Advanced digital Mill Operations

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ABSTRACT: *Today's economic environment requires paper producers to make continuous efforts to improve their mill operations, while increasing production efficiency and product quality. To a great extent, the productivity of a paper mill depends on its management having a clear view of actual performance levels. Since mill performance is a result of several factors interacting within a complex industrial environment, performance maximization requires a deep understanding of production flows, the transparency of the manufacturing process and efficient tools for tracking production, measuring quality and optimizing the use of capacity, materials and energy. Both day-to-day decision making and planning for the future require that the right information is easily available and presented in an understandable format. A key success factor lies in the ability to swiftly react to changes in the production environment, while maintaining effectiveness and the strategic direction taken.cpmPlus for pulp and paper offers you the right tools for managing this task. This product can have a huge impact on the profitability of a paper mill, by providing real-time insight into the manufacturing process and efficient solutions for maximizing overall mill performance.*

Benefits of cpmPlus for pulp and paper:
- Optimizing the use of capacity and materials
- Reducing production losses
- Improving inventory turns
- Increasing energy efficiency
- Optimizing quality
- Increasing manufacturing transparency and predictability
- Increasing the ability to react to changes in the production environment
- Increasing customer satisfaction
- Maximizing productivity and mill performance

Manufacturing visibility

cpmPlus for pulp and paper consists of integrated software modules with comprehensive functionality. Although all modules can be used on a stand-alone basis, true value is achieved when they are implemented together, forming an extensive and collaborative production environment. This includes a seamless view of any trustworthy business or manufacturing information, in the correct context, regardless of where it originates. cpmPlus also provides a reliable basis for the calculation of true performance metrics and a solid platform for the efficient use of ABB's sophisticated optimization algorithms.

Dedicated to the pulp and paper industry

cpmPlus for pulp and paper is based on over three decades of experience in supplying information technology to the pulp and paper industry. The related solutions are configurable, designed for continuous operation and include functionality which fits even the most complex paper production process. Our offering to the pulp and paper industry covers:
- Order management
- Production planning, scheduling and trimming
- Production management of pulp, paper, board and tissue production
- Quality management
- Customer service management
- Decision support
- Process data management
- Overall Equipment Effectiveness (OEE)
- Energy management and optimization
- Enterprise Connectivity integration platform

Focus on total cost of ownership

Today's paper companies are securing their IT investments by selecting reliable vendors that offer systems with long lifecycles and predictable maintenance costs. ABB's Collaborative Production Management (CPM) system delivery process has been developed to provide the best possible product fit with business processes and to maximize the effectiveness of project execution. The system lifecycle does not end with the handover of the delivery project. The ABB CPM team has the essential task of ensuring easy and cost-effective version upgrades that keep the delivered system up-to-date. In support of systems during their entire lifetime, ABB offers various customer support services, from basic support line service to license upgrades and system development

Success stories

Kotkamills Oy has an annual turnover of around EUR 270 million, and exports represent about 90% of total product sales. Scope of Delivery: ABB´s CPM Sales and Mill system: Order Management, Production Planning, Production Management, Quality Management, Decision Support and cpmPlus History process data management tool, as well as continuous support and version update services.

We have realized considerable savings in our system costs, says Mr. Petri Hirvonen, CFO of Kotkamills Oy. When Kotkamills Oy receives an order – 200 tonnes of magazine paper, for example – from a customer in western Europe, it takes an average of 28 days before the shipment is delivered. This 28-day period forms a multi-stage logistic chain which includes many variables. An essential aspect of Kotkamills' day-to-day operations is a smooth order-production-delivery process, since this enables the company to react rapidly to unexpected events such as changes in the logistic chain.

Better integration

Kotkamills Oy was acquired by a private investment firm in 2010, and the change of ownership meant that the company had to rethink its production control and logistics functions. According to Mr. Petri Hirvonen, CFO, the system then in use at Kotkamills Oy was part of the former owner's Group-wide system, and the company had one year to migrate to its own environment. At the same time Kotkamills Oy wanted better integratability of the individual systems. "System integration has not only brought us new technology but also enabled us to build a system that matches our needs perfectly," Petri Hirvonen says.

All the systems previously in use at Kotkamills Oy (with the exception of the sales and production control systems at the sawmill and the mill system at the impregnation mill) have been replaced by 'KOTTI', an integrated CPM Sales and Mill system supplied by ABB. The reporting function and communication links with the messaging system were also replaced.

Ongoing updates

The project itself was implemented in a dynamic way: less than one year from the project launch, the KOTTI system was already in use at Kotkamills Oy. Not all aspects of the project were completed in a year, but as Communications Manager Ms. Johanna Mäkelä states, the goal was for the new system to take over within a year, and that was achieved.
KOTTI consists of two parts: the manufacturing execution system (MES) and sales and logistics.

Petri Hirvonen says that in spite of the broad scale of the project it remained within budget. So far the overall system has undergone two updates. Non-invasive updates are possible because a productized system approach was chosen. The updates have covered the latest product versions and features specially tailored for Kotkamills Oy. Such features include the addition of price calculation components to invoice lines.
Implementing updates in stages has provided not only a cost effective way to tailor solutions to match Kotkamills' needs, but also the opportunity to seamlessly manage product life cycles."Kotkamills Oy is continuously developing its system, and at the same time ABB is evaluating the scope for productizing the features in question. This year´s development work is under evaluation, as are the version upgrades that may be implemented," says Ms. Tiia Lantta, Sales System Manager.

Real-time information improves transparency

There are many variables in the paper production process. Factors that make production planning and management easier include more predictable production times, reduced trim losses, and storage of end products in the correct warehouse locations. Important quality related factors are consistency of product quality and identification of nonconformities at the earliest possible stage. Improved transparency in reporting and order management makes communication easier and increases responsiveness between production and sales. KOTTI provides real-time information on the different stages of the order-production-delivery process. It covers the major part of Kotkamills' logistics function, and also combines sales and production into the same chain. The system delivers plenty
of scope to boost production planning, management and warehousing, to manage quality, and to manage orders and process data."Order handling, invoicing and sales are always up to date. Our operations are more straightforward with KOTTI," explains Tiia Lantta.

Standardized message format

EDI (electronic data interchange) messaging between Kotkamills Oy and its external partners is handled by a messaging provider. This ensures that the systems at both ends are updated with, for example, unit data for the harbor operator or export information for the customs.

The system is able to process and save even large amounts of information. In the KOTTI system, the number of single inbound or outbound messages per month can reach 20,000. As a result of the standardized message format, message connections can be built and utilized efficiently. This means less manual work and easier collaboration between different partners like agents, harbor operators, custom officers, carriers and end customers.

Effective process management reduces costs

The single integrated system has produced savings in both the cost of managing the order-production-delivery process and the cost of maintaining the hardware and updates.

"We have realized considerable savings in our system costs," says Petri Hirvonen. Use of the KOTTI system will further expand in the future when the extranet solution – which is currently under development – is taken into service.

Fact box

Kotkamills Oy has production plants in Kotka and Tainion-koski, Finland, as well as a subsidiary in Malaysia and sales offices in Germany and Spain. Its product range includes
printing paper, laminating paper and sawn timber.
The company has certified ISO 9001 quality, ISO 14001
environmental, and OHSAS 18001 occupational health and safety management systems, as well as certified systems for verification of the chain of custody of wood based raw materials.
The KOTTI system brings increased transparency to the order-production-delivery process and enables Kotkamills Oy to react rapidly to any changes that impact the logistic chain.