

TISSUE WORLD

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Tissue mill optimisation brings cost savings

The tissue manufacturing environment is one of the most challenging in the pulp and paper industry. Conditions in a tissue mill are often tough on equipment. But even with the dust and extreme temperature variations that occur during production, it is critical that tissue paper machines perform reliably.

Tissue mills face other complex manufacturing challenges. Production requires that throughout the process, the low basis weight tissue has to be protected against sheet breaks. And measurement and control need to be precise to create a product that is both strong and soft.

Tissue makers also encounter rigorous market requirements such as customer demands for absorbency, value and appearance - which all impact manufacturing and converting processes.

Factors like these make equipment issues even more critical in a tissue mill. Quality and productivity are among the most important concerns in any pulp and paper operation - and to maintain both, equipment needs to operate without process upsets, unplanned downtime or waste.

Although smooth machine performance is crucial to every aspect of a demanding and ever-changing tissue mill, maintaining that smooth performance is not always easy. With so many competing priorities it's easy to understand how your operation can get off track. Over time equipment loses its effectiveness and process performance degrades. The challenge is to keep a mill's automation running at optimal levels.

The key word for tissue mills where papermakers want to find - and close - performance gaps, is optimisation. Using optimisation services to evaluate the existing machine environment and pinpoint areas where it can be improved can help mills cut costs and get back on track to optimal machine performance.

A machine performance benchmark audit is often the first step taken by tissue makers who want to save money on their operating costs and identify ways they can improve equipment and process performance at their mill. If you're not pleased with your

machine performance how else can you truly get to the bottom of performance issues? To be effective, the process needs to include detailed testing and analysis. But the results can be well worth the effort. ABB calls such a benchmark and diagnostic audit a Fingerprint.

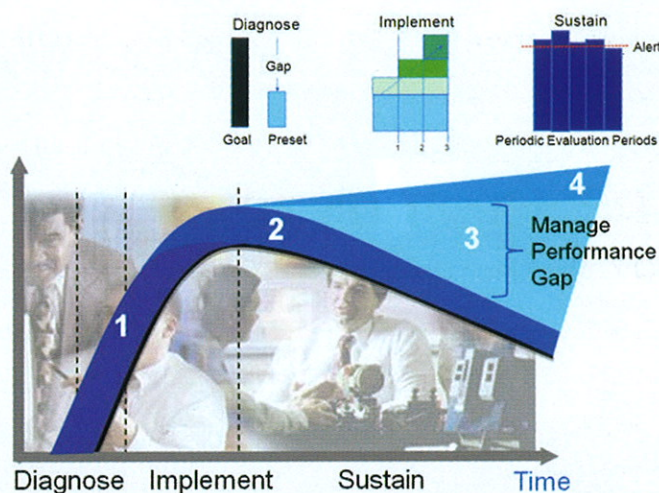
Our specialists point out that Fingerprints are nothing more than a diagnostic audit of a system or process area. They are the first step of a solution. ABB's Tissue Machine Fingerprint services, including engineering, consulting and optimisation, can help tissue mills get back on track and sustain performance long term.

Pinpointing tissue machine malfunctions

Customisable Fingerprint services centre on comprehensive testing and analysis designed to assess machine performance and improvement potential. Importantly, Fingerprint diagnosis will pinpoint any machine malfunctions. The Fingerprint technique can identify problematic sheet variation, allowing papermakers to take corrective action.

Machine tests, performed using ABB's diagnostic tools and methodologies, evaluate performance in tissue process areas that include mechanical vibration, machine and cross direction controls, lab testing procedures, sheet break recovery, process control system performance, coordinated speed control and grade change control.

ABB identifies underperforming areas and gives tissue makers practical ways to solve any problems that are found. Papermakers obtain process information benchmarking and detailed ROI-based improvement plans. These improvement plans in turn facilitate



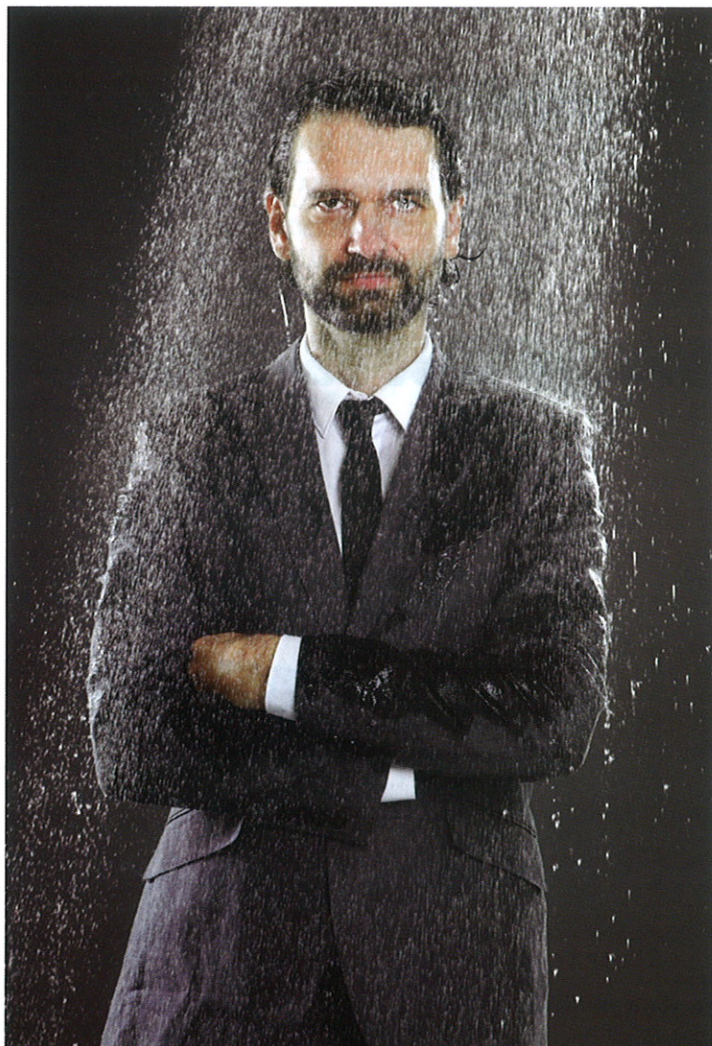
management decisions by focusing on high impact opportunities for improvement and cost savings to close the performance gaps. Typically mill savings potential is USD 150,000 to 350,000.

Better decision making through MD and CD data analysis

The Fingerprint analyzes data from both the machine and cross-direction (MD and CD) variation of the sheet. Information is collected from the quality control system, distributed control system and individual instruments. The logged data are processed to obtain a time series in engineering units and Fourier analysis is used to express each time series as a sum of sinusoids of varying amplitude, frequency and phase.

MD variations are divided into six frequency bands spanning the range 0.0001-100 Hz. To accurately benchmark a tissue machine's performance, variation in all six decades of the MD plus variation in the CD must be measured.

At one tissue mill, machine problems were connected to stock prep, actuator-level controls and scan-level controls - issues that can be problematic in tissue mills. After extensive control and process work the overall coefficient of variation on the tissue



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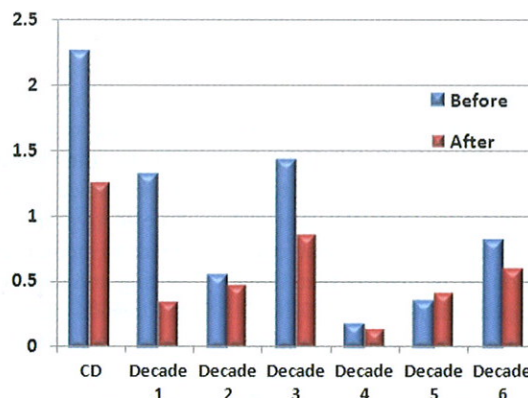
Sure, we think water treatment is important. But, our focus is really on the tissuemaking itself, creating cutting edge solutions to improve fibers, streamline processes, and enhance products. Buckman is helping mills all over the world become cleaner and greener. Why not join them? With Buckman you get full strength support from river to reel. Find out more. Contact your Buckman representative, or visit buckman.com.

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Fingerprint of CD and MD variation in tissue mill before and after fine tuning of controls

machine was cut in half. Although the CD variation was reduced significantly, it still remained high because the mill only had manual control of the actuators. The CD variation reduction was obtained by manual adjustment of the actuators. The conclusion: the mill would benefit from adding automatic CD control.

A Fingerprint can be a useful tool for establishing machine performance before and after major machine changes, when assessing the need for capital equipment purchases or when determining if further control work is necessary. The Fingerprint can also identify where money should be invested to improve sheet quality and runnability.

Sustain optimal process performance long term

Once performance is back on track there is a solid foundation for continuous improvement. Many mills are now choosing the convenience and cost savings offered by remote services. With remote services, much of the sustain-level performance services can be completed by mill personnel on site using ABB Scan service level performance analyzer applications or, should an ABB expert be needed, through remote enabled troubleshooting or Track service level condition monitoring services.

Sustain services helps mills maintain smooth, trouble-free performance by monitoring systems and providing their personnel with an easy-to-follow maintenance schedule. Mills obtain remote access to ABB experts for troubleshooting specific problems or system failures, periodic maintenance (Scans) with detailed health check reports, and system and process monitoring (Track) services.

Combined, these services provide effective ongoing process optimisation and, since they are remote enabled and supplier personnel don't have to travel onsite, the services offer another way for mills to save costs.

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