

Tissue Machine Optimization

Enhance tissue machine performance for waste, raw material and energy cost savings



Tissue manufacturers can save anywhere from \$150,000 to \$350,000 in reduced waste and raw material by optimizing their tissue machine production lines.

Solutions to boost performance

ABB Tissue Machine Optimization services follow a proven three-step methodology to Diagnose, Implement and Sustain improved tissue machine performance. The Diagnose step establishes a benchmark for optimal performance and a basis for evaluating and identifying improvement opportunities unique to your tissue machine process.

Diagnose

The diagnostic step generates a performance benchmark and an implementation plan, with improvement opportunities prioritized by estimated economic benefit. It is a platform-independent, non-invasive service that can be applied to any tissue machine.

Common issues that cause tissue machines to under perform

- Sheet weight and moisture variations cause lab test or converting issues
- Startup, sheet break, and grade change recovery time results in off-spec product
- Felt break-in period is longer than expected to maximize production
- Felt life is shorter than expected
- Yankee steam and dryer hood operation not optimized for energy costs

Performance indicators

Diagnosis involves comprehensive testing and analysis that measures four key performance indicators (KPI). The KPIs assess machine performance and improvement potential.

- Product variability
- Stock approach stability
- Machine response
- Profile capability

Each performance indicator includes a series of indexes derived from specific machine tests. Each test is performed inside product specifications, utilizing ABB's diagnostic tools and methodologies. The resulting index is used to evaluate the performance of different tissue machine process areas:

- Mechanical vibration and rotational frequencies
- Machine and cross direction controls
- Lab testing procedures
- Sheet break recovery
- Process control system performance
- Coordinated speed control
- Grade change control
- Machine area testing sequences require three to five working days to collect the data required for the diagnosis and to compare improvement recommendations

tions. Testing will be coordinated with ongoing mill activities.

The machine response indicator is used to determine a performance index for the machine direction controls. It includes multi-level testing and analysis of dry stock, tissue weight, moisture (hood temperature and Yankee steam), and rush/drag. Similar testing methodologies are involved with each of the other performance indicators.

Diagnostic reporting

At the conclusion of the evaluation period, results are described in a comprehensive report. Recommendations include supporting data collected during the machine diagnosis. Benchmark results, summary of findings, financial impact of recommendations, and an actionable implementation plan, based on the machine diagnosis are also provided.

Implementation plan

The implementation plan defines how to resolve bottlenecks and improve performance. Recommendations include associated financial impact and may include valve replacement, cleaning up signal conditioning problems, optimizing or adding control logic, updating standard operating procedures, re-tuning controls for optimal performance, and isolating high frequency machine problems related to rolls, pumps, screens, machine clothing.

Implement

Once improvement recommendations have been defined, steps to increase performance, while creating a foundation for continuous improvement, can begin. Services to implement improvement recommendations are in addition to the diagnose service and priced separately.

Approved improvement recommendations may be implemented all at one time, or scheduled to be completed incrementally over time; beginning with improvements that provide the greatest financial return. ABB is available to implement the improvements, work with site engineers, or work along with site personnel to achieve the desired optimization level.

What sets this solution apart

Trusted process: The Tissue Machine diagnostic consists of well defined service modules that are delivered consistently, provide an accurate assessment, and ensure a practical corrective action plan can be identified.

- Proven method: Trial and error methods to achieve results are eliminated, or greatly reduced, when this diagnostic method is used to arrive at targeted corrective actions.
- Your choice: The included implementation plan gives you the options to make improvements yourself, employ ABB's Advanced Services team to implement recommendations, or some combination of both.
- Exclusive tools: Only ABB has the diagnostic and troubleshooting tools for data collection, and platform and process analysis that allows all ABB service engineers to deliver the assessment and additional implementation services consistently.
- Return on investment: The findings quantify the newly discovered performance gap in terms of dollars, showing you the financial benefit from implementing the improvement recommendations.