



Consumer Packaged Goods (CPG)

Global References & Case Studies for Non-Food CPG Manufacturing

80% of the world's Top 20 Consumer Goods companies use GE Digital solutions

Our customers make:

- Household goods such as tissue products, detergents, and much more
- Food, beverages, wines and spirits
- Health and beauty aids including cosmetics and electric personal devices
- OTC pharmaceuticals
- Traditional and reduced-risk tobacco products
- Housewares and small appliances
- Machines / equipment
- System integration
- And more ...



Consumer Packaged Goods (CPG) Manufacturing

The Consumer Goods “Smart Factory” requires a range of technology solutions: IoT-fueled production efficiency and quality, mobility, high performance SCADA, and massive operational data gathering, reporting, analytics, and optimization.

Access to accurate, timely data is essential. Reliable automation ensures operations can function at peak performance, respond to changing consumer demands, overcome supply chain issues, and operate within compliance.

Our automation, MES, industrial data management, and analytics solutions: increase efficiency, improve uptime, support sustainability, enhance security, and improve regulatory compliance.

Increase the reliability and efficiency of your Consumer Goods operations by connecting your machines, data, insights, and people.

GE's Experience

- Consumer Goods is our heritage: more than 100 years
- CPG customers around the world: Americas, Europe, MENAT, Asia
- Long-term relationships: decades of experience



Think Big

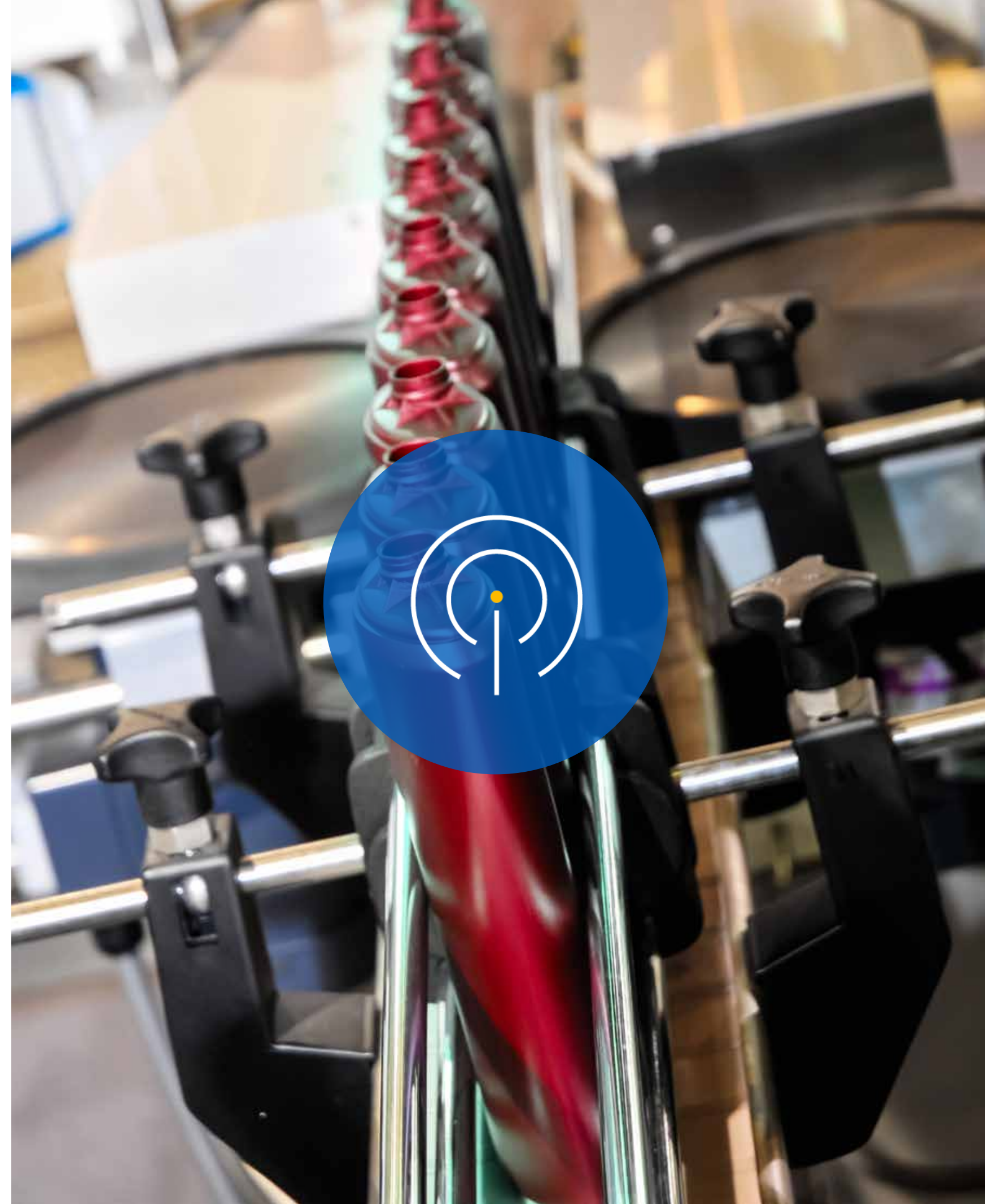
From super SCADA to top-ranked MES to cloud-based industrial data management & analytics

- More than 3,500 Consumer Goods customers
- Majority of Top 50 leading Consumer Goods companies use GE Digital software
- 2500+ GE software customers have systems with >500,000 tags—and some have more than 1,500,000 tags!
- #1 MES according to analyst report
- SCADA with 99.999999999% availability

"Data is really important to us to improve stability of the operation.
GE provided the most complete software suite for our needs."

— Benoit Lapensée, MES Director, Cascades Tissue Group

***GE and our software are known for serving the world's
largest Consumer Goods companies***



Delivering Real Results to Consumer Products Manufacturers



- \$5M annual quality improvement savings
- >\$10M energy savings over 5 years
- \$500K annual waste savings
- \$200K/yr SKU cost reduction
- \$0.01/case SKU formula cost savings
- \$850K/yr production efficiency savings
- 3-month payback on MES investment
- 39% decrease in downtime events
- 10% operating costs reduction
- 10-15% energy savings improvements YOY
- 30% faster new product introductions
- 25% defect reduction
- 25% plant downtime reduction
- 80% reduced furnace emission
- 50% waste reduction
- 20% OEE improvement
- 90% waste reduction
- 35% reduction in product waste
- 90% decrease in finished goods holds & packaging waste
- 9% increased production efficiency





Outcomes



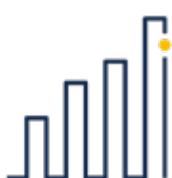
Increase visibility

For many consumer goods manufacturing companies, the majority of the workforce is on the plant floor, working at individual pieces of equipment or on production lines. Establishing near real-time visibility into equipment health can empower operators to quickly identify problems and decrease unplanned downtime.



Optimize operations

By integrating and analyzing the data being generated on production lines, improvements can be made across plants including on batch variation, resource consumption, quality costs, waste, and management of abnormal situations. Optimizing consumer products manufacturing also alleviates knowledge gaps between experienced and new operators.



Improve quality and output

By monitoring the health of your equipment and production lines with industrial applications, consumer products companies can shift from schedule-based maintenance practices to condition-based or preventative maintenance practices. This helps eliminate vulnerabilities in the production lines—improving both product quality and output.



Increase agility

Manage your batch execution for greater agility and reduced costs. You can streamline end-to-end operations, ensure product quality, and drive high-volume production, even when switching products between batches is a requirement.



Adhere to regulations

Complying with stringent regulations is a must. Support your traceability, data management, reporting, and continuous improvement needs with proven, modernized technologies. Furthermore, enforce Standard Operating Procedures by guiding operators through the right steps and tracking performance.



Speed time to market

Improve your ability to compete, penetrate new markets, and even speed production of existing products with digital transformation. You can improve local production operations while meeting global requirements. With a connected enterprise, you can accelerate time to market and boost competitiveness.

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TOBACCO



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Major plastic films manufacturer: 25% reduction in downtime through cloud-based analytics

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Other Consumer Products Manufacturing

- 90% of the world's top Food & Beverage companies use GE Digital software
- 40+ case studies
- 150 pages of rich information
- Our customers win awards – such as Food Engineering magazine's Plant of the Year

DOWNLOAD F&B BOOKLET



Pharmaceutical / Life Sciences

- 90% of the world's top pharmaceutical companies use GE Digital software
- 15+ case studies such as wound care products, Nicorette® manufacturing, and more
- 60+pages of rich information
- Implementations from around the world

DOWNLOAD PHARMA BOOKLET



Digitization Step Change at Procter & Gamble Improves Performance

Diverse Consumer Products: shampoo, paper towels, electric personal devices, OTC medicines, and much more



Digitization is a journey, whether in a large or small organization.

Learn how P&G, one of the largest consumer packaged goods companies in the world, has deployed Proficy Plant Applications at an enterprise scale to accomplish digitization step changes and achieve critical outcomes.

Mixed Manufacturing Environment

With diverse manufacturing requirements, P&G leverages a hybrid MES for both process and discrete capabilities in one solution.

Hybrid On-Prem / Cloud Approach

Furthermore, discover how P&G has employed GE's Manufacturing Data Cloud for an on-prem / cloud approach that improves performance, reduces costs, and provides a foundation for analytics and optimization.

P&G Plant Statistics

- 2 GBS Supported MES Platforms: Proficy (94), Maple (17)
- 10 Category's (Clients: 10 BU VPs and 120+ Plant Managers)
- 39 Manufacturing Solutions
- 68 Sites archiving data in the Mfg Data Cloud (MDC)
- 101 plants
- 2000+ manufacturing lines
- 45,000+ (Users: people working in manufacturing discipline)

P&G

Products

- Proficy Plant Applications
- Proficy Manufacturing Data Cloud
- Proficy Historian
- iFIX HMI/SCADA
- Proficy Workflow

Results

- Improved performance
- Reduced costs
- Data analytics

WATCH P&G VIDEO #1



Delivering Manufacturing of the Future

Background

Procter & Gamble (P&G) is a fast-moving consumer goods company that's made up of several different business units that touch the entire spectrum of a person's life stages.

Challenges

Keeping up with consumer demand

The company's technicians were often tasked with re-entering the same data across multiple systems, causing improper utilization of time and frustration among its operation teams. P&G needed an integrated system that would allow technicians to interact with data in real-time and at scale.

Results

Unlocking real-time operational visibility

P&G was able to visualize its operations to achieve improved process reliability, production efficiency, and operational safety.

- Improved process reliability
- Increased productivity
- Improved operational safety

[WATCH P&G VIDEO #2](#)





Kimberly-Clark

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Visibility into global operations for cost out and process optimization

Challenge

Promote MES as an infrastructure so that the company can gain better visibility into global operations, including all machines and existing applications.

Action

- Partnered with GE and Gray Matter Systems (GMS) leadership to create and present MES infrastructure strategy and funding request
- Rapidly deploying both GE Digital's Proficy Plant Applications including Quality as a focused first step with GMS and Cognizant across 62 sites (7+3+52) with 38 more to come globally
- View and use data to quickly make product decisions, understand basic downtime, and be more reactive about improvement opportunities within their processes

Results

- Delivered cost out and optimized and controlled manufacturing processes in highly competitive market
- GE and GMS serve as part of leadership strategy team for rapid deployment and continued MES infrastructure innovation



Tissue at issue

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At Kimberly-Clark, a manual quality system had been used back in the 1990s to monitor the company's football field-sized machines that manufacture enormous rolls of toilet paper.

“Samples were manually taken, manually plotted on the wall and manually compared to control charts,” said Mark Marek, IT business partner. “Adding new equipment provided the opportunity to expand and automate the quality systems in the plant. GE Proficy now works across all our lines for manual and automated tests.”

“The whole definition of quality is continually adapted depending on our customer,” Marek noted. “We work with marketing to continuously improve our product. It’s always changing—it’s never static. And with access to actionable data, we make adjustments on the fly. We can stop the production if necessary and change the process as needed to make good product.

“We can also ‘run to quality’ knowing that the roll will successfully meet the quality parameters of one of our downstream converting lines,” Marek said.

“We have the data of a golden roll, we know the specifications needed to make a quality product, and we know we are meeting those specifications.”

— Mark Marek, IT business partner, Kimberly-Clark





Kao Brands

Embarks on Operational Excellence Journey with Proficy Software



Improved quality and decreased cycle times

Challenge

- Complex batch processes and control system with many different recipes on single equipment
- Lack of comprehensive visibility into processes
- Need for greater agility to meet increased capacity requirements

Action

- Implemented GE's Proficy software to optimize its manufacturing operations and provide a foundation of reliability and predictability
- To meet Kao's need for increased capacity, Proficy enables the manufacturing agility required to accommodate many different recipes on the same equipment
- Enables Operational Excellence, critical to supporting Kao's growing operations globally



Results

- Improved product quality
- Increased flexibility to implement recipe and equipment changes in hours instead of days
- Decreased cycle times
- Greater efficiencies and reliability
- Reduced commissioning time for a competitive advantage
- With greater operational insight and flexibility, Kao can optimize many different recipes while ensuring quality



Ability to implement recipe and equipment changes in hours instead of days translates to agile solution that impacts the bottom line.

Kao Brands of Cincinnati, Ohio chose GE's Proficy software for a complex batch execution system in primary operations across its many consumer products.

The company was looking toward improved quality, decreased cycle time in the process and implementation, increased versatility, testing and reduced commissioning time for its production lines.

Global Beauty Brands Manufacturing

Kao Brands, a global manufacturer of premium beauty brands including Jergens, Ban, Biore, Curel, Guhl and John Freida, prides itself on innovation and quality. Therefore, when the company added new equipment or implemented different procedures, they realized that they needed a system that was both agile and secure to allow optimizing the manufacturing of many different recipes on the same equipment.

Over the last years, Kao expanded its operations globally, particularly in Europe and Australia. New equipment was added to accommodate the additional needed capacity. This increase in sales necessitated using outside contractors to fulfill product commitment. The company saw value in cost savings and quality improvement while protecting the confidentiality of recipes by bringing that manufacturing capacity back to the plant. Kao produces many different products and SKUs on the same equipment and packages those products on the same lines.

"This was a logistical problem," said Andy Pickens, Engineering Manager for Kao Brands' Cincinnati plant. "With three major production areas – making, storage and packaging – producing many products with the same equipment and having to validate cleanings between products, results in a complicated system. We needed to continue to provide high quality products but with more agility to address the increased capacity requirements."



Interconnected Operations

Kao's control system is complex and its PLC platform was driving the operation. Many operations are interconnected and if a change in one system was made through the PLC, due to sequencing, it could have an adverse effect on another operation down the line.

The team thought that, due to the rate that things change, they needed a solution that would allow them to develop PLC code once and not have to change it with each tweak to the process.

Kao implemented Proficy Batch Execution, a powerful and feature-rich solution used to increase product quality, consistency and efficiency, and Proficy Historian to capture high-resolution process data enabling true process visibility.

The Proficy solution was implemented on the new equipment and now the team is implementing on all equipment.

“We now change recipes more quickly and more reliably. Changes that used to take days to implement are now taking hours instead.”

— Andy Pickens, Engineering Manager, Kao Brands

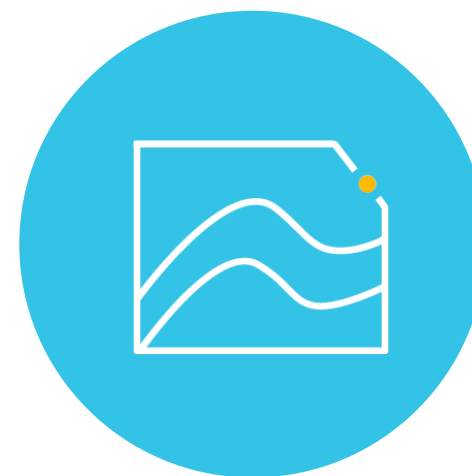
Faster Recipe Changes

Kao isn't stopping there, according to Pickens. The company would like to use the data collected by the Proficy software solution for process improvement.

“We are working to optimize what is a good time for each step of every product we make,” he said. “We would like to see what the impact any manufacturing bottlenecks have on the schedule made by the production team and adjust our schedule dynamically to compensate.”

Kao Brands is a great example of how companies achieve efficiencies by laying a solid foundation of reliability and predictability.

Operational excellence starts with visibility into operations, moves to efficiency, reliability and then, by standardizing work processes, improving planning and execution across the company results in a sustainable competitive advantage for the company in the marketplace.





Cascades Tissue Group Achieves Reliable and Predictable Manufacturing Performance

GE Digital's software enables real-time production insights



A blast into the siloed past...

It's 5 a.m., and Sarah Smith is starting her shift as an operator at Cascades Tissue Group in Memphis, Tennessee. As she begins to look at the work from the previous shift, she realizes they didn't produce the amount of tissue products they were supposed to because one of the lines went down. But she doesn't have the visibility or analysis to understand what caused the downtime. Sarah also knows her plant continually faces quality issues compared to Cascades' other plants, but she isn't sure where to make improvements to ensure better consistency. These types of hypothetical scenarios were not uncommon at Cascades before the company implemented powerful manufacturing execution system (MES) capabilities. Today, Cascades has a real-time pulse on its operations to make fast informed decisions across its various sites—ensuring quality and consistent production.

About Cascades

If you're a consumer who buys environmentally friendly products, Cascades is likely a name you trust. As a well-known North American tissue manufacturing and conversion company, Cascades produces paper hand towels, paper towels, bathroom tissue, facial tissue, napkins and wipes, and also designs dispensers for its tissue products. Headquartered in Canada, Cascades is the fourth largest tissue paper manufacturer in North America today.

The company is known for its strong environmental practices and offers a complete range of products that are made from recycled fibers and carry certification seals, including PCF (Processed Chlorine Free), EcoLogo, Green Seal and Green-e®. Environmentally friendly Cascades products are made with less water than the Canadian industry average, and they are compostable and biodegradable.

Along with sustainable green manufacturing, quality is core to the Cascades brand value. Understanding that there is no compromise when it comes to consumer expectations related to quality, Cascades has invested in equipment, processes, and a culture that enable it to manufacture a higher quality product with a smaller ecological footprint.



The challenges of business growth and disparate systems

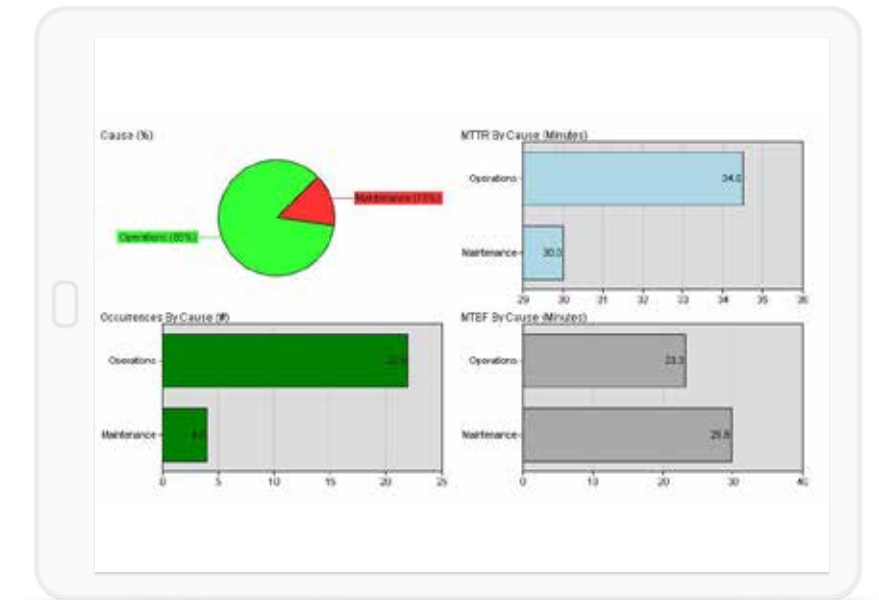
As part of its growth strategy, Cascades Tissue Group, a division of Cascades, acquired several manufacturing sites, which resulted in disparate automation infrastructures. Some of the plants were 100 years old and without a lot of data or sensors on machines, making it difficult to effectively monitor them and gain operational visibility.

Lack of consistent visibility, reporting, and performance metrics hindered the ability to effectively assess production downtime, efficiency, and quality characteristics. The company could not compare the operational performance of its individual sites to make informed decisions about how to allocate new resources across its operations. It needed a common platform whereby different systems could connect and talk to each other using real-time information and analytics.

GE Digital's solution: Real-time decision support on a common platform

With GE Digital's Proficy software, Cascades Tissue Group embarked on a phased approach to upgrade the automation infrastructure of the paper line across its key manufacturing sites.

- For phase one, the goal was to identify key process parameters and to ensure that data was collected uniformly across all sites. GE Digital's Proficy Historian provided a site-wide platform for consistent data collection, archiving, and distribution. The solution allowed Cascades Tissue Group to aggregate its data in a central place and quickly extract value from it through data analysis to drive better, faster business decisions.
- In the second phase, it installed GE Digital's Proficy Plant Applications, part of the Proficy Smart Factory suite. The solution's powerful manufacturing execution system (MES) capabilities provided a common platform to track real-time production, manage quality, monitor downtime, and gather genealogy information.
- To facilitate continuous improvement, the company also integrated a web-based tool with sophisticated trending and reporting capabilities to access, analyze, and visualize production data.



GE Digital's Proficy Plant Applications software helps track real-time production.

Results

- Reduced production downtime
- Better quality tracking and management
- Increased operational efficiency
- Faster responsiveness to issues
- Smarter decisions based on data-driven insights

"Data is really important to us to improve stability of the operation. GE provided the most complete software suite for our needs."

Benoit Lapensée, MES Director, Cascades Tissue Group

Continued competitiveness by tracking downtime and quality

A critical goal for Cascades Tissue Group was to track production downtime. Using sensors and signals on the machines, it sought to understand where downtime was occurring by starting with a common basis for all of its lines. While machines may be operating, they could be running dry and thus not driving productivity or profitability. By understanding which machines had production issues, it could adapt to that equipment to avoid downtime.

Quality was also a top priority for the business. Being in a very aggressive retail market with many different brands, Cascades Tissue Group wanted to ensure its quality stood out from competitors. To provide the level of quality that consumers expected, it needed a way to track quality and drive consistency across its products, no matter which plant or line produced it.

Process improvements through better data visibility and analysis

With Proficy software, connected data has been a key enabler of better business performance, providing Cascades Tissue Group with deeper insights into its operations. The solution collects and analyzes data, and automates and integrates the information-related activities for performance optimization holistically. With these capabilities, operators can make objective business decisions related to efficiency, downtime, and quality.

In the past, machines could run or set up however the operator chose, only to have the next operator change everything back to “his or her own way.” Now data provides a single version of the truth of machine behavior, and through analytics, users can see the trends and understand the impact of making changes.

Understanding how the machines work enables users to make the best decisions for improvements. For example, operators can see how changes to the speed of a machine will impact the softness of the paper by monitoring the output, quality specs, and data points related to the product itself and track those against the process setup. Data analysis brings deep operational insights that were previously untapped.



Using data analysis to understand machine performance allows for better decisions.



Higher Overall Equipment Effectiveness (OEE)

Before implementing GE Digital's Proficy software, operators had to wait until a report came out at the end of the month and try to figure out what happened and fix it. Now, they can see in real time if there's a problem, where it is, what it is, and inform the right people to address it. This level of responsiveness helps increase quality and efficiency and improve key performance indicators (KPIs).

For example, operators can quickly and easily access real-time KPIs such as OEE. This capability helps drive efficiency because when operators see the metrics, they understand what they are and how to make adjustments to ensure machines are running at peak performance. Furthermore, the way OEE is calculated is now centralized and standardized, whereas before, operators had their own ways to calculate the metrics, causing inconsistent views and results.

GE Digital's Proficy software leverages the power of the Industrial Internet, enabling Cascades Tissue Group to optimize its production performance for a competitive edge.

Powerful business outcomes help drive continued competitiveness

With Proficy software, Cascades Tissue Group can ensure quality and consistent production with critical insight into quality information and process performance. The solution delivers an integrated approach that accelerates information delivery and enables product reliability—increasing consumer confidence and brand loyalty.

Furthermore, to drive sustainable manufacturing, the software helps uncover data from systems and sensors, and makes it available for both usage analysis and the process or equipment tuning that eliminates excessive usage. It provides intuitive visibility into resource consumption in areas controlled by operators, technicians, and management, empowering them to drive savings as events occur.

With a single view of production data powered by GE Digital's software, operators at Cascades Tissue Group can make informed decisions that help drive quality improvements and increase manufacturing efficiency across the various sites—critical for sustainable growth and a competitive edge.



Cascades Tissue Group can now keep a real-time pulse on operations, whether it's the speed of a machine in Toronto or in Memphis. If there's a problem, everybody knows in real time what's occurring on the production floor. And this makes for rapid response times—driving faster problem solving and optimized performance.



GE Lighting, a Savant Company

Cutting order-to-ship time by 33% using Proficy to streamline production

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Visible Data Means Operations Excellence

Seeing is believing, and bringing operational information into the light makes it usable by everyone in an enterprise—allowing them all to make faster, more productive decisions.

This enhanced awareness was especially useful at GE Lighting, which reinvented itself to transition from manufacturing millions of homogenous, incandescent light bulbs to developing tailored, LED lighting solutions for its many customers.

These experiences were described by Craig Platt, IT director at GE Lighting, in his presentation “Operational Excellence: Improve Data Visibility Across the Enterprise” at a GE users summit.

"Incandescent bulbs were our bread and butter, but now it's going to be unlawful to manufacture them. Fortunately, we're prepared on the LED side, but we also had to combine a 75-year-old business with what is basically a start-up organization," Platt said.

“Where lighting used to be a replacement business at the back of the supply chain, we had to move further up into the supply chain because LED is a fixtures-and-solutions business. So instead of making 3.5 million of the same bulb per day at one plant, we had to move to configuring LED solution for individual users. We also had to reduce our order-to-ship (OTS) cycle time from 30 days to 10 days and improve our OTS fill rate from 70% to 90%.”

With help from its reorganization and GE's Proficiency software, Platt reported that GE Lighting:

- Streamlined its assembly and OTS processes
- Reconfigured and integrated its manufacturing lines
- Improved its raw material flows
- Implemented a visual material management system

"We created a supermarket and mini-market approach, used Kanban cards and flow, adopted on-demand label printing and got down to 10 days for one product line and then added others."

In fact, our mini-market picking is done with wearable, on-wrist PCs that are all controlled by our overall MES system. Now customers can see their units as they're manufactured, and this gives everyone more confidence."

— **Craig Platt, IT Director**
GE Lighting





Głucholazy Paper Company

Paper Mill improves efficiency and safety with GE Digital solution



Głucholaskie Zakłady Papiernicze [Głucholazy Paper Company], with annual production of about 15,000 tons of paper, was founded more than 50 years ago. The company consists of several businesses, including Głucholaskie Zakłady Papiernicze Sp. z o.o., GZP Energia Ciepła Sp. z o.o. and Asko Papier Sp. z o.o., with annual sales of PLN 140 million; the monthly production volume based on five paper machines totals approximately 4,000 tons of unprocessed paper.



Challenges

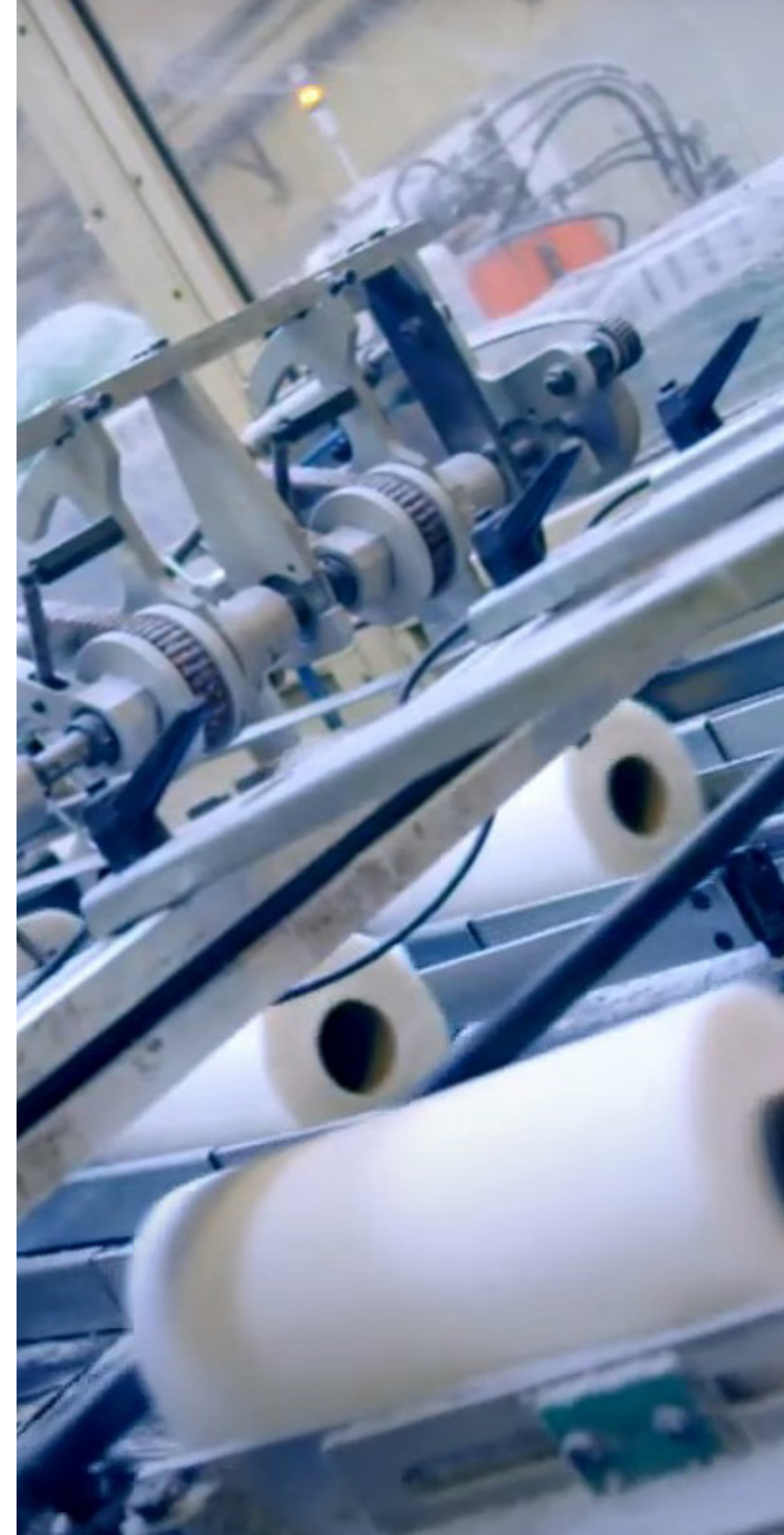
The businesses are located in three locations, with the headquarters in Głucholazy, where recycled paper is manufactured for further processing. The Głucholazy plant has four paper machines for the manufacture and processing of toilet paper, paper tubes, and cellulose wadding. Głucholazy Paper Company had ambitious plans for dynamic growth and model management.

In order to meet the company's goals, its plant maintenance managers defined a number of system requirements to do so, with the most important being:

- Supervision and control of a large and extensive production process in paper machines
- Inspection and control located in one facility (control room)
- Online data access both in real time and archived
- Online plant-wide, state-of-the-art reporting system with dynamic report configuration for every user

So, they turned to iFIX and Proficy Historian from GE Digital. These solutions were implemented in the Głucholazy and Niedomice paper mills.

WATCH VIDEO



Solutions

iFIX and Proficy Historian were implemented by ELTOP s.c. Industrial Automation Systems. Staged implementation included individual production processes within the whole plant. In addition, the support and configuration of mobile and database solutions was provided by VIX Automation during the implementation phase.

The system is based on iFIX and Proficy Historian software across several workstations.

Prior to implementation of the automated production control system, most production processes were controlled manually or semi-automatically. No advanced automation or SCADA systems were in place at the company. Years ago, iFIX (called FIX at the time) was the first software implemented in the production process of the MP3 paper machine. Subsequently, when the other machines were upgraded, iFIX was installed in MP1, MP2, and MP5 machines and in the paper pulp preparation process.

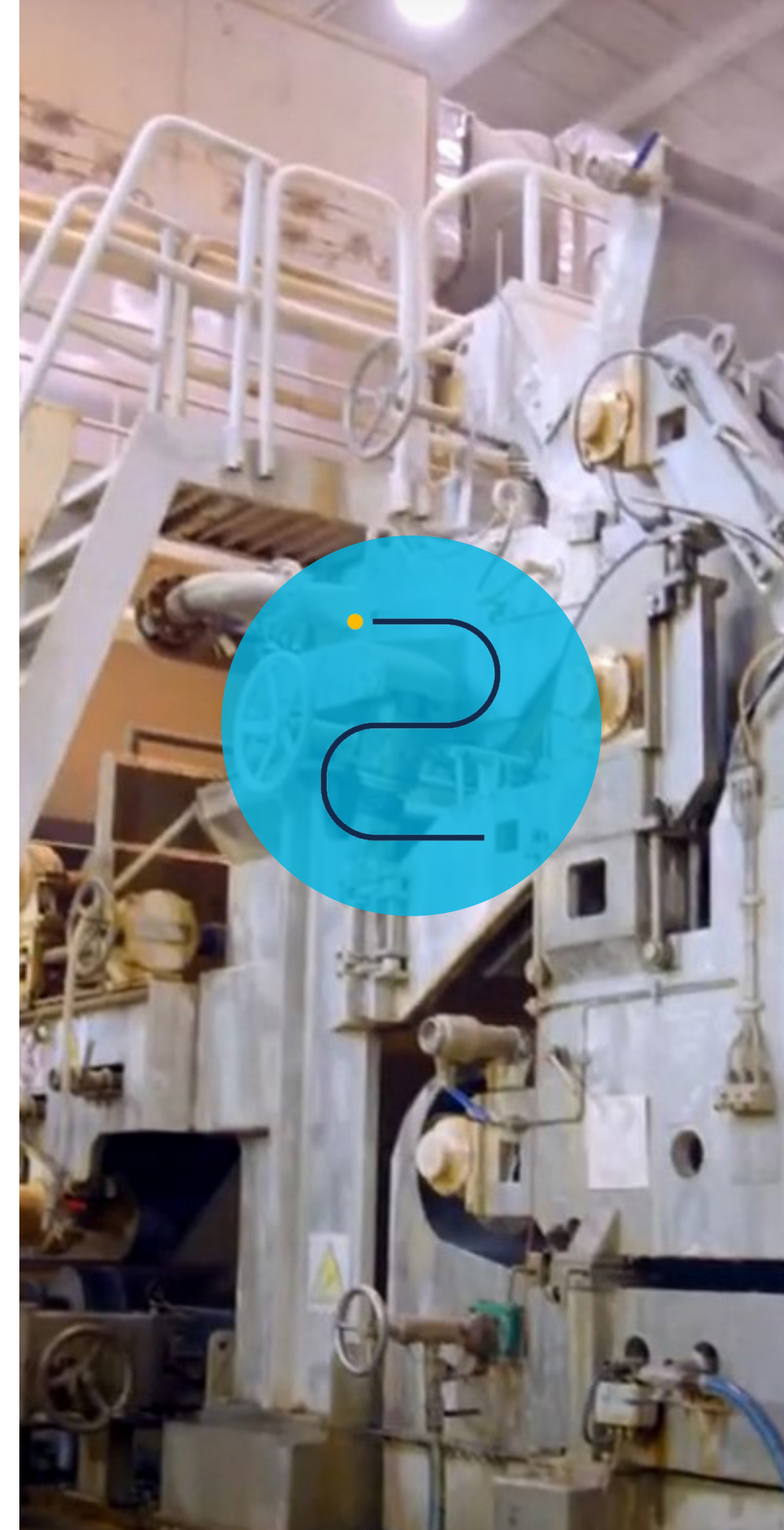
Later, a large investment was completed in the Niedomice Branch. Based on an existing paper machine, a new one was developed along with the production processes for the preparation and refining of paper pulp, water preparation, and sewage treatment. iFIX was used as the SCADA system. Meanwhile, the heat plant in GZP [Głucholaskie Zakłady Papiernicze (Głucholazy Paper Company)] Głucholazy was also upgraded based on iFIX while the company sewage treatment plant was upgraded based on iFIX.

Additionally, the company made another major investment to upgrade the MP3 machine. This new, very extensive production process is controlled by iFIX. To complete the system, Proficy Historian was also implemented. The successful individual implementation stages of these solutions fully met the expectations of the company's leadership team.

This new system now supports complete visualization, control, and recording of archive data. The system has extensive alarm options and the whole manufacturing process is shown on multiple synoptic screens. Bidirectional communication (switching devices or whole process units on and off) is supported by each screen. Controller settings can also be adjusted. Proficy Historian generates clear reports and allows remote production process and machine parameter monitoring using the global network. This is particularly important when supervising the machine in the Niedomice Branch. In order for the company to continue to grow and scale, this system undergoes continuous expansion and upgrades.

"When developing a user's interface through iFIX, we can use a wide range of database blocks and an extensive object library. This allows us to develop applications quickly and easily. Experts can be used to animate objects and create scripts. We can modify them with only a minimum knowledge of VBA or develop our own solutions. The option of drawing layers provides a wealth of opportunities for the layout of synoptic screens. Proficy Historian efficiently collects and archives data not only from the GE Digital applications, but also from other sources. User-created applications based on SDK provide practically unlimited opportunities for data processing and entry. Also, extensive reports can be created based on archive and real data with Proficy Historian."

Janusz Paliga - Głucholaskie Zakłady Papiernicze



Results

Due to the current market requirements concerning product quality and economy efficiency in paper production, extensive SCADA systems must to be used in the manufacturing process. A reliable system is indispensable in production.

With the well-designed and highly reliable system that included user-defined needs (processing and production supervision in the plant) the number of workplaces could be optimized and, with the MP3 machine, largely contributed to increased efficiency exceeding the maximum design value.

iFIX and Proficy Historian helped ensure that:

- A minimum number of workplaces could be sustained at the paper machine, while still maintaining control over the production process that is safe for the employees and equipment
- Equipment operating ethos could be improved as the processes were run according to automatic algorithms
- The manufacturing process could be stabilized with direct effects on stable quality
- Continuous control of utility (power, heat, and water) consumption, largely contributing to production costs optimization of the paper machine
- The legitimacy of upgrades and changes in the equipment of paper machines could be verified

iFIX allowed for supervising of manufacturing and maintenance processes of the machines, minimizing losses related to product change during manufacture while sustaining maximum productivity and product quality possible for the machine.

Through Proficy Historian, the company was able to start analyzing process indicators related to ISO 9001 based on the data collected and analyzing machine clothing (pulp felts) in terms of their time, energy, and throughput performance.

"The software was also used to adjust technology and the ongoing control of new products implemented in Niedomice, located 350 km from the Głuchołazy plant, without the need of the employees responsible for technology in GZP Spółka z o.o. in Głuchołazy going to Niedomice."

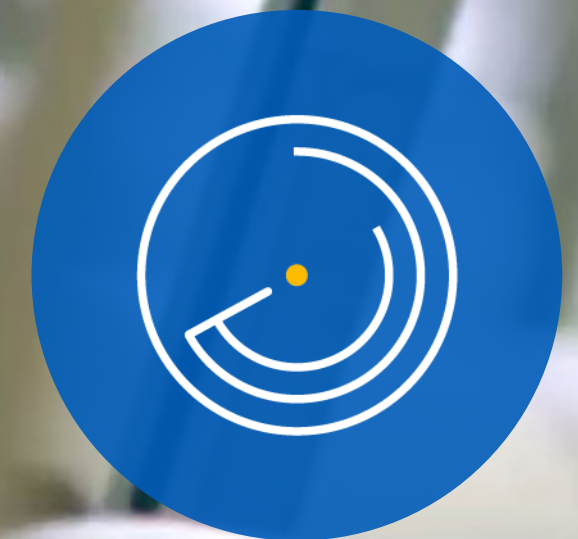
**Mirosław Englot - Head of Production, Chief Technologist,
Głuchołaskie Zakłady Papiernicze Spółka z o.o**

About VIX Automation

[VIX Automation](#) is an Authorized Distributor of GE Digital in Poland.

They are one of the leading suppliers of comprehensive IT solutions for production on the Polish market. 15 years of experience, qualified engineers and knowledge of the specificity of the Polish industry allows them to provide their clients the highest quality services.

The VIX Automation offer includes: SCADA and MES systems, production archiving and reporting systems, production scheduling, production efficiency analysis (OEE), software consultations and audits, implementation services, optimization and updating of existing systems.





Global Consumer Tissue Company

Increasing roll-to-roll consistency and quality with GE's HMI/SCADA



Global Consumer Tissue Company

Challenge

This leading hygiene and health products company uses GE Digital's software widely at plants around the world. As an example of one implementation, the company needed to select the automation for a new paper-processing machine for maximum efficiency at a recycled paper plant.

Action

Implemented GE Digital's HMI/SCADA as the cornerstone of the plant's automation including the new machine, maximizing production of recycled paper towels, napkins and tissue products.

Results

- 25% increase in plant production
- 40% decrease in engineering time
- Increased roll-to-roll consistency and quality
- Less scrap
- Easy, fast setup for different grades
- Less maintenance and troubleshooting
- Fast system startup
- Operator friendly and easy to use



Consumer Packaged Goods | Global

25%
increase in plant
production





Mouthwash Manufacturer

30% faster new product introductions



Mouthwash Manufacturer

Challenge

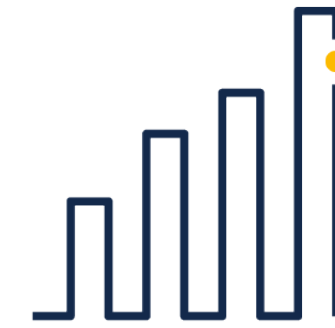
- Increased pace of product launches – need for equipment and recipe flexibility
- Optimization: analytics and reporting – yield comparison, set up raw material tracking, batch analysis for process optimization

Action

- Implemented GE Digital's easy-to-deploy, high-availability Proficy solution including HMI/SCADA and MES software
- Scalable, flexible solution that plugs and plays for efficient production reporting and process analytics

Results

- 30% faster new product introductions
- Improved scalability – easy to expand as the site grows
- 12% increased yield due to reduced process variations
- 5% reduced waste due to better process visibility
- Increased capacity and quality
- Easily adapts to the requirements of new product launches and recipe changes, increasing productivity and lower total cost of ownership



Consumer Packaged
Goods | Americas

30%

faster new product introductions





Global Cosmetics Company

40% reduced waste and 20% increased capacity



Global Cosmetics Company

Challenge

- Inconsistent quality
- Labor intensive – hundreds of manual inputs and adjustments – that constrained capacity and process reliability improvements
- Unpredictable cycle times
- Production efficiency dependent on experienced operators

Action

- Implemented GE's Proficy software to improve Operational Excellence of the manufacturer's complex manual batching operations
- Leveraged existing infrastructure in conjunction with Proficy to maximize previous investments
- Digitized best practices and deployed across the organization
- Operators follow electronic standard operating procedures, knowing the right actions to take

40%

reduced waste

20%

increased capacity

Results

- 40% reduced waste
- 70% increased operator productivity
- 20% increased capacity
- Visibility and analysis of processes that before were “black holes” in the batching process, enabling Operational Excellence improvements





Global Personal Paper Manufacturer

\$649K per year savings due to increased OEE



Global Personal Paper Manufacturer

Challenge

- Lack of understanding into production downtime
- Product quality issues
- Need for increased profit margins on high-volume products

Action

- Implemented GE's Proficy software including Plant Applications and Historian to collect and analyze the manufacturer's operations data in the proper context for greater operational insight
- Analytical tools resolved downtime issue on Line 1, driving corrective actions
- Identified that quality issues on Line 2 were due to the line running too fast

Results

- \$295K annual savings due to increased OEE on Line 1 by 1.55%
- \$354K annual savings due to increased OEE on Line 2 by 5.93%
- Reducing the line speed enabled decreased quality issues and increased OEE for optimized inventory stock levels and improved profitability



Consumer
Packaged
Goods |
Global

\$649K

per year savings due to
increased OEE





Packaged Kitchenware Manufacturer

Saves Nearly \$1M Per Year Replacing Obsolete Plant Floor Reporting System



Overview

This Kitchenware Manufacturer produces packaged bakeware, dinnerware, kitchen tools, range-top cookware, storage and cutlery that's sold in stores across America, as well as high-end retailers in parts of Asia, Europe and South America. With around 3,000 employees, they have major manufacturing and distribution operations across North America and the Asia-Pacific regions.

Challenge

The Kitchenware Manufacturer's legacy plant floor reporting system had become obsolete. The outdated system was difficult to operate and required multiple personnel to manage and support. The system lacked real-time data and analytics

and had an inefficient manual input process – data had to be printed out and manually entered into a spreadsheet for analysis.

Proficy Plant Applications identified micro stops as the biggest cause of downtime.

Solution

GE Digital partner AutomaTech analyzed the Kitchenware Manufacturer's process and worked to understand the financial implications of implementing Proficy Plant Applications. With thousands of success stories around the world, Proficy Plant Applications automates and integrates information-related activities for managing production execution and performance optimization.

With data from Proficy Plant Applications, dashboards were created that provided real-time feedback – allowing real-time changes and greatly simplifying the quality change process.

Plant performance data is automatically uploaded into the corporate business information warehouse using Proficy Plant Applications, giving high-level management more visibility into plant operations.

"One of the best parts about working with AutomaTech is getting that 24/7 support. Whether it's AutomaTech or GE, I have a large support network, so I never feel like we're left alone on an island trying to figure it out."

Plant Manager, Packaged Kitchenware Manufacturer



Results

Quality issues were caught earlier, and specification and recipe management improved with better product quality because of access to real-time data.

With higher visibility of downtime and machine underperformance, behavior is different on the plant floor —resulting in reduced downtime and improved machine performance.

Decisions have become more data driven and the savings have been significant.

Unscheduled downtime reduced by more than 30%, with estimated savings of \$700,000 per year.

Proficy Plant Applications also eliminated numerous paper documents because it automatically creates reports with no additional labor – including Excel add-on tools for greater insight of anomalies in the process.

The automated reporting functions are estimated to save them more than \$100,000 per year.

About AutomaTech

[AutomaTech](#) is a leading provider of industrial technology solutions focused on improving your operational performance. By harnessing the power of data, we enable significant gains, visibility across your entire organization, and increased profits for a competitive edge. Our product offering includes a flexible and scalable mix of hardware and software solutions to solve your toughest challenges while providing a roadmap for future improvements and growth.





Tobacco

GE Digital in Tobacco Products

Manufacturing Around the World



50+ tobacco-related customers, including in nearly every province in China

100s of tobacco product plants using GE Digital software

5 continents with tobacco manufacturing using GE Digital software

4% increase in efficiency

5% decrease in raw material waste

3.05 to 4.03 Sigma quality level improvement

Experience

- Traditional (combustible including smokeless), speciality, and newer reduced-risk products
- Multi-national manufacturers as well as single-plant companies and OEMs
- Long-term relationships: decades of experience
- All levels of automation: From machine/equipment to individual plants to enterprise level
- Diverse: From raw materials processing to finished goods packaging
- Manufacturers, OEMs, & Systems Integrators



Royal Agio Cigars Connects Real-Time Information to Production, Improving Efficiency and Quality



Royal Agio Cigars is one of Europe's largest cigar producers, known for brands such as Mehari's, Panter, Balmoral, and De Huifkar. The Westerlo factory in Belgium produces approximately 3,000 country-specific end product cigars with no fewer than 164 production lines.

Managing Director Johan Gebruers and Chief Operations Officer Koen van Hooft explain the role of MES and automation solutions from GE Digital partner Novotek and how they automate the data flow of the entire production process, while simultaneously responding to changing legislation.

“We have made huge improvements in efficiency. Quality and data have improved. Production now has real-time information and the administrative activities of our employees are now completely automated. This data gives us insight into the production process with which we can further optimize.”

— **Johan Gebruers, Managing Director, and Koen van Hooft, Chief Operations Officer, Royal Agio Cigars**



Products

- Proficy Plant Applications
- CIMPLICITY HMI/SCADA
- Proficy Historian
- ROB-EX Scheduler
- Proficy Workflow

Results

- Zero operator errors
- Enormous gains in efficiency & quality
- 100% failures caught
- Visibility and access to real-time information

The MES / automation solutions include:

- OEE, quality and traceability
- Centralized monitoring system
- Real-time visualization and control
- Industrial data management – real-time and historical
- Information anywhere, any time through web browser
- Scheduling and planning across plants



The Role of Automation

“The entire automation operation has been rolled out in various phases and consists of a number of steps,” Johan begins. “The first step was to fully automate the data flow to and from the PLCs. Many of our machines were already equipped with PLCs, but they were still set manually. In addition, only global information was available. At the start of the project, we only looked at the automation of production registration and some other simple things. By implementing the MES solution for operational excellence solution with Novotek, it now automates the entire data flow, including the data collection of all PLC failures. As a result, in the pilot alone, we uncovered an important difference in production. We had been working on these differences for years.”

Less Administration

“We have also made great strides in terms of functionality,” Johan continues. “We now see exactly which product will run on which machine because the data flow is now fully linked. Actually, our operators can no longer make mistakes.”

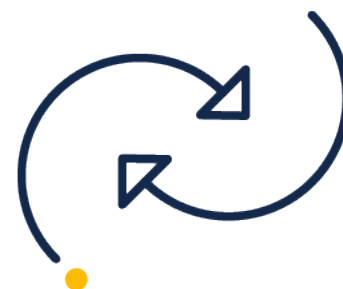
Koen adds: “We have made a lot of progress in the processing and handling of complaints. Originally these were manual procedures. For example, a complaint came in about a coil (roll of net curtain-like fabric on which the tobacco leaves are stored) from Sri Lanka. In the past, the booking voucher had to be looked up first, then that voucher went to administration, and eventually the ignition coil could be booked, and the complaint passed on. In this new situation, the ignition coil is already scanned on the machine and logged automatically. Any remarks about quality will immediately be considered. It is now fully automated and traceable online.”

Catching 100% of Failures

“Phase two included the RFID story,” says Johan. “Now if a container with bunches (semi-finished products) is placed on the wrong machine, the system will immediately display a message on the screen, and the machine is immediately stopped. In the past, the machines continued to run for a few more hours, with enormous consequences. Such an error produces 100% failure: the entire batch was then unusable. This occurred five to six times a year. That is now captured and errors prevented! Because there is a link between MES and RFIDs, we know exactly what is on the pallet and what goes into the machine.”

Linking HMI and Document Management System

Phase three is also currently running. Johan said “We have taken on the extra functionality that was not in the pilot, such as the Document Management System. All our procedures are included. Until recently, they were printed out and hung up on the shop floor. If something changed in the procedures, you had to restart all numbering and replace all versions. Now the HMI is linked to the document management system, allowing operators to immediately have access to the corrected versions.”



Changing Legislation

Koen explains that Agio Cigars also immediately deployed the real-time scheduling and planning module, ROB-EX Scheduler, in view of changing legislation. “Until now, all products were packed in Westerlo. We then put it in the Netherlands in stock, where we labelled the products country-specifically. Due to new legislation, there will soon be so many stickers on packaging, that we will switch to country-specific packaging, and therefore have to plan across factories: from ‘single-site planning’ to ‘multi-site planning.’ ‘We are also going from ‘make to stock’ to ‘make to order.’ Real-time planning is then a must.”



About Novotek

[Novotek](#) is the leading creator of innovative solutions for Automation and Industrial IT in the Nordic countries, Benelux, Switzerland, United Kingdom and Ireland. The foundation is a portfolio of great products from among others GE Digital. With a team of highly dedicated solution architects, we are able to deliver solutions that make it possible for our customers to stay ahead with competition.



Beijing Dart Streamlines Operations with Centralized Monitoring for Chinese Tobacco Manufacturers



Company:

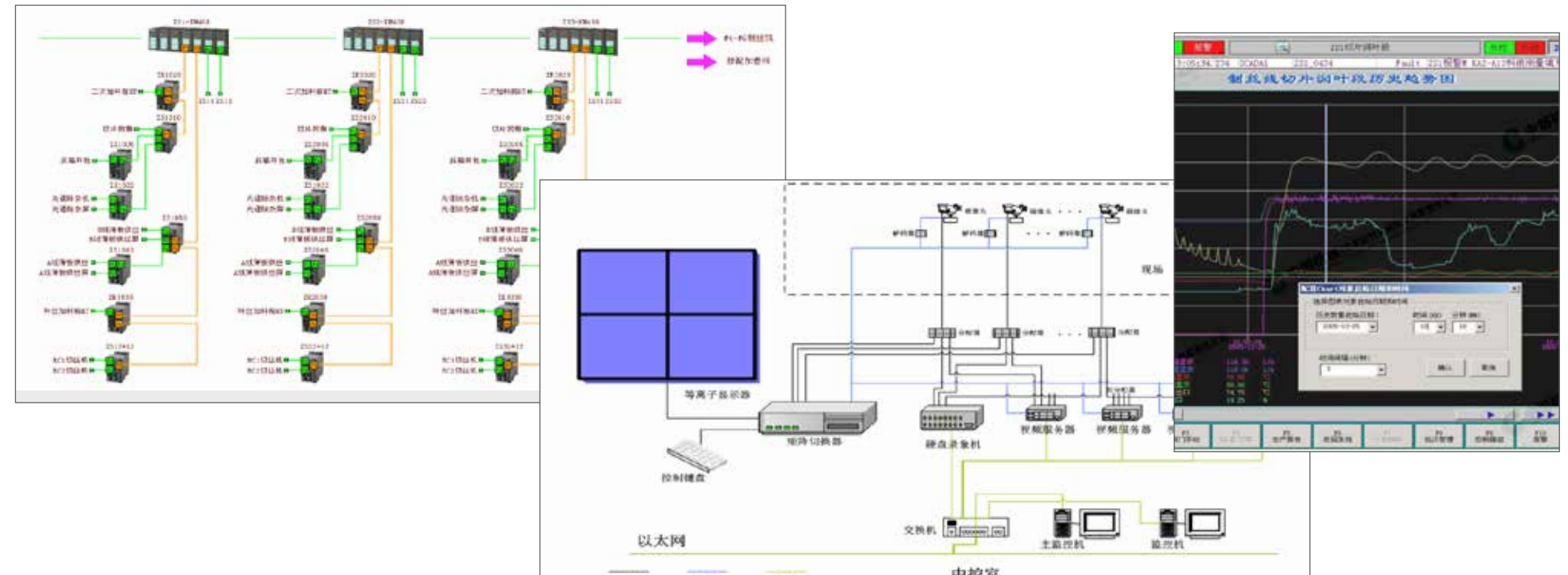
Beijing Dart Integration Technology Co., Ltd. Zhang Dongyue

Solutions:

- Centralized monitoring system
- Real-time visualization and control
- Industrial data management – real time and historical
- Information anywhere, any time through web browser

Products:

- iFIX HMI/SCADA
- Proficy Historian
- Proficy WebSpace



Results:

- Improved production efficiency
- Powerful scalability
- Faster decision-making



Centralized monitoring in tobacco production

With recent innovations in automation and IT, the combination of industrial automation and management information is an important trend in industrial control systems. In the tobacco industry, the centralized monitoring system is an indispensable part of the overall centralized control system framework.

After a comprehensive analysis of several HMI/SCADA software platforms, Beijing Dart Company chose GE Digital’s powerful Proficy software suite to realize the functions of the centralized monitoring system of cigarette factory production lines.

Based on successful project implementations in Shanghai, Chengdu, Mianyang, Wuhu, Longyan and other provinces and cities in recent years, Beijing Dart has exceptional experience with the design principles of integration, scalability and versatility of this entire centralized monitoring system.

There are several aspects to the advantages of the centralized monitoring system designed with GE Digital’s Proficy software for tobacco production – featuring iFIX HMI/SCADA, Proficy Historian for industrial data management, and Proficy Webpace for browser and mobile access.

Proven and complete multi-interface graphical system architecture

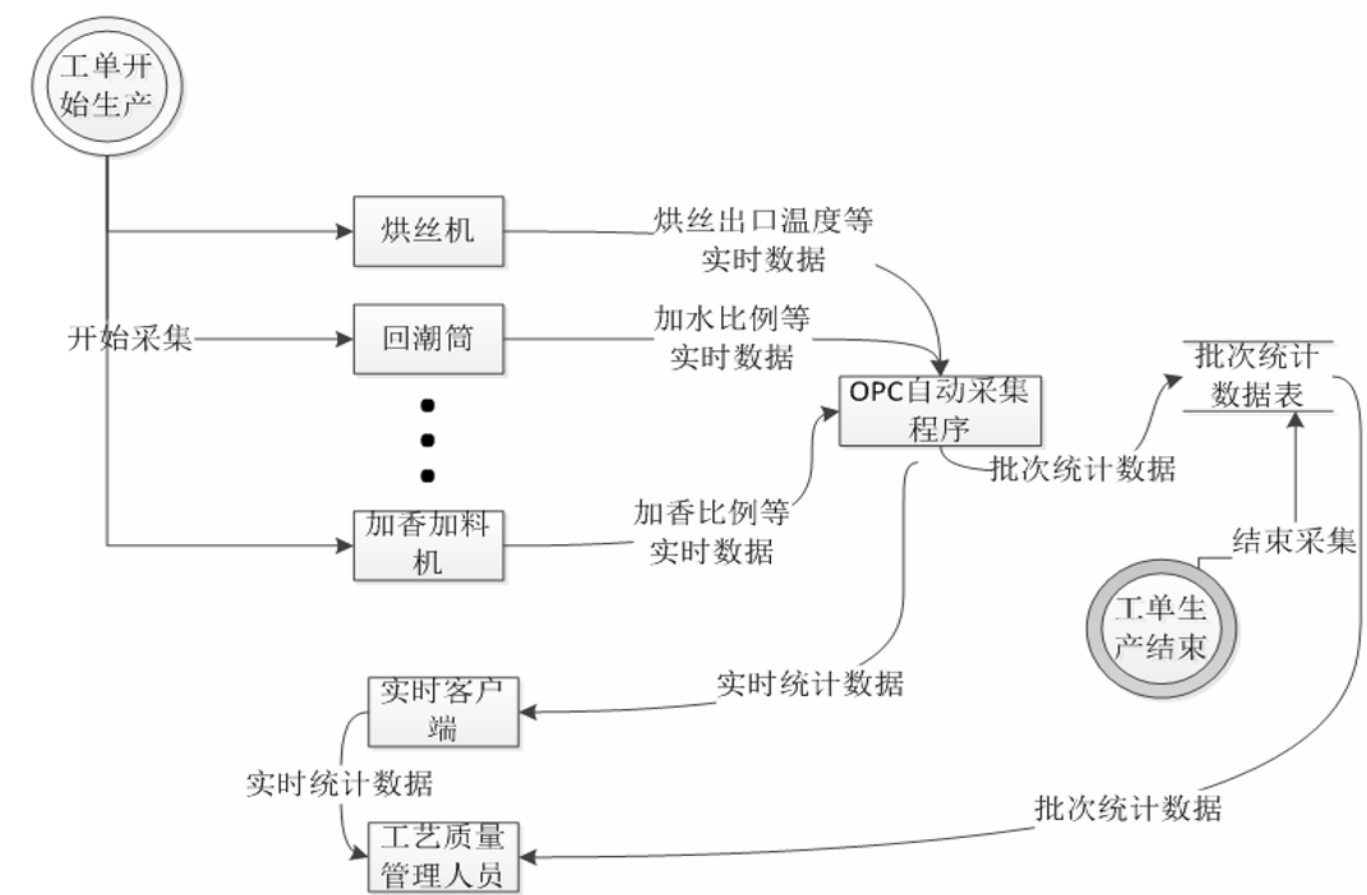
The iFIX configuration platform provides an effective, comprehensive solution for the construction of the centralized monitoring system for the tobacco production line as well as the real-time monitoring and control of the production process.

Using the Proficy platform that comes with multiple communication protocols including OPC, the system collects the production data of the PLC in each process section at the device layer.

At the same time, through the upper-level information management network, the system uses cross-platform interface protocols to obtain data such as recipes, process standards, production plans and scheduling tasks from the production management system. The solution uses the control network to issue production instructions, control parameters and other information to the equipment control system PLC to realize information production.

The centralized control system collects production process data and records it in the database for use by the production management system.

The centralized monitoring system is an important part of control intelligence. Operators can realize rapid production operation and improve intelligence through simple menu and graphic operations.

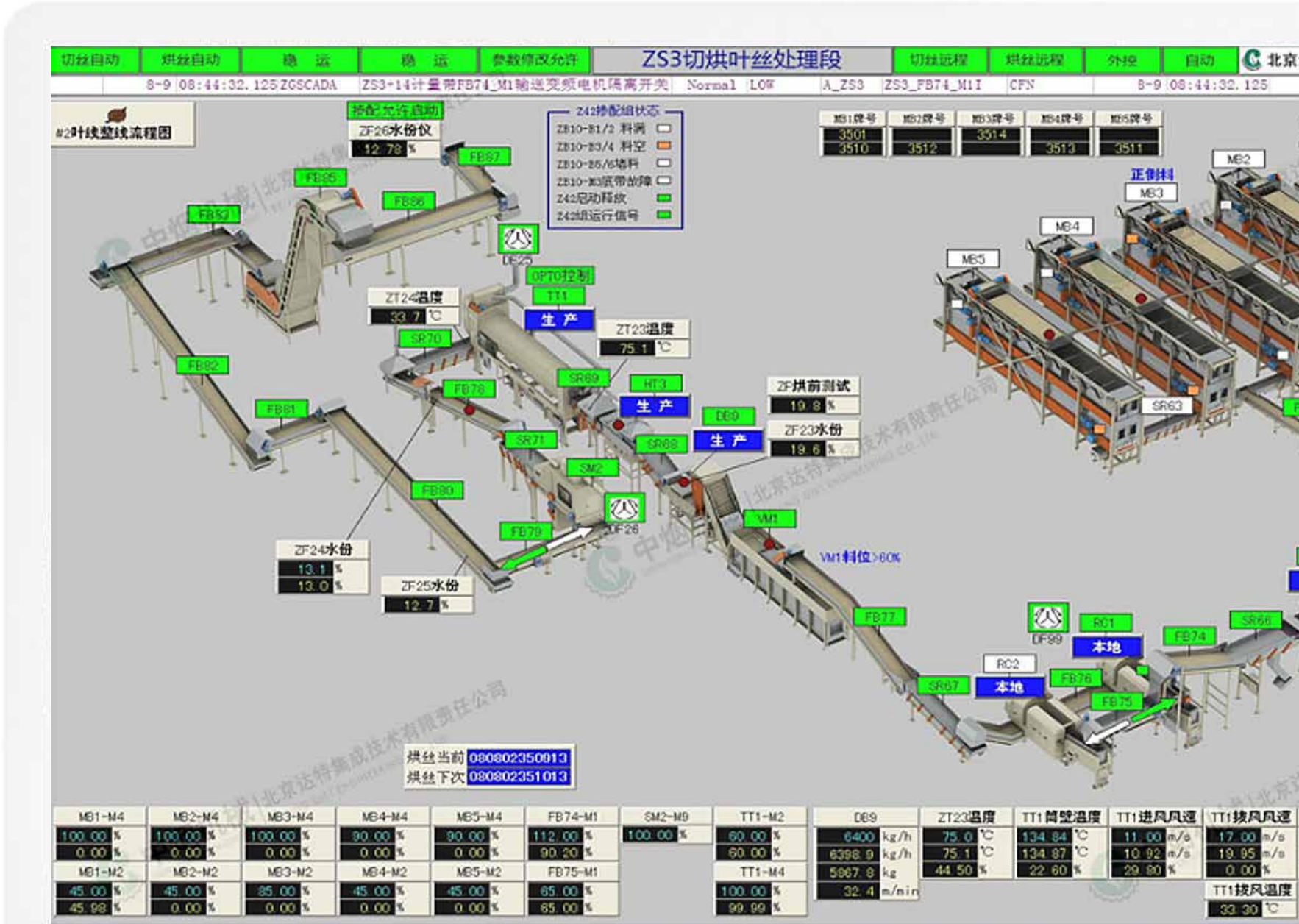


Web publishing, application of intelligent platform visualization solutions

With recent innovations in automation and IT, the combination of industrial automation and Browser/server (B/S) is a network structure mode that is widely used. A Web browser is the most important application software of the client. This mode unifies the client, concentrates the core part of the system's function realization on the server, and simplifies the development, maintenance and use of the system.

The Proficy software solution utilizes information publishing under the B/S architecture. The user installs the latest Proficy Webpace network publishing software on the server side, and the client can use the Web browser. The Webpace server and the iFIX server conducts data interaction, and the browser provides the monitoring screen. At the same time, the intelligent platform visualization solution, Proficy Webpace, provides the following, easy-to-use functions:

- Real-time data – update the client directly so that users can respond in real time.
- Multi-session interface – supports multi-tab browser
- Secure-by-design container – compatible with third-party control technology applicable to Microsoft, AB, Siemens
- Electronic signatures – electronic signatures enhance network security and audit trails
- Animation – supports IFIX monitoring animation and script display
- Controls – All controls can be operated and set up secure by design as in the client environment
- Alarms and warnings – view, activate and acknowledge alarms like a thick client
- Third-party applications – third-party applications can be effectively triggered in the Web page



Industrial network management and diagnostics system

Network management generally refers to the monitoring, analysis and control of various devices in the network system, so as to ensure the reliable and effective operation of the entire network system. Previously, in the field of automation control in the entire tobacco industry, network diagnosis was often limited to the upper computer directly obtaining the power-on and fault information of the IO substation equipment of the process section from the PLC, but it could not provide more intuitive and effective information for important network "bridge" switches and routers. The diagnostic information and detailed view of the system lacked

good management and maintenance functions, and the recovery speed was slow when a failure would occur.

Using iFIX and the OPC protocol in the centralized monitoring system and through the establishment of a web management service, tobacco companies can realize the collection, analysis and diagnosis of the status of network switches and routers.

The communication protocol based on network hardware is used for web management. The centralized monitoring system can directly connect to the physical switch to obtain diagnosis and maintenance information.

The PLC control system can perform centralized diagnosis of the status of the subnet switch in the hardware device and feed it back to the central control system, which can greatly shorten the development cycle. When a network failure occurs, it can be located, maintained, and restored directly from the monitoring system, improving the stability of the network system and the ability for early warning of failures.

Effective integration with on-site video monitoring system of tobacco production line

The centralized monitoring system built through the iFIX configuration platform can provide a data interface integrated with the on-site industrial video system, and integrate and display information via the industrial video system.



- In the real-time monitoring system of the production line process of the centralized monitoring system, the dynamic monitoring screen of the third-party on-site industrial video system is embedded to realize the integration of digital monitoring and image monitoring.
- When the centralized monitoring system detects important equipment failures, critical process area failures or other important events, the video switch button at the corresponding position in the monitoring process screen will appear accordingly. By clicking this button, the scene can be displayed in the monitoring system. The video screen of the probe switches to the fault point area.



Powerful historical data collection and storage function

The application of Proficy Historian for a plant-wide historical database can help operators, production supervisors, maintenance personnel, support personnel and business personnel manage and improve the performance of factories, workshops or production equipment.

The Proficy Historian solution is easier to implement and manage than the traditional historical database. Installation, configuration, and management of historical data collection with Proficy Historian requires very little work.

The automated configuration process can help identify and connect the underlying control system, and quickly configure and start data collection. By using the native interface, it provides a convenient connection with other systems, allowing the daily management of each distributed Historian subsystem to be completed in the central control room.



With the click of a button at a key process area with a failure, the video surveillance system automatically locates the field probe screen to that location to show the true information of the failure point

Reliable and real-time access to accurate information is an important part of improving productivity and production efficiency, speeding up the decision-making process and helping to reduce production bottlenecks.

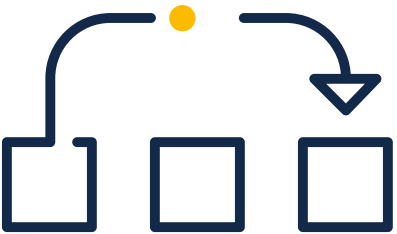
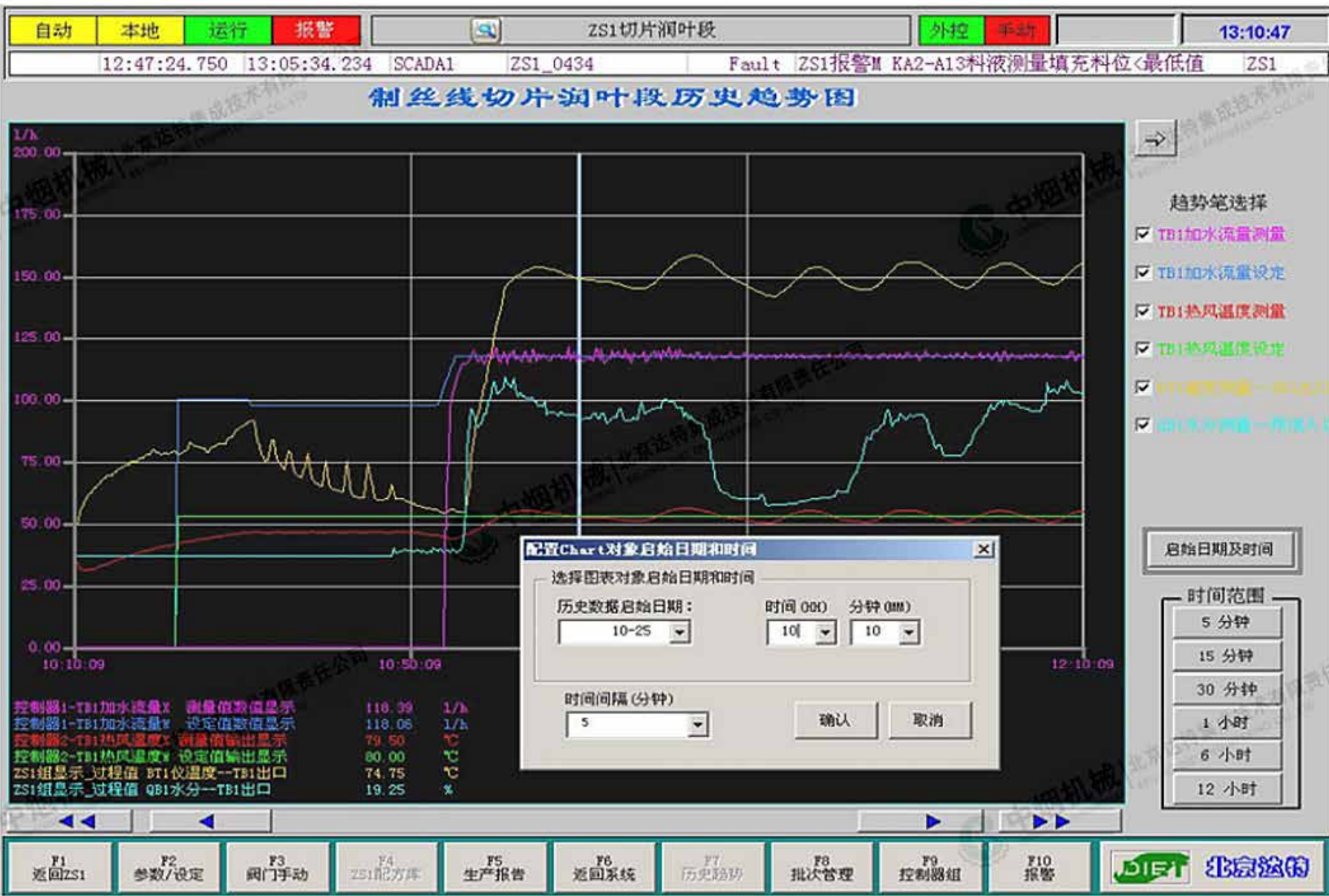
Using Proficy Historian's database and screen platform editing software, the solution can display the historical records of key process parameters and equipment operating status with trend charts and reports, providing timely and accurate quality evaluation and production status evaluation for process control for better lean control and smart scheduling. The historical curve window provides historical data analysis of important process data in a selected period of time such as 60 days, 90 days, etc.

Results

The centralized monitoring system for tobacco production line designed with GE Digital's Proficy software meets the diverse control needs of on-site users, improves production efficiency, and accelerates operator and management decision-making.

At the same time, the platform also has the powerful advantages of good scalability and strong integration for data collection and analysis.

Beijing Dart has deployed the application of this software solution in many cigarette factories and has won unanimous praise from users.





Global Tobacco Manufacturer Enables Just-in-Time Operations across 15+ Plants



Global Tobacco Manufacturer

Challenge

- Higher costs with multiple MES systems across global plants
- Need to improve visibility to support just-in-time manufacturing decision-making
- Need to improve efficiency, reduce costs, and improve quality

Products

- Proficy Plant Applications
- iFIX HMI/SCADA
- Proficy Historian

Achieving Just-in-Time Manufacturing

This large, multi-plant tobacco company sought to standardize its manufacturing systems and enable just-in-time decision-making across 15+ global plants.

Challenges included connecting to OPC and non-OPC compliant equipment, improving operational efficiency, reducing costs and boosting quality and throughput.

Meeting Growing Customer Demands

The company implemented GE Digital's Proficy Plant Applications, iFIX HMI/ SCADA, and Proficy Historian across 15+ plants, optimizing operations with the right data. Results include higher efficiency and less waste using the Proficy solution globally.



Results

- Maintain quality standards
- Deliver the right data for just-in-time decisions
- Identify causes of yield losses and production inefficiencies





Chinese Tobacco Products Manufacturer Increases Efficiency by 4%



Real-Time Visibility for Better Decision-Making

With GE Digital's iFIX HMI/SCADA, operators can leverage real-time visibility and control for better decision-making and take proactive actions that improve production. Additionally, the MES capabilities of Proficy Plant Applications have delivered clear insight and analyses to enable real-time decisions and improve overall efficiency, quality, and reliability of the process.

Manage Process Complexity While Optimizing Production

With the challenging mix of complex recipes/specifications and high-speed processes in tobacco products manufacturing, the Proficy solution is uniquely suited to collect and correlate high volumes of quality and event data—driving improvements. GE Digital's solution has enabled the manufacturer to act on critical process information to improve productivity and manage multiple new product introductions with optimized efficiency.

Challenge

Upgrade existing automation infrastructure to handle multiple product specifications and recipes. Improve overall quality, reliability and efficiency as more complex tobacco cutting, flavoring and blending processes were launched.

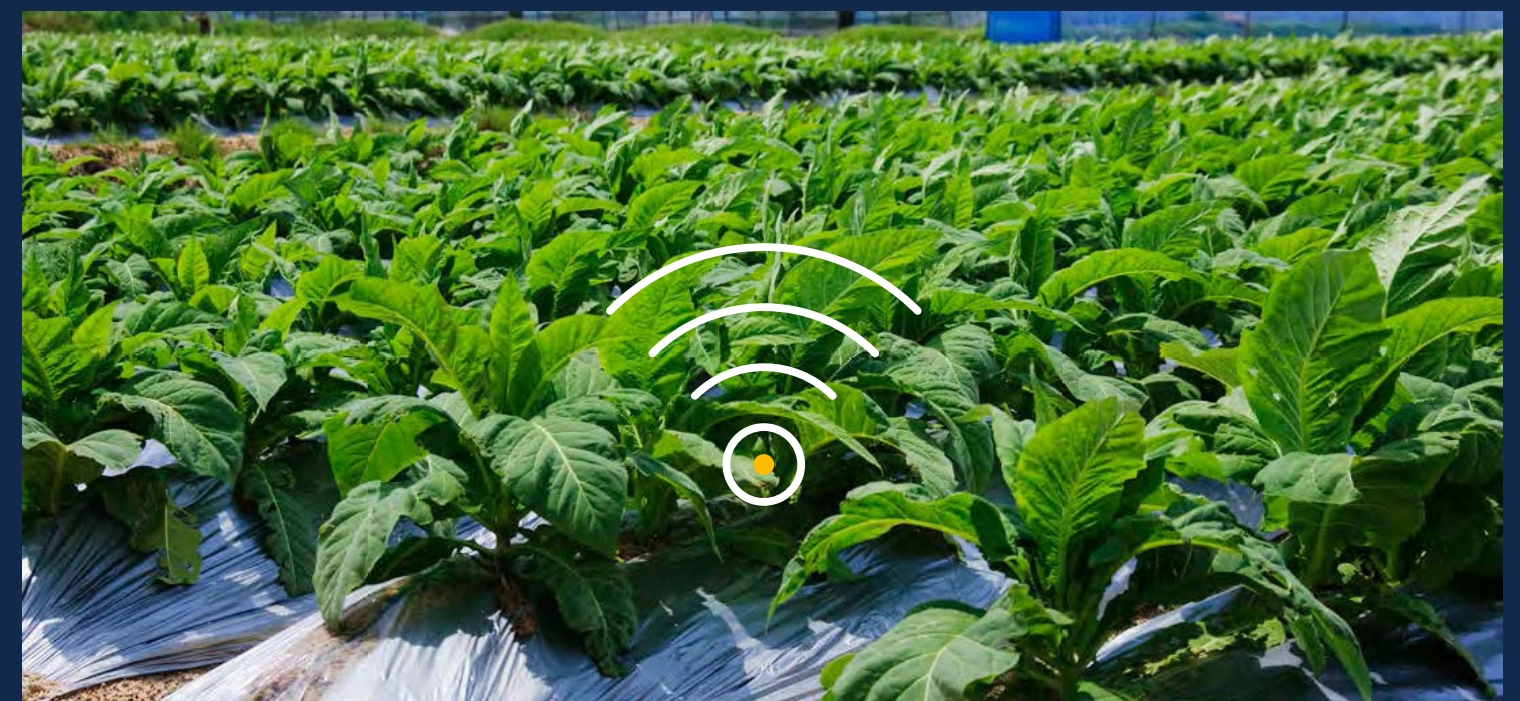
Products

- iFIX HMI/SCADA
- Proficy Plant Applications
- Proficy Historian



Results

- 4% increased efficiency
- 5% reduced raw material waste
- Increased flexibility with a single platform to manage multiple product recipes and specifications





Qinhuangdao Tobacco Machinery Co. Uses GE Digital's Automation for Large-Scale Complete Equipment Manufacturing



Monitoring and Control in Tobacco Production

Qinhuangdao Tobacco Machinery Co., Ltd. is a wholly state-owned subsidiary of the China Tobacco Monopoly Administration. It is the only large-scale complete equipment manufacturer directly affiliated to the tobacco industry that manufactures silk thread, threshing and redrying, and carbon dioxide expanded shredded tobacco. The enterprise was established in 1967 and was jointly invested and restructured by China Tobacco Machinery Group Co., Ltd. and Hebei Tobacco Company (later Hebei China Tobacco Industry Company) in March 2002.

Qinhuangdao Tobacco Machinery Co., Ltd. has cooperation with tobacco companies in almost every province of China.

Solutions

- Reliable monitoring and control with modern HMI/SCADA
- Alarm notification to improve uptime
- Real-time and historical data for trending and analysis

Products

- iFIX HMI/SCADA
- Proficy Historian
- WIN-911
- Industrial Gateway Server (IGS)





Tobacco Manufacturer Ensures Stability of Moisture Content with New Dryer Control System



Challenges

- This large tobacco products manufacturer needed to improve the stability of the moisture content in its cut tobacco.
- Increase quality and conform to specs
- Reduce costs while improving throughput

Results

- Enhanced productivity while reducing product costs
- Improved quality, helping to meet product standards
- Improved data access and visibility
- Accelerated operator response with modern screens, centralized visualization, and alarm management

Products

- iFIX HMI/SCADA
- Proficy Historian
- Proficy Webpace





Automation System for Tobacco Shred Production Line



Stability of the shred thread production automation and its reliable operation are key to ensuring quality.

Background

This major manufacturer's plant needed an automation system for a 5000kg/h tobacco primary processing line for its shred production. The aim of the shred production line is to resurge, charge, cut into shred, and dry the tobacco leaf and stem which has been processed in the stem-dried factory. Next, the processed tobacco shreds are blended and fragrance added in accordance with the product requirements. Finally, the shredded tobacco will be produced which is suitable for future tobacco products production.

Action

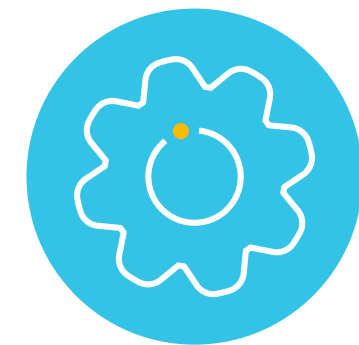
Automation Drives Operations

Using iFIX HMI/SCADA from GE Digital, the company's production includes six operating processing lines: online moisture regain processing line, leaf processing line, shred processing line, stem shred processing line, mixed stem shred processing line, and flavoring processing line.

iFIX provides monitoring and control of the production including the cut tobacco dryer control cabinet. Every operating line includes a main control cabinet, one to two field operator stations with iFIX, a distributed control box, and a distributed inverter. Additionally, operators can oversee operations from the central control room.

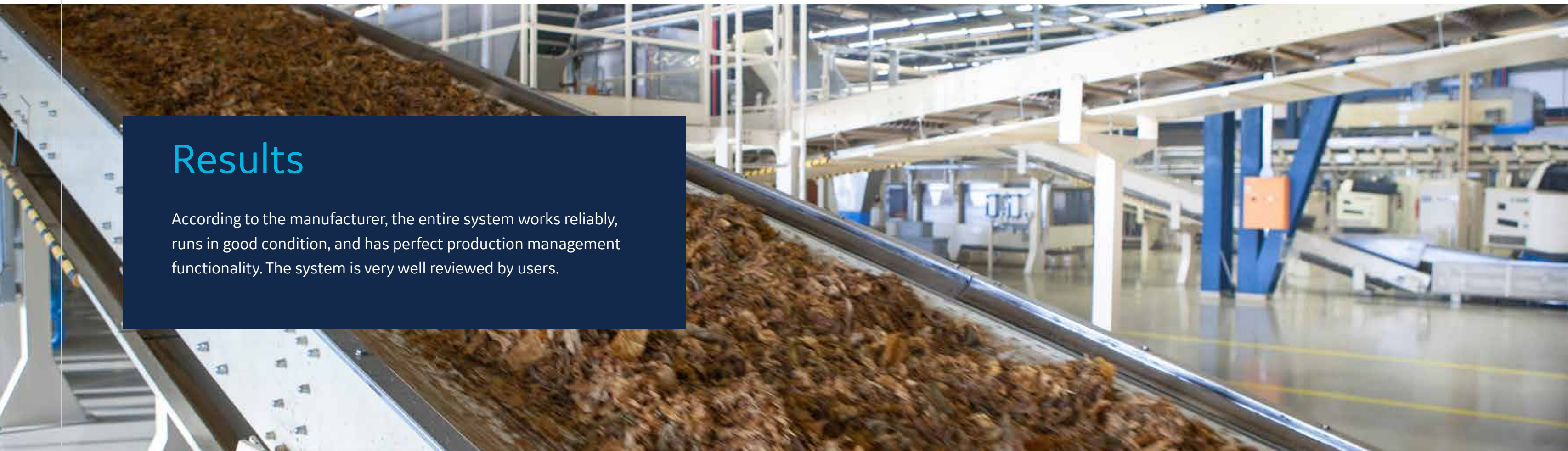
The central monitoring system comprises two sets of I/O server, one data server (fault tolerance), real-time database server (fault tolerance), management of application server,

Web publication server, and 6 monitors. The iFIX system uses a client/server structure to achieve monitoring, data acquisition and information management functions. The system sets up an engineer station to complete the programmed maintenance, system development and network maintenance. It also can communicate with other network or systems through external switch and routing equipment. The field operator stations use iFIX to realize equipment monitoring. It also can solve the problem of different I/O servers (in the central control room) failing at the same time which would lead production suspension.



Results

According to the manufacturer, the entire system works reliably, runs in good condition, and has perfect production management functionality. The system is very well reviewed by users.





Improving Tobacco Products Manufacturing with Sigma-Level Assessment and Optimization



Challenges

- This manufacturer sought to improve real-time quality control through Sigma-level assessment
- Time-consuming test processes
- Operators apt to make errors when estimating results

Actions & Results

- Adopted Proficy Plant Applications for real-time data collection and analysis
- Data storage uses Proficy Historian, collecting data every 6 seconds and carrying out the acquisition of frequency and phase for each tag point. Historical data is archived using GE's efficient compression algorithms
- Steady-state process control with digitization as the core
- Sigma level improved from 3.05 to 4.03 for higher quality and reduced raw material usage
- Key Performance Indicators (Complex Process Capability index)
- Solution includes: evaluation model management, data preprocessing, process standard management, silk workshop model management, roll package calculation model management, formula library management, results display, and more
- Calculates defect quality inspection statistical process, using the number of defects per million opportunities DPMO (Defects Per Million Opportunities) then synthesized according to the three-layer relationship of process, workshop, and enterprise





Pulp & Paper / Board

Pulp & Paper / Board

GE Digital's experience

- 100+ customers in the pulp & paper industry with hundreds of sites around the world
- Pulp & paper is our heritage. Former paper mill employees created Proficy Plant Applications with a thorough understanding of the industry's needs, and this innovation has continued.
- Long-term relationships: decades of experience
- Diverse: From equipment to processing plants



Pulp & Paper / Board

Form industry suppliers to diverse, multi-national manufacturers

Our customers:

- Manufacture pulp and paper products
- Process raw materials
- Build pulp/paper manufacturing equipment
- Process specialty paper
- Integrate equipment systems for both manufacturers and suppliers
- Develop automation/control systems
- And more ...



From the Pulp Mill Through to Packaging

Proficy has been implemented in pulp & paper operations from the pulp mill through finishing, converting, sheeting, and packaging.



Our paper mill implementations include:

- Production management, from raw materials to winder
- Schedule download from ERP
- Schedule execution
- Production tracking WIP management and reporting to ERP
- Product genealogy
- Order completion control and reporting to ERP
- Certificates of Analysis
- Downtime and broke loss tracking
- Grade specification and process recipe management
- Production reporting
- Quality management and reporting
- Process data tracking and analysis
- Efficiency / broke loss reporting

Functional areas covered typically include:

- Raw materials
- Coating makedown
- Stock prep
- Paper machines
- Re-reelers
- Coaters
- Supercalenders
- Winders
- Pulp and paper customers are applying Proficy to solve other applications as well, including environmental event tracking and reporting.



Skjern Paper Uses AI to Improve Product Quality and Reduce Waste



Skjern Paper, located in Skjern, Denmark, has always been ahead of its time.

The only paper mill in Denmark, Skjern Paper started production in 1967 with the idea of manufacturing paper exclusively from old newspaper, becoming an innovative leader in sustainability.

Today, Skjern Paper is owned by Buur Invest A/S and manufactures 75,000 tons of paper and board products each year from 100% recycled fiber.

The majority of its products serve end customers as:

- Cardboard cores in toilet rolls and kitchen towels
- Composite cans
- Cardboard in binders
- Solid board boxes
- Gift wrap paper rolls
- Sheet interlayers for pallet goods

The company's environmental and societal commitments extend to Circular Economy and membership in the UN Global Compact and its Nordic network.

Supporting its commitments to the environment and customers, Skjern Paper relies on innovation in its production. Using the latest technologies and processes, the company provides high quality, flexibility and just-in-time delivery to its customers – with delivery within 24 hours to most of Europe.

Recently, the plant manager at Skjern Paper looked to Artificial Intelligence (AI) and Machine Learning (ML) to take production to the next level.



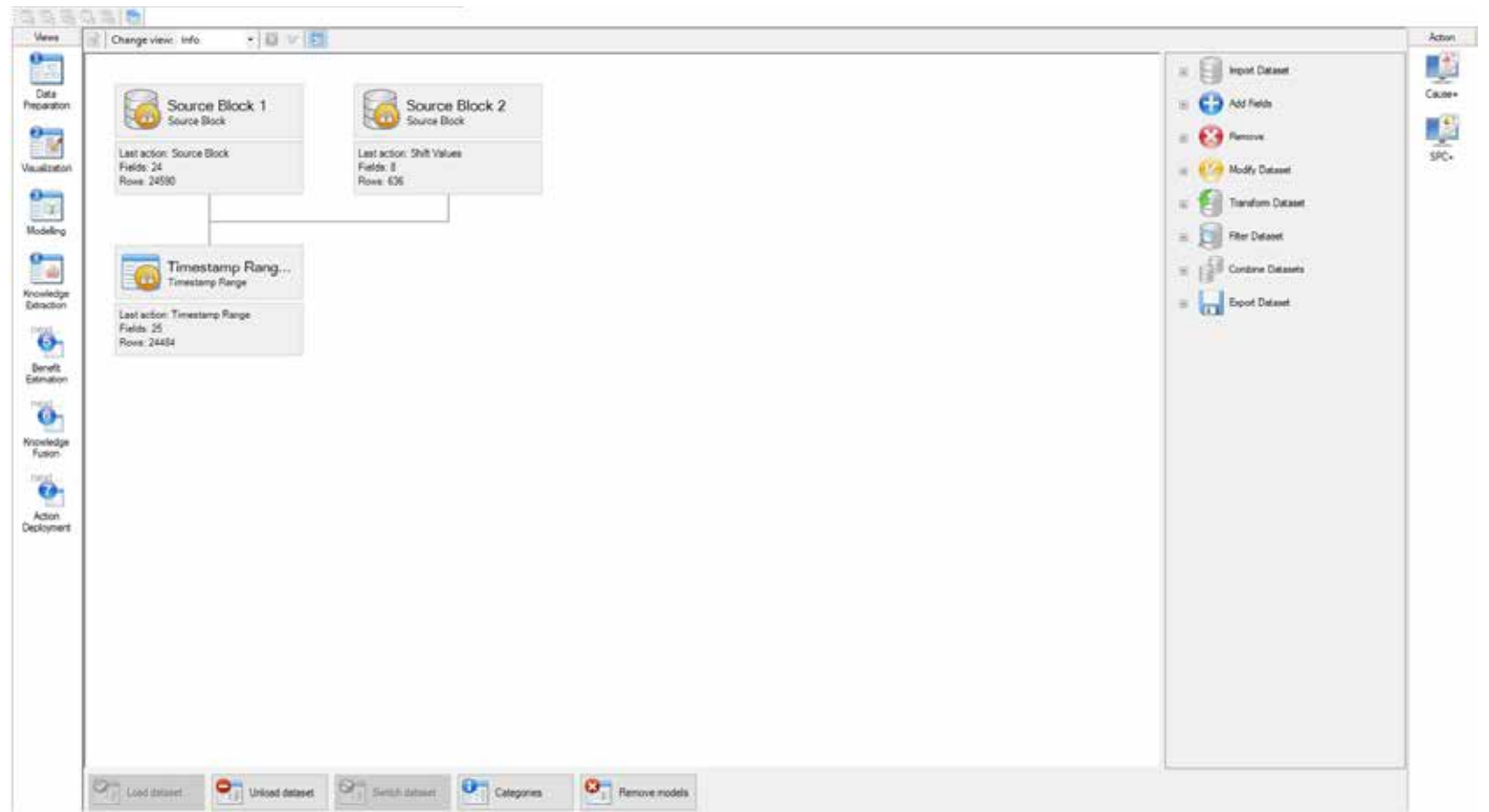
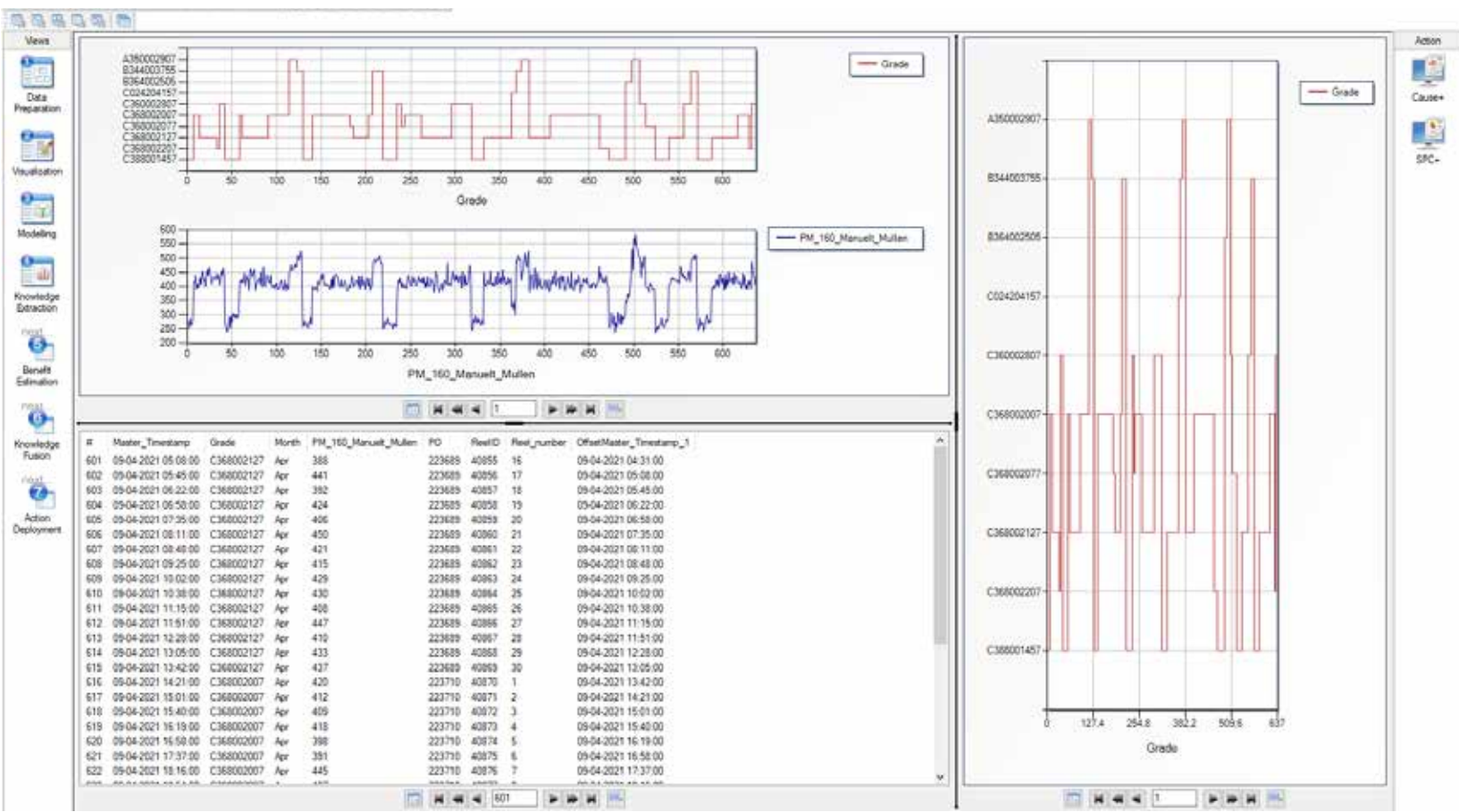
SKJERN PAPER

A Strategy to Leverage AI in Production

“I’ve been looking at the area of AI for some time,” explains Skjern Paper’s Technical Manager Erik Møller. “The industry has gained insight into improved efficiency using AI and ML. We decided to make digitization and production improvements through AI and ML part of our strategy.”

GE Digital partner, Novotek, introduced Møller to Proficy CSense, an industrial advanced analytics software package that predicts future asset and process performance. Møller was able to easily explore CSense’s technical capabilities through a series of YouTube videos and demos.

“Proficy CSense looked very user friendly,” Møller says. “I saw that it has the capabilities that we needed; the price was right, and GE Digital was willing to provide six hours of free consulting to help us get started. I was interested to see what possible production issues we could identify when using the CSense product.”

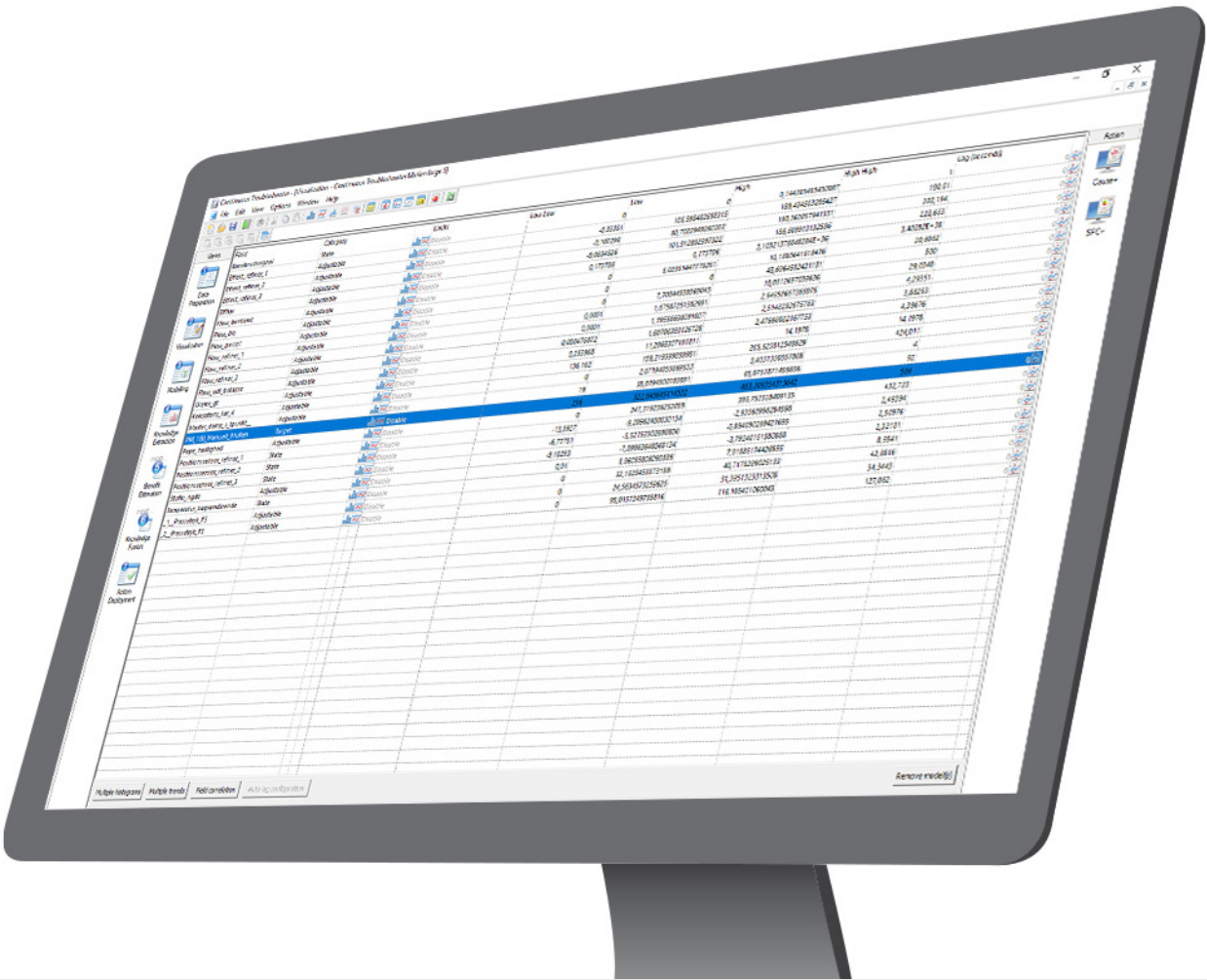


Accelerating an Initial AI Project

Paper plants have hundreds of PID control loops that can cause process variation and contribute to quality issues, if not maintained in a healthy condition.

At the same time, while Skjern Paper has extensive quality assurance systems, the team does not have many real-time ways to measure paper quality, making real-time quality control difficult. Operators would check quality samples for a whole reel of paper at the end of a production run, which involved a delayed lab analysis and the inability to adjust production earlier in the process.

With a goal of avoiding or reducing 5% of quality rejects, especially when switching between different products, Møller took advantage of free consulting with a GE Digital AI and ML expert to jump start the analytics project.



In six hours of consulting, Skjern Paper captured insights from the initial project. The team used Proficy CSense to:

1. Analyze: Used available data to discover causes of quality variation and rejects
2. Monitor: Monitored the health of PID control loops to reduce process variation
3. Predict: Created a predictive model from available data to predict product quality in real time, enabling real-time quality control to reduce quality rejects



Quality Prediction and Analysis: Paper Burst Strength

The team built a model in CSense around a quality parameter related to the Mullen burst strength of the paper. The Mullen Burst Test is an industry standard to measure the paper's physical strength and fiber bond. Skjern Paper has 20 data points inputting to the CSense model, which predicts the burst strength parameter.

Burst strength is a sensitive measurement, according to Møller, and a hard one to start with – however, even with that challenge, the team saw early predictive success.

“We built a rather fine model and compared data from the model with actual quality data later,” Møller explains. “It is not completely aligned but showing good results. I’m quite pleased with it.”

By examining data and applying the capabilities of CSense, Møller was able to discover possible causes of errors in the production line. When producing paper, manufacturers add dewatering chemicals. Møller discovered in the production process that they are producing scrap due to adding too much chemical to the pulp mix.

“The model provides instant feedback on the differences in the level of the chemical,” Møller says. “It was the error in the production. When we had problems with dewatering, we would add more chemical, but in this case, we can add less. We had thought that more chemical was better in the production, but we have new insight with CSense. Now, we can reduce the amount of chemical used and reduce scrap – which decreases our costs. It is a great capability that gave us benefit straight away.”

Quick Insight and Results

As the company moves from these initial insights and into production, operators will benefit from the real-time AI optimization.

This new insight from AI also supports the company's commitment to Circular Economy.

“When we finish implementing and adjusting the model, we will see a reduction in the scrap that we are producing,” Møller notes. “We will get an early warning when quality is changing, and the operator will get an early indication. The master plan is to have the indicators in the SCADA system. We will be able to solve the reasons for issues by using the CSense visualization.”

“Decreasing scrap and chemical usage and increasing production capacity through CSense are all ways that we are helping the environment,” Møller explains. “Also, as we use CSense more, we can gather data from the supply chain and optimize that way too. The capabilities are there, so it is just a matter of structuring the data and the model correctly.”

In summary, after just six hours of consulting, Skjern Paper was able to realize:

- 1. Analyze:** New insight was gained about how dewatering chemicals can affect product quality
- 2. Monitor:** It was then shown how Proficy CSense can be configured to monitor PID control loop health to detect suboptimal PID control loops early to avoid process variation
- 3. Predict:** It was shown how a predictive model can be created from available data and can be deployed to predict product quality in real time, enabling real-time quality control to reduce quality rejects and waste



Next Steps

While the initial project was about gaining some quick wins with a small model and realizing the potential of AI, Møller has a plan for next steps.

These include:

Taking the insights already learned and driving the realized process changes into production

- Constructing data that will lead to more insights
- Tackling downtime – starting with locking the data related to downtime, doing some manual manipulation of the data, then investigating how CSense can use that data
- Training additional team members on using CSense and having them take over from Møller’s foundation of work
- Build a model to gain insight into increasing capacity

Skjern Paper will also be implementing Proficy Operations Hub for main PID loop monitoring and visualization.

AI Recommendations and Insights

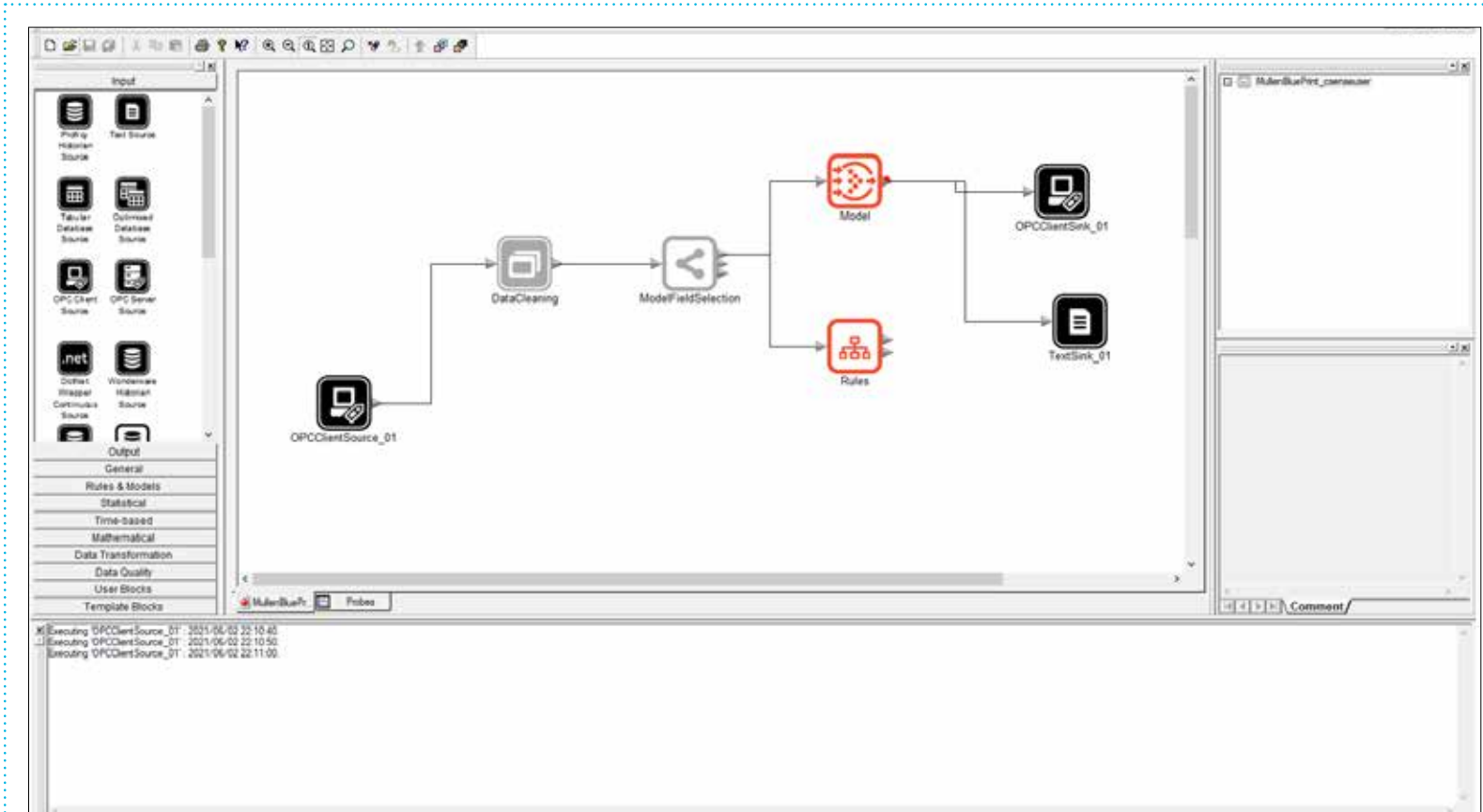
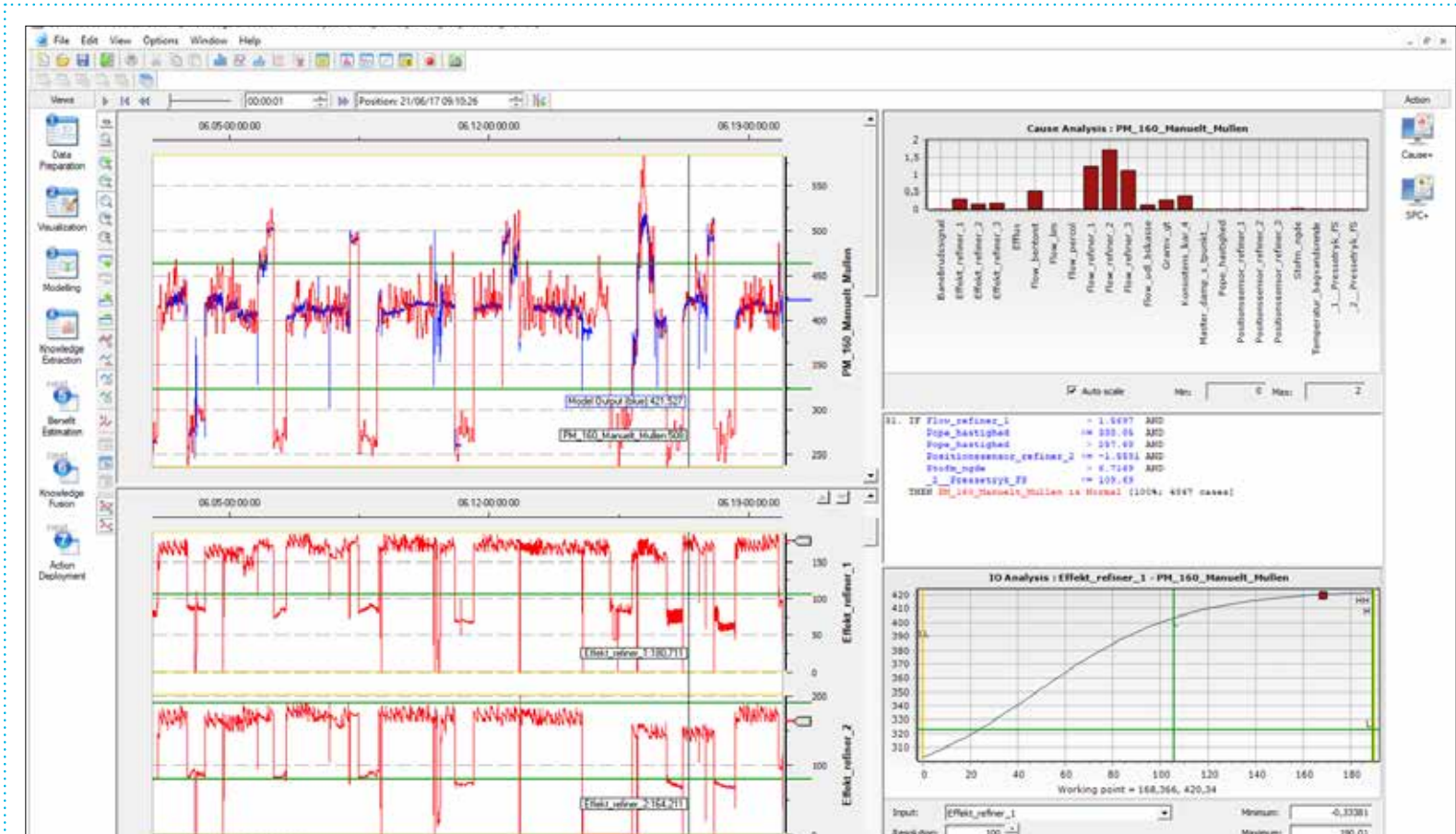
With its journey into AI, Skjern Paper is continuing its tradition of being at the forefront and ahead of its time.

What does the team recommend to other companies?

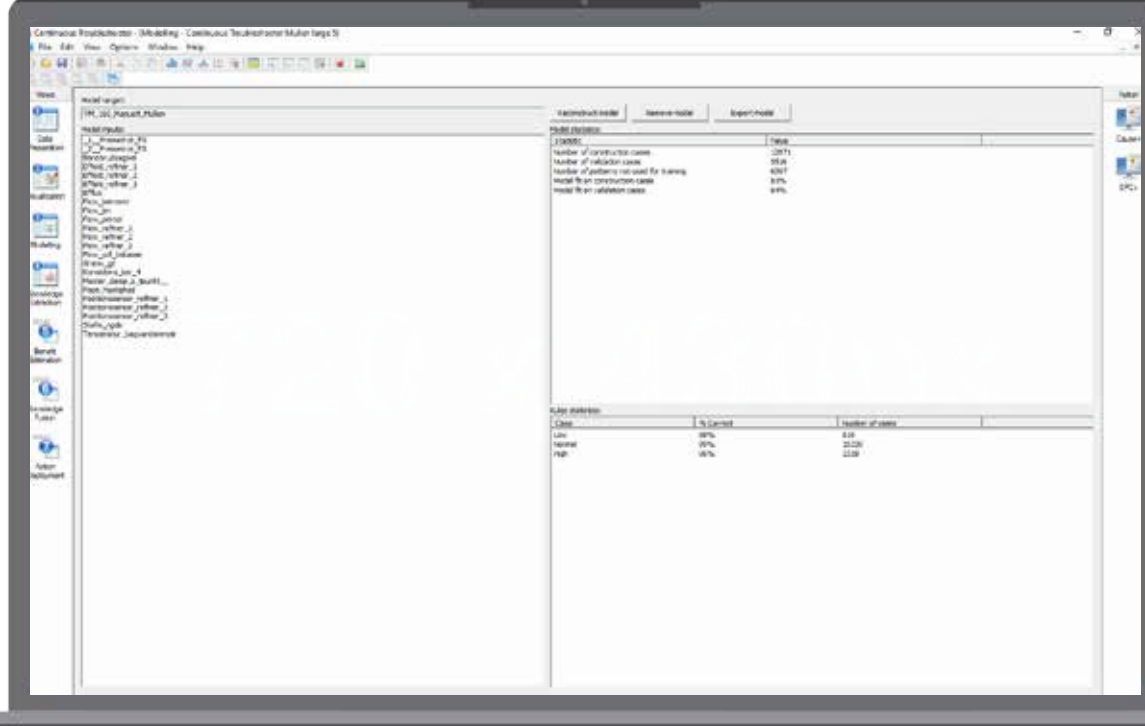
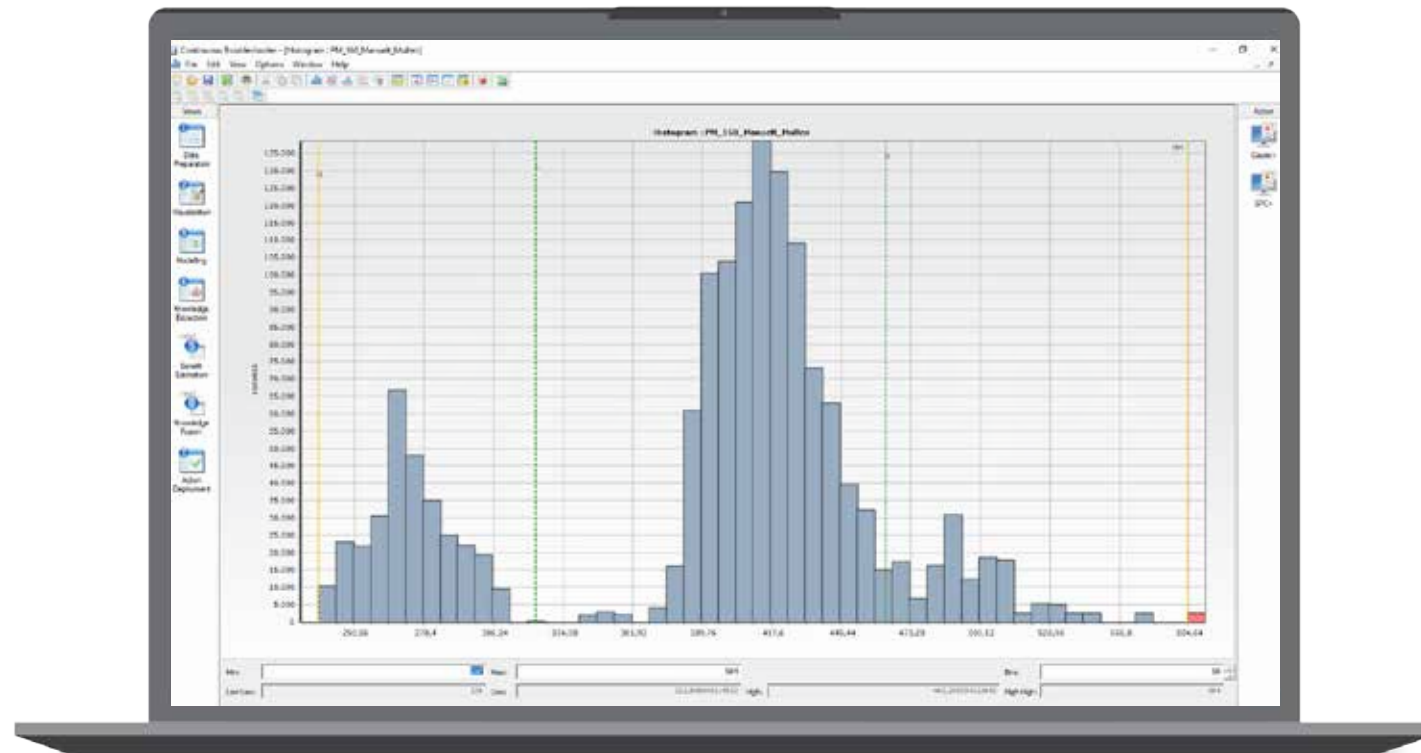
“I would recommend Proficy CSense to other companies,” Møller says. “Also, to proceed with AI, my advice is to start looking at how to get the dataset. We were quite lucky that I have been working with the data in the mill. The dataset that I have been producing is very compatible with CSense.”

Lastly, Møller foresees quick return on investment related to Proficy CSense. The team has already gotten valuable insights so far in a short time.

“The more we use the Proficy CSense software,” Møller concludes, “the more ways we keep finding to apply it. With AI, we can take production to the next level.”



Additional Examples



A software window titled "Continuous ProcessModel - Modeling - Continuous TestModeler Model Step 3" displaying model statistics. The window is divided into several sections: "Model origin", "Model results", "Model statistics", and "Model performance".

Model origin	Model results	Model statistics	Model performance
PM_10_MeanOff_Halfm	Model results	Model statistics	Model performance
Model results	Model statistics	Model performance	
Model statistics	Model performance		
Model performance			

The "Model statistics" section includes a table with the following data:

Model statistics	% correct	Number of cases
Case	90%	100
Train	90%	100
Test	90%	100





Neenah Paper Improves Quality with Proficy Software



For more than 100 years, Neenah Paper has been a market leader in specialty papers for premium writing, text, cover, digital, packaging and label applications.

At Neenah Paper, quality standards are of utmost importance. They use GE Digital's Proficy Plant Applications to ensure quality in their manufacturing. They verify and test the caliper, which is the paper's thickness, along with the porosity and weight, among others. If the paper is not up to specification, they do not ship it to their customers.

With GE Digital's Proficy Plant Applications Quality module, Neenah Paper's operators and the Quality Assurance Department are able to visualize the data. If something is out of specification, an alarm will notify the operator.

IT's role at Neenah Paper is to provide support to the business, focusing on software systems that can improve their operational performance. By harnessing the power of Neenah Paper's data, they can help with continuous improvement.

Garrity explains how he wants to take the manufacturing process to a different level and provide business users with the ability to get the data on their mobile devices, so they can make decisions anywhere. He reached out to GE Digital's partner AutomaTech to help with this project. He says that he values their customer service, professionalism, and expertise.

WATCH VIDEO

Results

- Ensuring quality in manufacturing
- Increased visibility for continuous improvement
- Information anywhere, anytime to support decision making

Products

- Proficy Plant Applications
- iFIX HMI/SCADA
- Proficy Historian

About AutomaTech

[AutomaTech](#) is a leading provider of industrial technology solutions focused on improving your operational performance. By harnessing the power of data, we enable significant gains, visibility across your entire organization, and increased profits for a competitive edge. Our product offering includes a flexible and scalable mix of hardware and software solutions to solve your toughest challenges while providing a roadmap for future improvements and growth.

"Software in manufacturing helps us out for decision support. We do need quality and timely data to understand how our product is performing and if our customers are satisfied."

—James Garrity - Senior IT Analyst, Neenah Paper





Mohawk Fine Papers

Production management at acquired paper mill unlocks company-wide gains



Mohawk Fine Papers

Challenge

Needed to improve order entry and scheduling, interface seamlessly with existing systems, and provide the agility to support changing grades on its paper machines, including several times a day, to maintain nimble customer response

Action

Long-term user of GE Digital's Proficy Plant Applications including Production, Efficiency and Quality modules – as well as Proficy Historian.



Michael Cargioli, Mohawk Fine Papers' director of Ohio operations, gets up-to-the-minute reports and metrics on every key parameter important to him, including output, downtime, energy usage, and chemical consumption.

Results

- Documented savings of \$4 million in just one year
- \$1.25 million in savings from a waste reuse application
- Less variability in production
- Reduced downtime and “broke” by tracking key parameters
- Detailed reports for better decision making on electricity usage, steam consumption, and other significant costs



\$4 million
in savings in one year



David Krupp, Enterprise Manufacturing Systems Manager, Mohawk Fine Papers

"We reuse waste more consistently, but also see less variability in production."



Appvion

Integration boosts quality and productivity

Reprinted with permission from Control magazine



Papermaker demonstrates the value of quality information integrated in real time

“Integration is the key to quality,” began Bob Nelson, plant IT manager at papermaker Appvion, in a presentation at a GE user conference. “We make better paper because of it.”

Data is connected in real-time from the company’s J.D. Edwards ERP system, through its GE Proficy quality management software, its process historian, and plant-floor automation and inspection systems.

“None of the information is keyed in,” Nelson noted. “It’s all automatic and it’s all integrated.”

But Appvion’s quality management system wasn’t always so seamless. Indeed, a customer with a real-time machine vision system had been finding defects that Appvion had missed, Nelson said. “We inspected only the end of the roll, but the customer could see the defects anywhere in the roll. To up our game, we purchased a web inspection system and integrated it into our quality system.”

The inspection system now detects pin holes, streaks, insects and other defects in real time.

“Now we have more than a quality system. It is a quality assurance and product disposition system.”

— **Bob Nelson, Plant IT Manager, Appvion**

For example, the integrated system also facilitates regulatory compliance, such as volatile chemicals reporting.

“We use product summarization and web reporting, and Proficy is the integrator piece. It pretty much integrates all the systems that run the plant.”

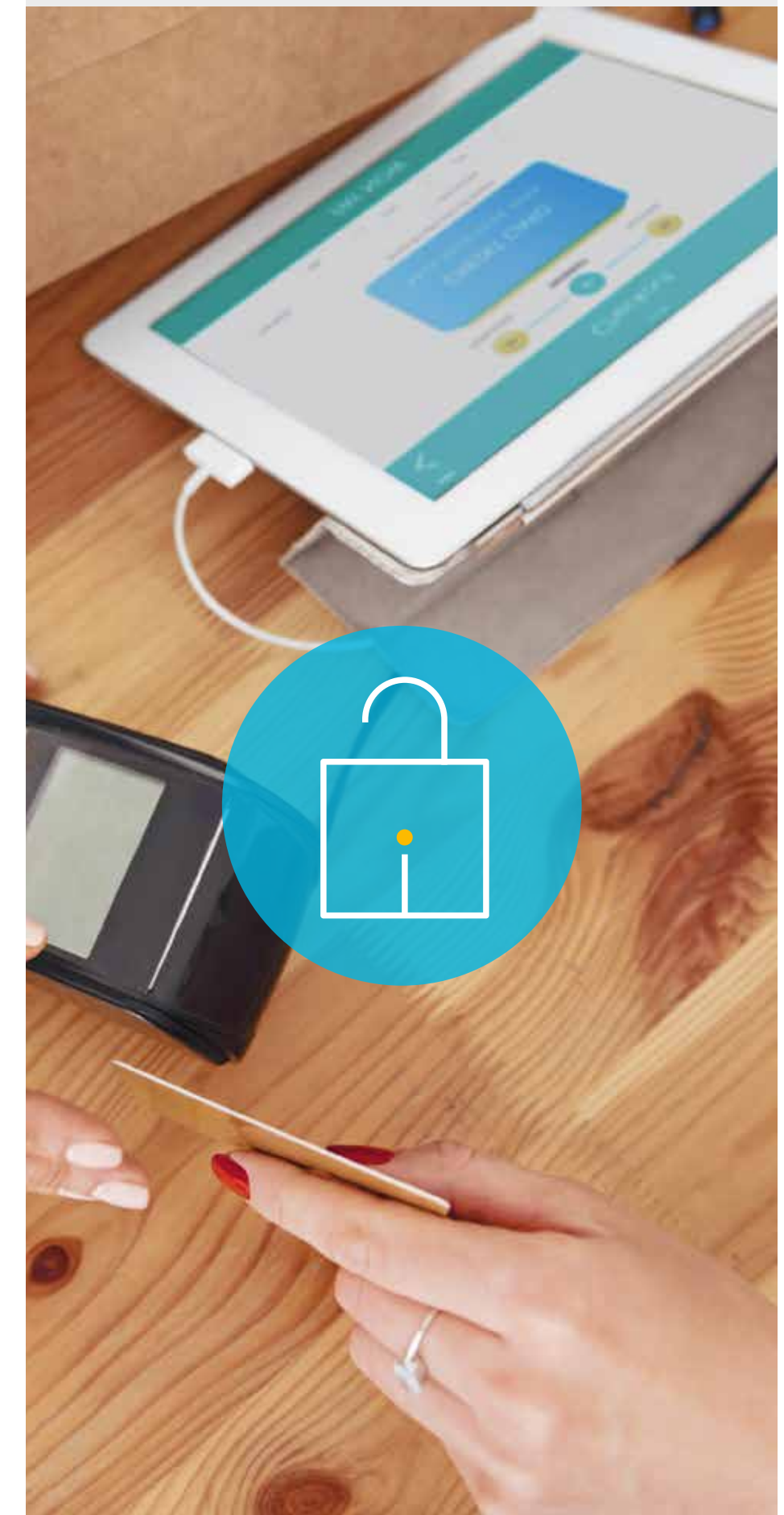


“Integration is the key to quality. We make better paper because of it.” Appvion’s Bob Nelson discussed the central role that GE Proficy software plays in maintaining the company’s quality standards.

“It was a large amount of data, but we can now keep all the quality information for a particular roll in one location.”

— **Bob Nelson**
Plant IT Manager, Appvion

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Leading Timberland & Wood Products Company

Improving quality and throughput across 15+ plants



Leading Timberland & Wood Products Company

Challenge

This large, multi-plant timberland and wood products company sought to modernize their operations, including how they visualize and analyze data.

Challenges included connecting to older equipment, optimizing track and trace, and boosting quality and throughput, in conjunction with Operational Excellence.

Action

Long-term user of GE Digital's Proficy Plant Applications including Efficiency, Production and Quality modules – as well as iFIX HMI/SCADA and Proficy Workflow. Various deployments at 15+ plants.

Results

- Improved quality of processed wood products
- Increased speed of production / throughput
- Supported Operational Excellence program goals

HMI/SCADA, MES | Americas

Improving quality and throughput across 15+ plants





Millar Western

High-Speed Data Acquisition System with CIMPLICITY HMI/SCADA Yields Impressive ROI

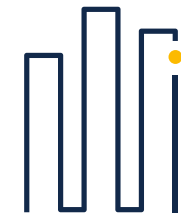


Challenge

Needed a reliable way to monitor the hydraulic slab pulp press, so they could better maintain it. Insufficient information resulted in difficulty diagnosing problems on the large, complex hydraulic machine. The team had ideas on how to improve performance but, in order to prevent too much stress on the hydraulics, couldn't test theories without more details on the machine's performance.

Action

With GE's partner Binnington Development Corporation, implemented a high-speed data acquisition system for machine optimization and maintenance, featuring CIMPLICITY HMI/SCADA. The system collects 60 samples per second, providing an in-depth look at equipment operation



Pulp & Paper | Americas

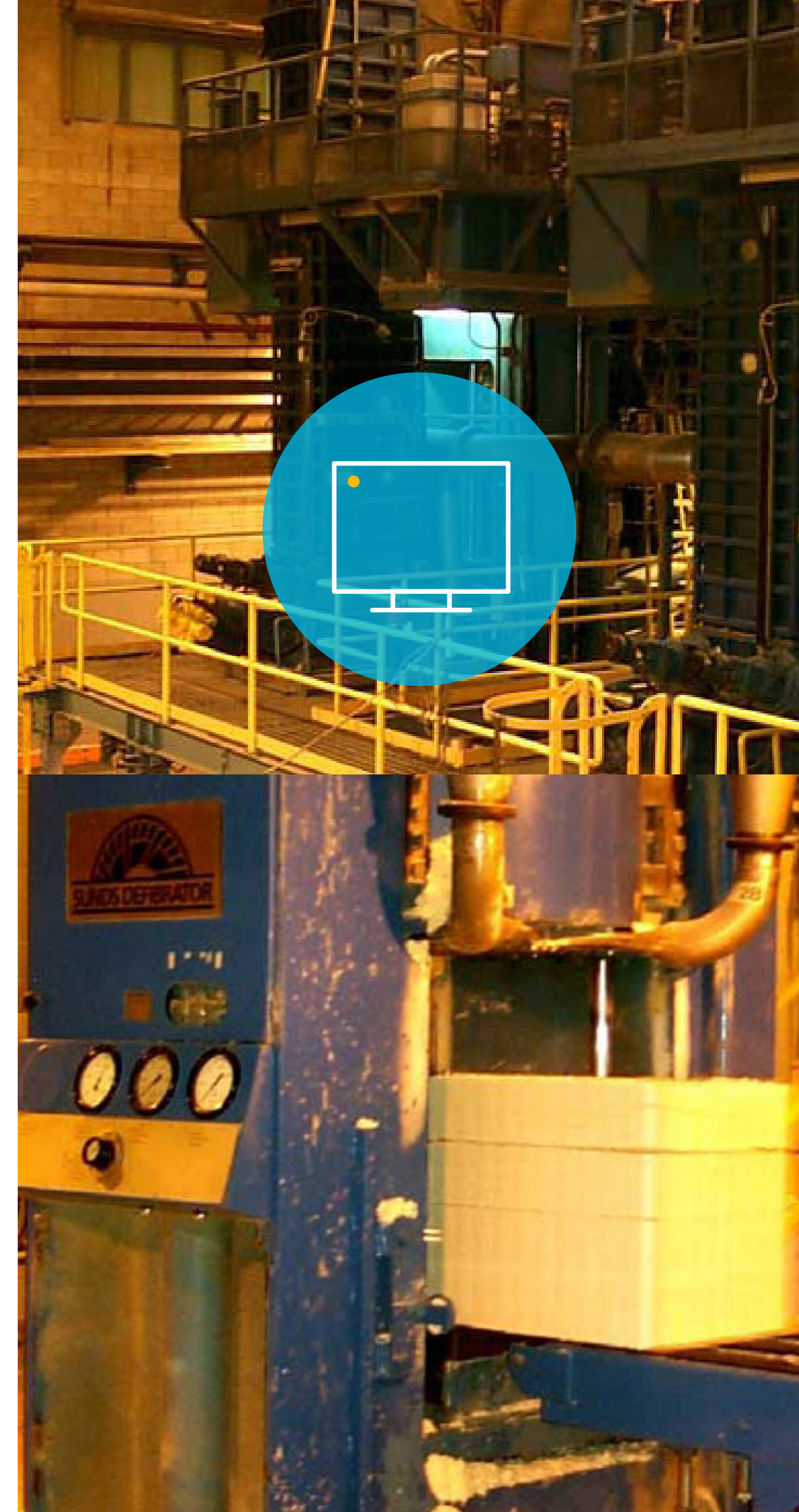
10% increase in throughput

Results

- 10% increase in throughput
- Estimated payback of \$15,000 per day in productivity
- 25% less cost to implement than other quotes

"We have realized a 10% increase in throughput with minimal alteration to our machine, resulting in an estimated \$15,000 per day ROI."

Rod Savoy, Electrician, Millar Western Forest Products Ltd.





Paper & Groundwood Specialties Manufacturer with 10+ plants

Reducing operating costs with remote monitoring & control



Paper & Groundwood Specialties Manufacturer with 10+ plants

Challenge

- Expensive downtime due to troubleshooting operations across 10+ manufacturing and hydroelectric plants
- High costs of travel with plants in remote locations
- Lack of standard automation across plants

Action

Standardized on GE Digital's CIMPLICITY HMI/SCADA with visibility from the equipment, plant and enterprise levels. Ability to remotely monitor, troubleshoot, control, and report.

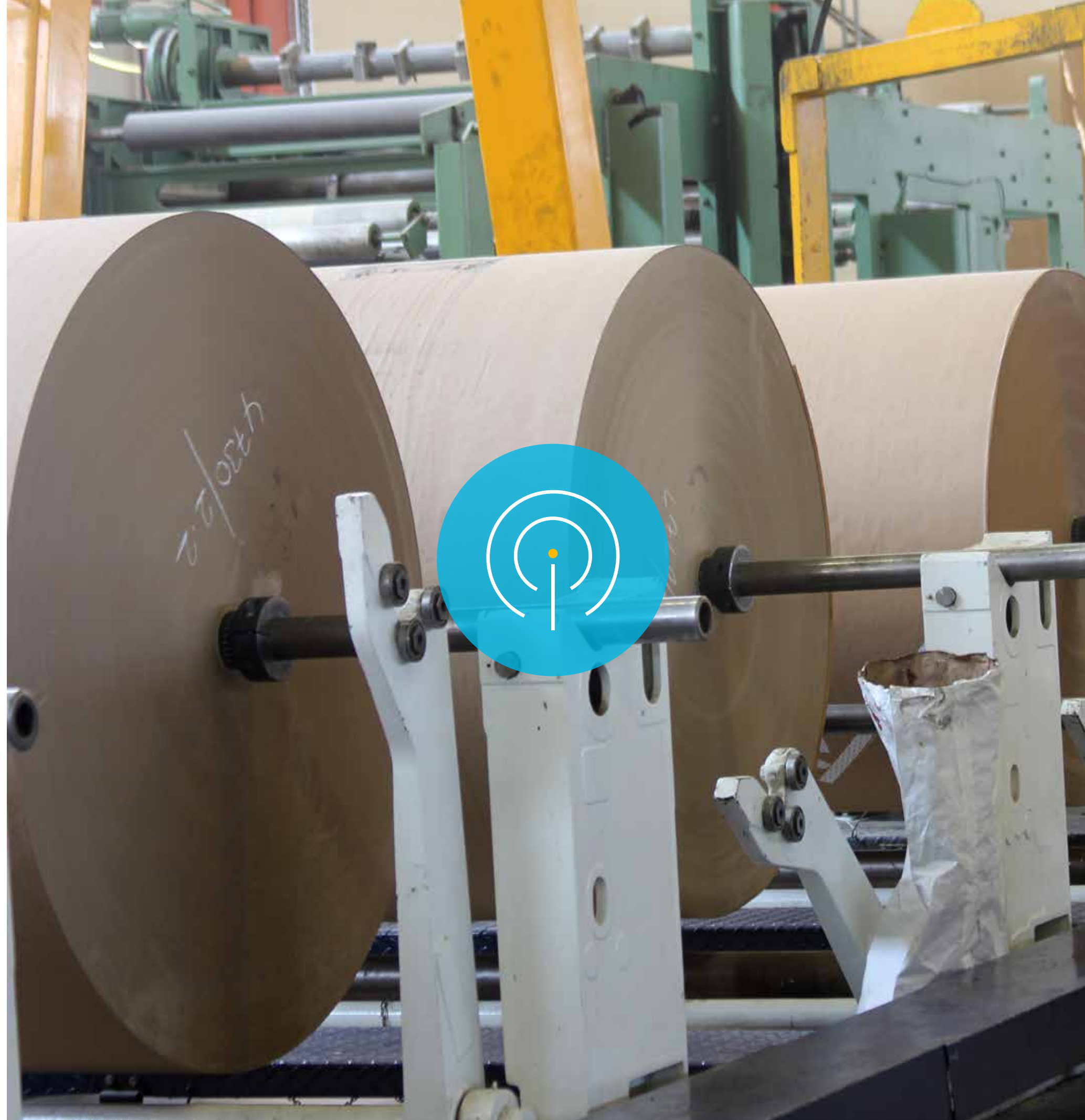
Results

- Lower operating costs
- Reduced downtime
- Simplified troubleshooting with increased data, visibility, and remote monitoring and control
- Significantly decreased travel costs due to alarms
- Enterprise-wide communication



Pulp & Paper | Americas

Paper Company Reduces Operating Costs with Remote Monitoring & Control





Crane Currency

Specialty paper manufacturer saved from potential financial disaster caused by 0.1 mm problem



Overview

Crane Currency, a Crane Co. company, is a fully integrated supplier of secure, durable and well designed banknotes for central banks all over the world. A pioneer in advanced micro-optics technology, Crane Currency provides a wide range of engaging visual effects in features that increase the level of security and public trust in banknotes.

Challenge

Crane was engaged by a customer to produce a new banknote to prevent digital replication and combat counterfeit issues. By introducing micro-optic security features, they will help the customer stay ahead of counterfeiting and future-proof the notes for years to come.

"AutomaTech provided really strong, effective training to help us understand the products we were using. That consultative relationship was really helpful to fix our problem and get us back on track."

Jim Schneider, Senior Manager, IT Services, Crane & Co.

During the initial printing process, Quality Control discovered a production defect, which nullified a portion of the product. Upon investigation, Crane realized that the specialized design of this banknote was causing the paper to misalign when hitting a roller during the production process. This caused random occurrences of the imperfection.

In order to complete production and meet their deadline, Crane needed to quickly analyze this highly automated, fast-moving process to determine why the defect was occurring.

Solution

Proficy Plant Applications captured data points created during production – allowing Crane to ensure the paper was being cut and printed correctly.

GE Digital partner AutomaTech worked with Crane to build numerous product and process trials and scenarios – using GE Digital's Proficy Plant Applications and Proficy Historian solutions to gather and analyze data. With thousands of MES implementations around the world, Proficy Plant Applications automates and integrates information-related activities for managing production execution and optimizing performance.

Armed with detailed reporting, AutomaTech helped Crane determine the root cause of the defect, enabling them to implement changes and eliminate the problem. Crane was able to configure Proficy Plant Applications to provide real-time trends, statistics, and notifications of the process to help reduce rework and avoid errors.



Results

Crane quickly implemented a process change to eliminate the problem and was able to complete the order with no further errors. AutomaTech provided additional training to Crane's process engineers exposing them to additional features and benefits of the Proficy Plant Applications software.

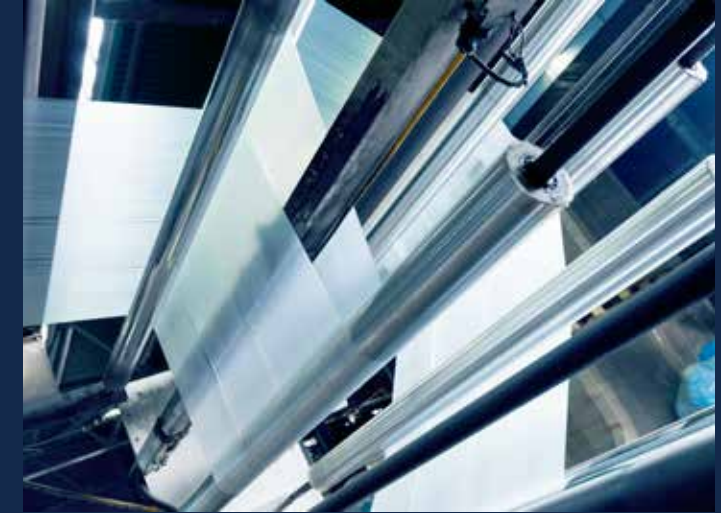
Using Proficy Plant Applications, Crane was able to reduce costs and improve agility of their discrete process. In the future, this MES solution will provide them with real-time visibility and deep operational intelligence to quickly address any issues before they become a larger, more costly problem.

Crane successfully delivered the product to their customer while avoiding revenue loss.

About AutomaTech

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Plastic Films



Toray Plastics (America), Inc. Optimizes Manufacturing Operational Performance with Big Data Analytics

World leader in high-performance films and other products



Background

If you've ever indulged in a bag of chips or munched on a breakfast cereal bar, then you're probably more familiar with Toray Industries than you think. Toray Industries, Inc. is behind the manufacturing of many of the shiny metallized packages that protect a variety of food products, from snack food to cookies, prepared meals, candy, crackers, and granola bars. Toray Industries—headquartered in Tokyo, Japan—is the world leader in high-performance films, synthetic fibers and textiles, carbon fibers, plastics, chemicals, and pharmaceuticals. Today, the organization operates 254 facilities in 26 countries with more than 45,000 employees—with annual sales exceeding \$19 billion.

Toray Plastics (America), Inc., an American based subsidiary of Toray Industries, is responsible for manufacturing the Torayfan Polypropylene Film, Lumirror Polyester Film, and Toraypef Olefin Foams across its Rhode Island and Virginia facilities. Within its facilities, Toray Plastics operates through a bi-modal approach—a combination of standard operations mixed with agile and cutting-edge techniques—that is fueled by technology. With a keen focus on lean activities, the company's strategy goes beyond the standard “mode one” of keeping a business up and running. Instead, Toray Plastics consistently strives to integrate innovation, creativity, and experimentation into all of its processes.



Keeping it fresh

The diversification of today's “food-on-demand” culture has led to an increasing need for keeping food products safe and fresh for extended periods of time—all while preserving its original flavor. Consumers expect their food products to maintain a relatively long shelf life without compromising quality. And as a result of this growing demand, Toray Plastics was faced with producing better food packaging film than ever before.

Food packaging film is composed of very unique components for protecting against oxygen and water, and producing these films is no easy task. It requires very tight production processes that are examined with the utmost scrutiny to ensure the highest quality. So, in order for Toray Plastics to meet its vision to remove waste across the organization and remain competitive, the company implemented a new integrated system that allowed it to monitor its film manufacturing much more closely to ensure exact quality standards in every unit.

Results from GE Digital Solution

- Over \$7 million in cost avoidance per year
- 37 siloed systems eliminated
- Best practices driven across divisions
- Removed costly manual processes and limitations – example, product traceability in seconds versus hours



Undergoing a digital transformation

Don M. Cormier, Vice President of U.S. Information Systems and Quality Assurance for Toray Plastics, knew that the company needed to change its processes in order to remain an industry leader. By embracing its bi-modal approach, Cormier geared up to accelerate innovative "mode two" through digitization. He sat down with his fellow executives to establish a holistic vision for Toray Plastics. The vision was simple—to drive extreme efficiencies out of its assets by becoming standardized, simplified, integrated, and secure. In order to make this vision possible, Cormier teamed up with various business groups within the company to conduct a robust discovery. This discovery phase was intended to reveal current hurdles each business group was facing, and to identify the gaps in information or operational siloes that caused these problems to exist.

Once these problems were identified, the hunt for the right data-driven solution began. Cormier and his team developed a criteria list to evaluate various commercial off-the-shelf MES solutions. And after performing various in-depth assessments amongst 20 vendors, GE Digital and AutomaTech, a GE partner, were chosen as the right organizations to meet Toray Plastics' needs—with Manveco providing support and implementation services during this transition.

We found that as the years went on, we were collecting more and more big data. And we were able to utilize a lot of tools from GE Digital to analyze that data and turn ourselves into an algorithmic-type organization.

Don M. Cormier, Vice President, U.S. Information Systems and Quality



Data-driven operations

Keeping high-quality film production at the heart of its operations, Toray Plastics started leveraging Proficy Plant Applications from GE Digital, part of the Proficy Smart Factory suite. As an on-premises solution, Proficy Plant Applications allowed Toray Plastics to collect real-time data directly from edge devices and assets for critical key performance indicators, as well as perform batch analyses to optimize operations. Proficy Plant Applications enabled operators to oversee manufacturing on a more granular level and reduce the production of defective film (first pass quality), which improved overall equipment effectiveness, quality, and reduced material waste, thus helping to increase efficiencies and decrease costs.

Toray Plastics also tightly integrated Proficy Plant Applications with its SAP software, which made it extremely cost effective and scalable globally. The two systems continuously pass about 30,000 pieces of information a day between one another—covering everything from inventory status to bill of materials, customer specifications, and production order status. This alignment between GE Digital and SAP allowed both systems to utilize the same number of assets and labor while significantly increasing productivity.

In addition, Toray Plastics began managing production with a “by-the-numbers” philosophy. This philosophy focuses on having accurate and visible measurements across operations to mitigate issues and allow better decision-making.

By implementing other edge solutions—such as iFIX from GE Digital and Proficy Workflow from GE Digital, Toray Plastics utilized data-driven information to gain visibility into potential production interruptions and downtime. Toray Plastics also leveraged Proficy Historian from GE Digital to optimize asset performance through its data archive and reporting capabilities. The company further developed its by-the-numbers approach by creating a downtime dashboard—which tracked each line by shift, downtime percentage, and cost of downtime—to better align plant floor metrics to executive level goals.

And it paid off. Toray Plastics yielded some big results, such as significant savings in film recovery, increase in film productivity, and improving uptime. Toray Plastics also drove significant quality improvements by decreasing the amount of time for product traceability as well as lowering film defective rate.

“We further developed our by-the-numbers approach by creating a downtime dashboard—which tracks each line by shift, downtime percentage, and cost of downtime—to create friendly competition amongst factory operators and encourage production efficiency improvements”

Don M. Cormier, Vice President, U.S. Information Systems and Quality Assurance



Moving to the next level

So, what's ahead for Toray Plastics? Chris Roy, Senior Vice President and General Manager of Toray Plastic's Torayfan Division, continues to play an instrumental role in accelerating Toray Plastic's digital transformation. He believes that continuing the momentum for improving efficiency, effectiveness, and responsiveness will help sustain the company's competitive edge in the market.

Being a digital industrial company that prides itself on innovation, Toray Plastics is looking to continue its digitization journey by leveraging artificial intelligence (AI) to transform its continuous processing operations. This will enable the company to generate more predictive analytics through placing sensors on machine assets to forecast process failures.



Proficy Plant Applications from GE Digital, part of the Proficy Smart Factory suite, has allowed Toray Plastics to maintain its high-quality control standard and keep each machine running smoothly.

The company is also continuing to work with GE Digital's Advisory Services to uncover which business outcomes will be the most critical to their Industrial Internet of Things (IIoT) initiatives.

By utilizing an edge-to-cloud solution with GE, the operating system for the Industrial Internet, Toray Plastics will be able to collect condition, material, quality, and machine processing data in real-time. Capturing this data will create a high probability for correlating asset, process, and product information through machine learning and algorithms—and successful execution could reap significantly more per year to the Torayfan division's bottom line.

"By implementing GE Digital's iFIX HMI/SCADA and Workflow products, we were able to utilize data-driven information to gain visibility into potential production interruptions and downtime. This improved visibility allowed us to identify problems and their causes quickly, and prevent mistakes from happening, which ultimately led to reduced downtime and increased productivity. GE Digital's HMI/SCADA software products provided a strong foundation for our digital transformation journey"

**Don M. Cormier, Vice President,
U.S. Information Systems and
Quality Assurance**

Toray Plastics drives production efficiencies through edge solutions within GE Digital's Proficy suite:

- iFIX provides operational visibility to enable better decision making
- Proficy Workflow drives more consistent operations with dynamic electronic formats
- Proficy Plant Applications optimizes operations and ensures product quality with real-time data
- Proficy Historian helps improve asset performance and production through data collection and aggregation



Major Plastic Films Manufacturer

25% reduction in downtime through cloud-based analytics



Major Plastic Films Manufacturer

Challenge

The company produces a variety of engineered plastic film products for various industrial and commercial uses - each use and customer has its own specifications and corresponding ideal operating line conditions.

Action

The manufacturer further looked to leverage predictive technologies and added Proficy Operations Analytics to the mix – using GE Digital's Predictive Operations Center to pull in data from multiple disparate data sources, monitor over 400 measures of line stability, and leverage machine learning to continuously predict top potential causes of line instability and film breaks in real time.

Result

- 25% reduction in downtime
- 15% increase in uptime
- \$500k in savings annually
- Real-time response to line instability issues



Cut Downtime with Predictive Analytics





About GE

GE (NYSE: GE) is the world's Digital Industrial Company, transforming industry with software-defined machines and solutions that are connected, responsive and predictive. GE is organized around a global exchange of knowledge, the "GE Store," through which each business shares and accesses the same technology, markets, structure and intellect. Each invention further fuels innovation and application across our industrial sectors. With people, services, technology and scale, GE delivers better outcomes for customers by speaking the language of industry.

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