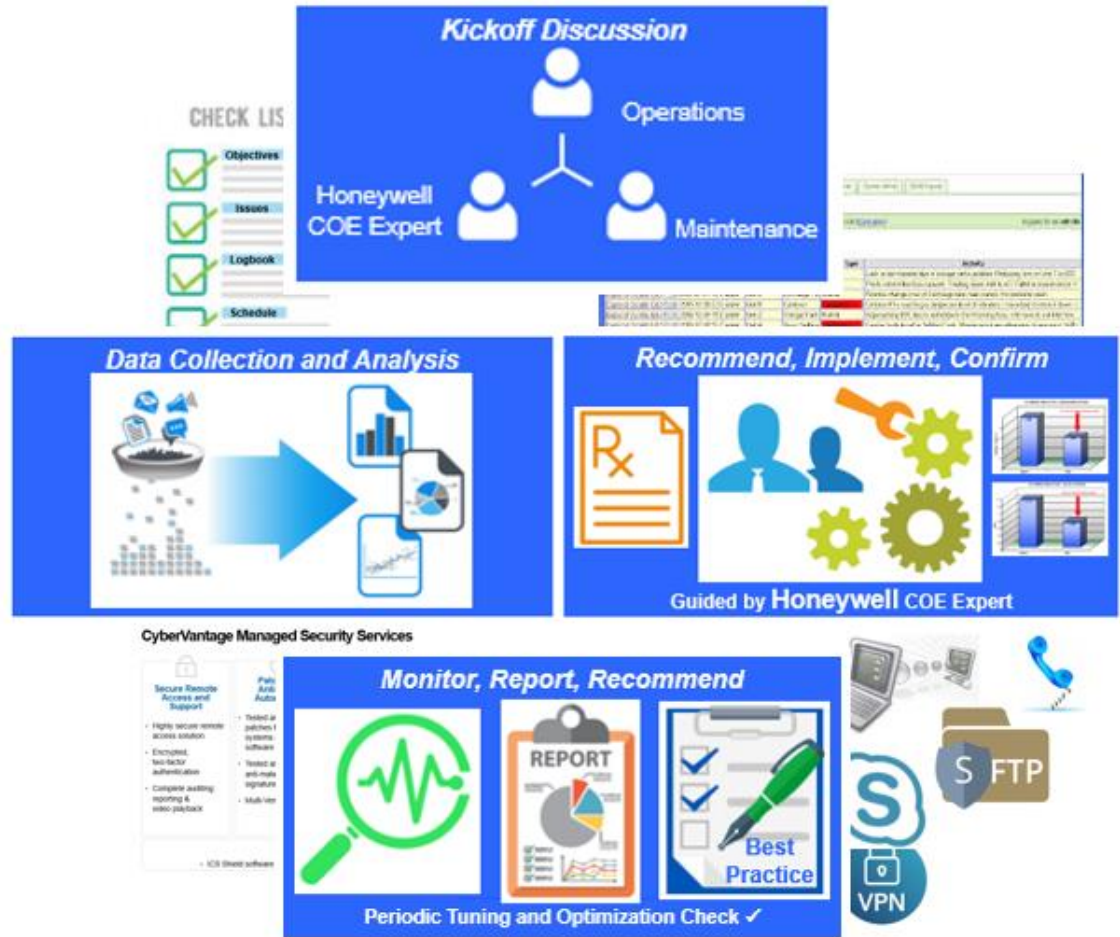
Approach

The tuning and optimization process begins with a discussion of production objectives and issues. Operating logs provide valuable details and help identify improvement opportunities.

The Production schedule defines data collection and implementation timing. Bump tests and tuning changes are covered to ensure close expert-site coordination for all tests and process changes.

The Six-Sigma DAMAIC process is used.

Sustained results can be realized through Honeywell Connected Plant QCS functionality and periodic optimization.



Following the kickoff discussion, a best-practice cycle is followed for each grade/grade group, beginning with data collection including bump tests, transfer of data to the Honeywell expert for analysis, recommendation, implementation and confirming/monitoring, followed by an Optimization report and recommendations for sustained performance.

Benefits

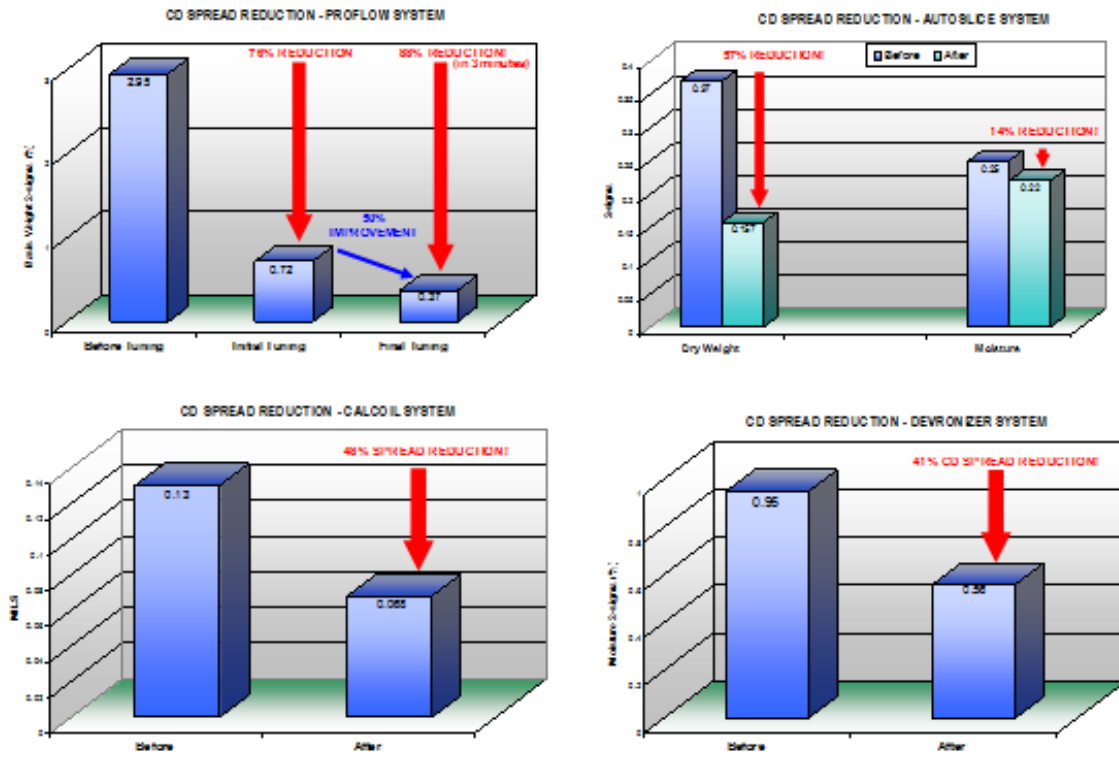
Periodic analysis, tuning, and optimization of MD, CD, and Grade Change controls ensures peak production at high quality and efficient cost. Expert-guided optimization services bridge skill and bandwidth gaps of local maintenance personnel, extending.

- Capital investments in paper machine actuators provide exceptional returns when properly tuned and optimized.
- Expert analysis of machine scan data identifies both machinery-induced product variation and controllable variation. Expert-guided tuning improves the control response and effectiveness, and expert identification of disruptive machine frequencies helps guide maintenance actions to locate and resolve machinery-induced product variation.
- The Honeywell expert follows the entire production cycle, ensuring all grades/grade groups are optimized, without the added costs of on-site travel and living, unconstrained by long grade cycles.
- Local resources learn best practices, build confidence and skill, and are better equipped to sustain machine production performance.

	Thick Stock	Clay Flow	TiO ₂ Flow	Steam Pressure	Speed
Dry Weight	↗	↗	↗	0	↘
Reel Moisture	↗	0	0	↘	↗
Ash	0	↗	↗	0	↘
Opacity	↗	↗	↗	0	↘

Summary

Honeywell understands the demanding papermaking business. Expert-guided tuning and optimization services sustain and enhance the value and benefits of critical control equipment, driving higher paper quality and improved downstream customer satisfaction.



Actual results from tuning and optimization services: CD optimization above, MD optimization below

After Profit controller models were updated, control tuning value such as Performance Ratio was also tweaked. This aims to improve control responsiveness while not sacrificing stability. It was achieved by performing setpoint change exercise while the controller is ON with the updated process models. Different combinations of performance ratios for CW and Moi were tested with CW setpoint changes and the combination which produced the fastest setpoint tracking response with minimum control oscillation was chosen. The table below details the final performance ratios saved in the system.

Tuning Group	CW Performance Ratio	Moi Performance Ratio
42-56 lb	2	2
62-75 lb	2	2.2
82-96 lb	2.2	2.3

For More Information

Contact your local Honeywell Field Service Manager to request Expert-Guided Paper Machine QCS Tuning and Optimization Services or for more information.

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Code Needed

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