



ABB in tissue

## Unique challenges



From consumer requirements to the manufacturing process, the challenges facing tissue producers can be significantly different from those faced by other papermakers.

Tissue production is an especially demanding process. Whether it's energy, resources, capital or assets, tissue makers are constantly challenged to meet demanding requirements. Finding a supplier that thoroughly understands the elements involved in tissue production is critical to succeeding in today's tough business environment.

Tissue manufacturers compete in a consumer-driven market. Customers demand softness, strength, absorbency, value and a pleasing look in their tissue products – and all of these factors impact manufacturing and converting processes.

ABB understands the unique and ever-changing environment that tissue producers face. We are committed to providing superior products that will improve product quality and mill productivity, while reducing process upsets and waste.

You have unique challenges. We provide innovative solutions that help you meet even the most stringent customer demands.

# Unique solutions



ABB is the only full service automation supplier dedicated to R&D, manufacturing and service for the pulp, paper and tissue industries.

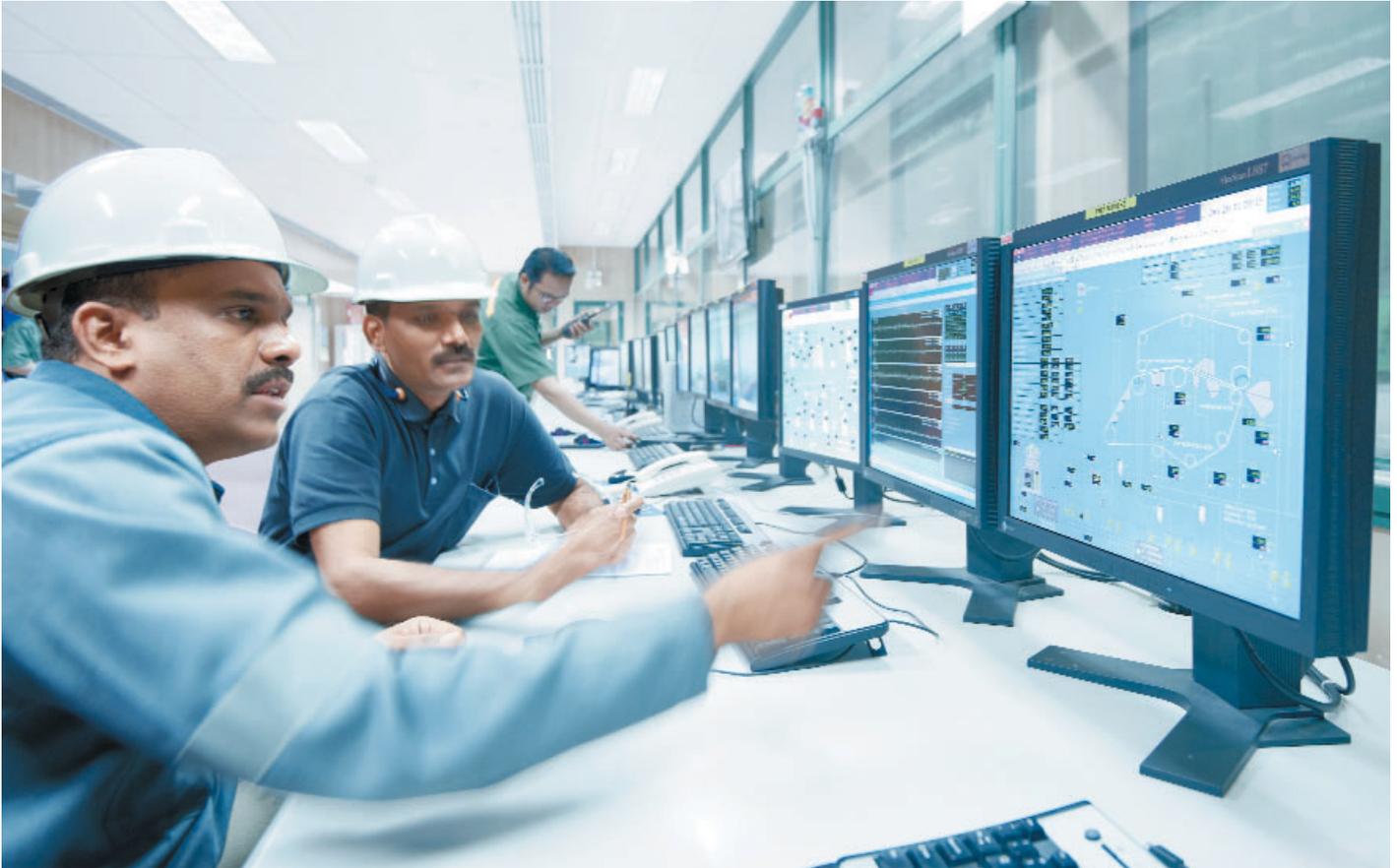
ABB uses its in-depth understanding of the tissue industry to develop solutions uniquely suited to the tissue mill environment. We know that issues like saving energy and improving productivity are critically important, and we design our products to help mills meet their goals.

Along with providing the best possible solutions, ABB is also committed to ensuring that products function well for decades and that their performance is optimized throughout their lifecycle.

ABB offers a portfolio of service capabilities that can be customized to meet each mill's unique requirements.

You have unique challenges...  
We provide unique solutions.

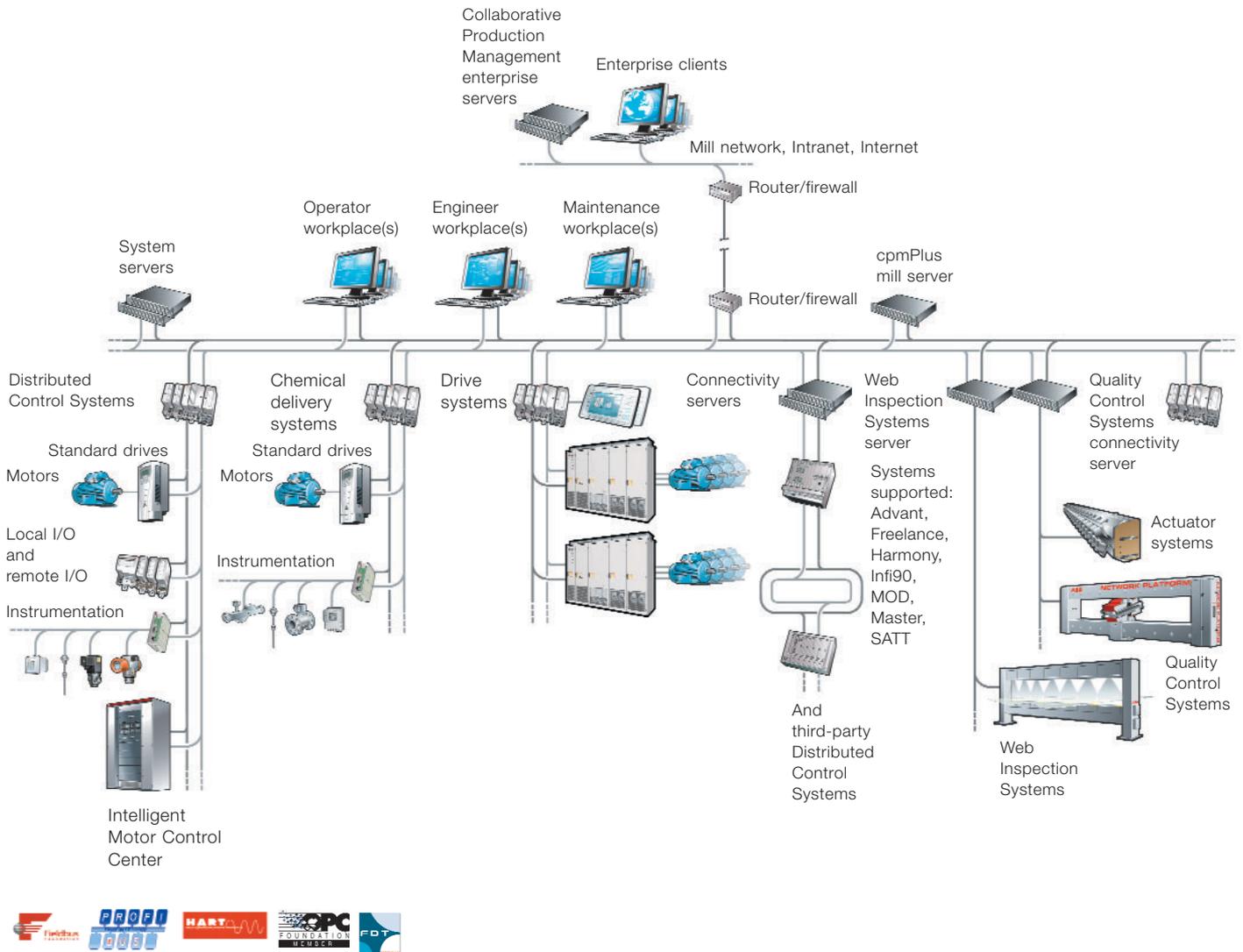
# Integration



## Simplicity in all things...

...is a core element in a successful automation strategy. And ABB puts this key strategy into practice in tissue mills throughout the world. For decades ABB has developed products that can be easily be integrated with all of the major automation systems in tissue mills. The result:

- Reduced initial capital costs
- Lower training costs
- Reduced systems interface costs
- Reduced time between decision and action
- Reduced maintenance costs
- Improved controllability



Manufacturing has entered a new era. It's no longer just about running process operations as efficiently and as profitably as possible. Today it's about boosting enterprise-wide performance, creating a sustainable competitive advantage and using a holistic approach that encompasses every aspect of a tissue mill.

To meet these new manufacturing challenges, ABB developed System 800xA, a real-time automation and information solution based on open technology and the latest global standards. System 800xA is seamlessly integrated; every component in the entire system is linked. Information can easily be accessed across applications and systems from any workstation connected to the network.

With the information they need at their fingertips, mill operators and managers can predict and quickly react to changes, dramatically increasing their efficiency.

The integrated system creates a common engineering environment that provides mill personnel with a highly-effective engineering management tool.

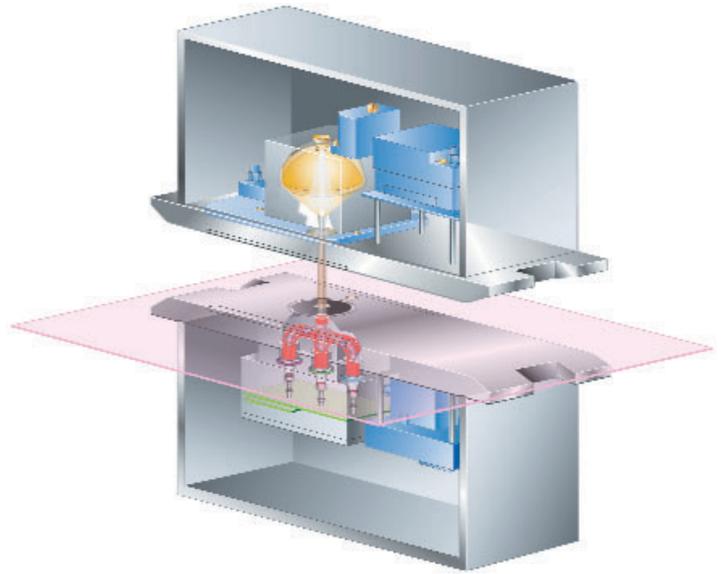
System 800xA protects a mill's investments while contributing to a higher return on assets and reduced total cost of ownership. The open architecture allows third-party applications to be seamlessly integrated, giving mills the flexibility to easily add the functions they need today while allowing them to adapt to evolving future needs.

System 800xA is more than just technology. It's the integration of people, products, systems and solutions that gives managers, engineers, operators and maintenance personnel the ability to do their jobs better.

# Sensor technology



The heart and soul of a good tissue sensor is its ability to handle dust and gap temperature variations.

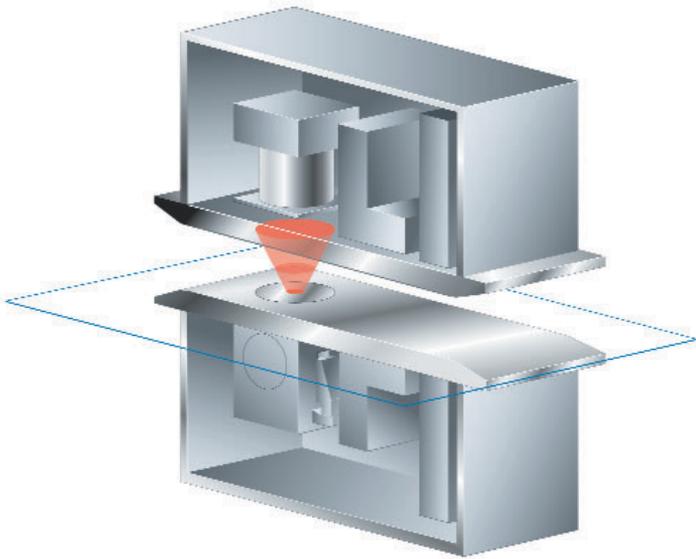


## HPIR-FW

Excellent moisture and fiber weight measurement are the critical parameters for tissue and non-woven processes. The HPIR-FW (High-Performance Infrared) moisture and weight measurement feature combines these two measurements in a single infrared instrument to provide the most precise tool available to measure with the confidence needed to maximize control performance and to minimize both energy and fiber costs.

HPIR-FW extends the capability of ABB's infrared portfolio to deliver a single infrared instrument capable of measuring four parameters simultaneously: fiber weight, web moisture, basis weight and web temperature. These are the critical parameters for MD and CD control of tissue and non-woven processes. HPIR-FW comprises a single, field serviceable infrared instrument to simplify and remove the need for ionizing radiation sources in the measurement system, substantially reducing the costs of ownership of the system.

The compact optical design is robust and inherently stable, ensuring high performance even in severe environments. The innovative optical design doubles the signal to noise ratio of the instrument, removing bandwidth constraints imposed by chopping to provide industry-leading moisture and fiber weight measurement rates.

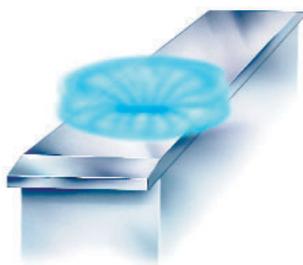


### Basis Weight Sensor

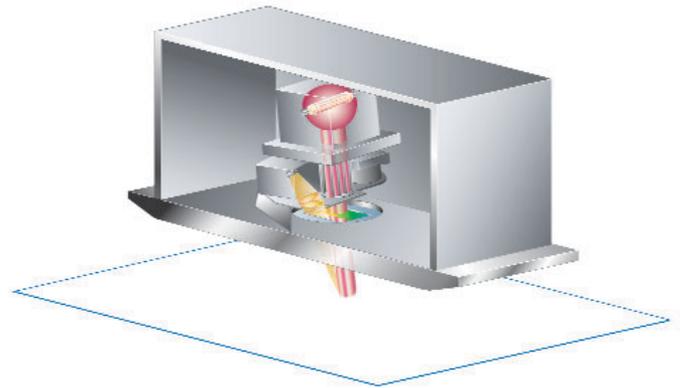
ABB sensors are designed to protect the low basis weight tissue against sheet breaks while guaranteeing precise measurement of key sheet parameters. Accurate measurement and control of basis weight and moisture, allows producers to make a strong yet soft product that meets consumer demands.

The Basis Weight Sensor minimizes and dynamically controls and measures the air column, eliminating the air mass variations that are the largest cause of errors in tissue applications. The Controlled Air Plenum (CAP) provides temperature-regulated air flow into the measurement gap, reducing the air column's effect on sensor accuracy.

Dynamic air mass measurement continually accounts for air column density changes while it compensates the basis weight measurement. This ensures accuracy over a wide range of temperature variations.



Controlling the air eliminates dust buildup and seals the air column



### Reflection Fiber Weight and Moisture Sensor

The Reflection Fiber Weight and Moisture Sensor is designed to overcome the challenges posed by applications such as fabric-backed lightweight grades. An accurate calculation of dry fiber weight and the percent of moisture is provided through the sensor's unique focusing device, detection capabilities and multi-wavelength signal processing. The sensor can also measure sheets that are not backed.

The Reflection Fiber Weight and Moisture Sensor is a single-sided, non-contracting sensor using diffuse infrared absorption spectroscopy to analyze the process at several wavelengths and determine material properties. The unique diffuse reflecting geometry assures that changes in the process surface smoothness do not influence sensor calibration. Proprietary geometry and wavelength tuning make the sensor inherently insensitive to the temperature of the sheet.

# Network Platform

## A frame built for a tissue mill.

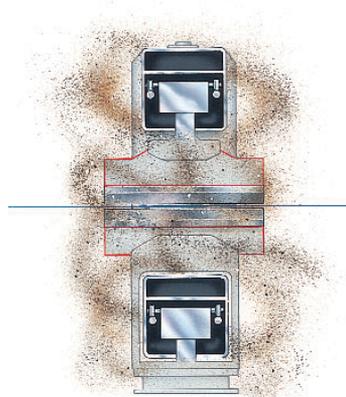
The Network Platform NP1200 is the industry's strongest and smartest measurement foundation for online scanning sensors, integrating onboard intelligence for unparalleled measurement performance.

The Network Platform's rock-solid design and powerful processing facilitates fast, accurate measurement of the moving web – even in the harshest mill environments. As an integral part of the quality control system, the platform gives papermakers the highest profile resolution and most advanced control in the industry.

The Network Platform reduces overall system lifecycle costs. Advanced capabilities include smart diagnostics, step-by-step expansion and complete end column access for all maintenance tasks. These capabilities also minimize downtime, startup requirements and installation time.

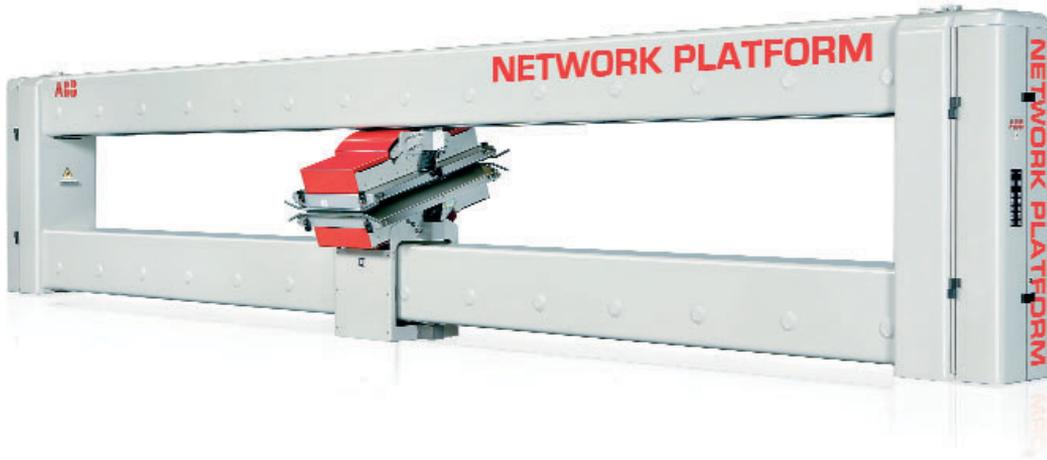


**Durable box-beam construction**

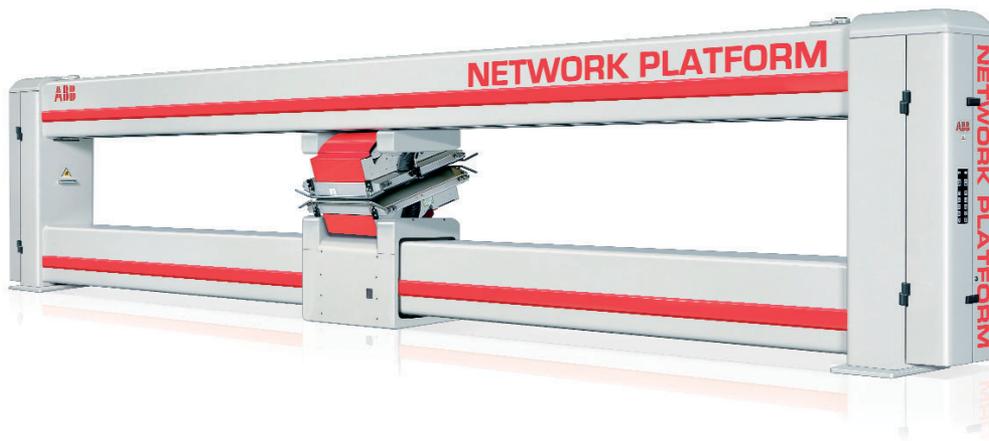


**Environmentally protected against dust, extreme temperatures, harsh chemicals**

- Monocoque 10 mm thick box-beam construction for unmatched vertical, horizontal and torsional strength
- Welded, box-construction end columns provide structural rigidity beyond any scanner in the industry
- Structure has inherent thermal stability. No liquid cooling is required.
- Platform structure is completely stress-relieved prior to alignment to simulate years of on machine use, ensuring accurate and permanent factory alignment
- Streak-optimized sensors aligned in the machine direction within the head package ensure same point measurement and tight measurement of sheet edges
- Automated self-calibrating routines ensure high integrity measurement performance day after day
- Automated and user-selective smart diagnostic tools for fast startup and online troubleshooting
- Health reporting for frame, sensor and electronic components
- Fully automated frame tuning for superior position control allowing edge-to-edge total sheet measurement
- Industry's strongest and most stable platform
- Smooth exterior design with no external openings, covers or exposed hardware or cables
- Membrane control panels prevent dirt and water from reaching internal components "seam-side" down upper and lower beams prevent material from falling into the structure



**Network Platform NP1200**  
The Network Platform NP1200 provides scanning sensor support on processes of all sizes. Its rock solid 10 mm steel A-frame design is unparalleled in providing a sound foundation for measurement success. To ensure reliable performance in even the harshest mill environments, the system is pressurized by air and has a welded and well-sealed exterior with no service covers.



**Network Platform NP700**  
The Network Platform NP700 provides a compact design, featuring an unparalleled strength-to-size ratio. It offers the opportunity for NP1200 quality and performance where space restrictions require a small footprint.



**Network Platform RNP1200**  
The Network Platform RNP1200 supports ABB single-sided infrared measurements for process locations such as wet presses, coaters and size presses.

## QCS systems



If your sensors are off the sheet your QCS cannot control the paper quality.

### Controls

ABB's multivariable, model-based controls quickly and accurately separate the machine-direction (MD) and cross-direction (CD) components of scanning measurements. This allows aggressive control action every 5 seconds, which is critical to achieving superior control performance on high speed tissue machines. And with these immediate control actions, product uniformity is greatly improved to aid the converting operation.

### Weight and moisture controls

MD weight and moisture controls maintain weight and moisture averages at desired targets to reduce product variability and maximize production efficiency. CD Weight and Moisture Controls ensure minimum cross-machine profile variations to improve runnability and increase production efficiency,

### Dynamic Yankee/Hood Control

Dynamic Yankee/Hood Control maximizes speed-of-response to moisture variations while maintaining the desired drying balance between the hood temperature and yankee steam pressure.

### Crepe Control

Crepe Control adjusts the yankee-to-reel-speed ratio to maintain the desired amount of crepe. This results in improved bulk, caliper and softness of the sheet.

### Headbox Controls Package

The Headbox Controls Package coordinates stock flow and speed change control actions to maintain the desired jet-to-wire ratio. Proper control of stock delivery to the wire significantly impacts the optimum formation, fiber orientation and strength properties of the product.

### MCD

A mill's primary goal for any set of CD controls is to produce a paper sheet where all of the profiles (weight, moisture, caliper, fiber orientation) are uniform. To achieve this, mill personnel try to minimize profile variations – which can lead to competing control actions among multiple sets of actuators. ABB's MCD application simultaneously optimizes and balances multiple paper quality CD profiles, while

coordinating the contributions of multiple sets of CD actuators within their operational limits.

MCD coordinates multiple sets of CD actuators used for controlling multiple profiles of sheet properties. It delivers the most effective results by empowering operators to set the best balance among the objectives using a simple and intuitive operator interface.



Years of CD control technology leadership and expertise have gone into the development of ABB's Multivariable CD (MCD) Control. The result: ABB's MCD helps papermakers create a higher quality product. It also helps mills run more efficiently, using less energy.

# Actuators

ABB actuators correct profile variations to ensure a stronger, softer tissue product is produced. Reducing these variations enables higher capacity at a lower cost for the manufacturing process.

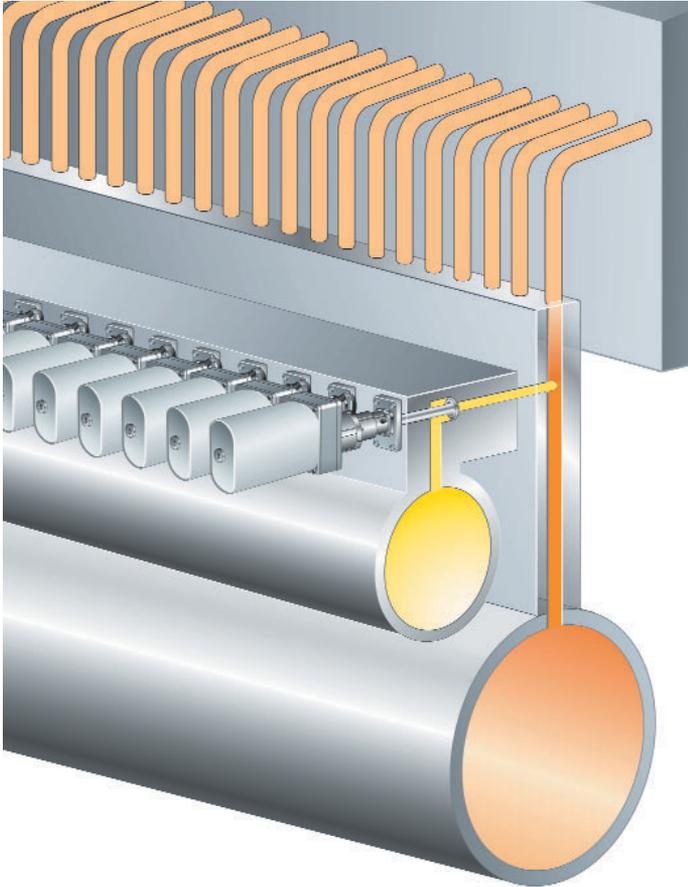
## SteamPlus xP

The SteamPlus xP (extended profiling) actuator has a perfect track record in tissue mills where the environment is harsh and confined. It offers producers incremental drying capacity while simultaneously correcting moisture process variations.

The SteamPlus xP wet end profiling steambox improves on previous steambox designs by controlling 100% of the steam flow across the web. The SteamPlus xP is truly a total profiling actuator system because there are no unsegmented steam sections that reduce the amount of sheet temperature differential. The SteamPlus xP utilizes the proven, maintenance free, T880C pneumatic actuator, designed for the highly corrosive tissue environment. The rigid “solid beam” design allows a smaller and lighter beam construction, yet maintains structural integrity for installation in the most challenging locations, providing for the highest steam usage efficiency in the industry. SteamPlus xP also has automatic self cleaning with the unique “Flush Jet” feature that further reduces maintenance and is especially useful in tissue environments. The “drip free” SteamPlus xP typically provides the following benefits:

- 5% to 10%+ increase in production or 5% to 10%+ reduction in energy costs
- Up to 80% reduction in moisture profile variability
- 10-year T880C pneumatic actuator guarantee
- Increases press felt life, sheet strength properties and sheet surface properties





### Dilution xP

ABB pioneered CD control of dilution headboxes beginning in 1994. Since then over 150 dilution headboxes and radial distributors of all manufacturers have utilized ABB actuators or controls to produce CD weight profiles with consistently low variability. Dilution xP is the very latest version of rotary actuator technology. It is designed to meet exacting specifications that exceed process requirements. Dilution xP is easy to install and maintain, and the rugged design is both robust and highly reliable.

- Reduced profile variability
- High-speed positioning and accuracy ensures the fastest possible recovery from grade changes and process upsets
- State of the art non-contacting positioning sensor maintains absolute positioning accuracy, even after a power loss
- Measurement Fusion Techniques increases positioning measurement quality and reliability over the lifecycle of each actuator
- Patented power supply solution with built-in back-up, allows simultaneous movement of actuators at all times, even during flush cycles, global setpoint changes, or if one power supply has failed
- Simple installation and cabling with a common communication and power bus without on-machine I/O modules
- Advanced diagnostics allows for ease of troubleshooting and increased system availability
- Built-in monitoring of each actuator enables proactive asset management over product lifecycle



## Pulp quality control

For decades, Lorentzen & Wettre has been leading the way in developing quality control equipment for the pulp and paper industry. Innovation is a key word in our strategy. The basis of this strategy is a commitment to identifying the future needs of our customers and developing new measuring solutions that will address those needs.



Lorentzen & Wettre is dedicated to the most advanced technology for our product development. This is reflected in the fact that a substantial portion of our revenues is constantly reinvested into research. In today's fast-moving markets, access to state-of-the-art technology will determine our customers' business success. Reliability and serviceability are equally important aspects of our development work. Accordingly, our entire operation is officially acknowledged by ISO 9001:2000 certification. Through a comprehensive network, we provide extensive service and technical support to users all over the world. This means that you will receive maximum return on your investment when you choose a partnership with ABB's Lorentzen & Wettre product group.



Measurement of pulp properties is the key for producing an optimal and uniform pulp quality. A uniform pulp quality creates the best situation for optimization of the tissue machine, is the base for a uniform tissue quality, and is the most important quality property in itself.

Runnability in the tissue machine and sheet properties depends on the quality of the fibers. The demands on fiber properties at production of tissue are different from most other paper grades. Tissue sheets have a loosened paper structure with high porosity. Fiber collapse and high bonding should be avoided. Fiber deformations are positive. Wet and dry tissue strength shall be enough for good runnability and not fall apart when used. Compared to other paper products very low strength levels are required. This means a minimum of refining in order to keep the bulk and avoid developing bonding. Fines and vessel cells have negative effects and should be avoided or have high retention in the sheet to

avoid dust and deposits in the machine or converting. Softness is affected from both the loosened structure and fiber length and stiffness. Lorentzen & Wettre offers measurement systems for fiber analysis in several different forms. The customer's needs determine which method and instrument that is the most suitable.

## A new language for pulp quality



Using measuring statistics for fiber properties, the pulp's properties can now be measured in ways that are more practical than before. Among other things it is the length, width, deformation and coarseness of fibers and fines that are measured. In addition, the measurement technology is automated and enables, via a special sampling system, total automatic and frequent analysis of pulp quality throughout the manufacturing process.

The Fiber language gives you new possibilities. Modern optical technique makes it possible to analyze fiber properties statistically and in detail. Since the measurements are automatic with good repeatability they are suitable for online measurements. For example tissue strength properties depend on the fiber properties including coarseness. Lorentzen & Wettre product group supplies excellent online measurements of fiber quality.

Runnability problems in the tissue machine and tissue quality deviations can be created from different types of fines, shives or vessel cells in the pulp. The problems can also be a result of unknown variations in fiber mix, fiber quality or refining. If appropriate pulp quality properties are measured continuously in the process it is easy to see correlations with other things that happen in the process and this enables taking correct actions and strategies based on measured facts. Early detection of deviations in quality makes early corrective actions possible.

To be able to optimize the process you have to know what you are doing. Lorentzen & Wettre supplies you with the right tools.

## Improve pulp quality by extensive testing

Lorentzen & Wettre offers measurement systems for fiber analysis and tissue properties in several different forms. The customers' needs determine which method and instrument that is the most suitable.

### L&W Fiber Tester

Measurement offline usually involves manual sampling and analysis in a laboratory. L&W Fiber Tester is the ideal fiber analyzer for measurements of pulp quality in a laboratory, for both routine analysis in production and for advanced statistical analysis in R&D environment. The measurements are industry standard and based on highly engineered image processing. Detailed statistics about fiber length, coarseness, deformations, width, fines, vessel cells, shives etc. are measured.



### L&W Pulp Tester

Generally, there is a need to measure more frequently and in different parts of the process. In that case, online measurements are a solution. Lorentzen & Wettre offers a fully automated wet lab for pulp quality – L&W Pulp Tester. Fiber analysis is one of several modules in this system. L&W Pulp Tester is automatically provided with pulp samples from samplers in the process. Quality data is displayed in real time and allows adjustments in the process. A unique feature is that measurements are done according to standard, which means that the need for calibration is minimized.



### L&W Fiber Quality Transmitter

In some cases, additional prompt information from the process is needed. L&W Fiber Quality Transmitter is a sensor, mounted directly into the process pipe where it measures continuously. The results are sent to the DCS or QCS system in the mill and are displayed in existing monitoring system for process control. This fiber analyzer is the fastest on the market. It produces measurements in less than a minute and thereby shows even the most rapid variations in the process, which is not possible with other fiber analyzers. This makes L&W Fiber Quality Transmitter unique.



### Successfully manage and control consistency with L&W's KPM state-of-the-art technology

KPM's innovative products enable the pulp and paper mills to successfully manage and control consistency and secure reliable break detection of the paper machine. KPM products represent the most progressive solutions of the field.



### L&W Tensile Tester

L&W Tensile Tester is a perfect choice for dry and wet tensile testing of tissue paper. The wetting and tensile test sequence is fully automated. Standard test span for wet tensile testing is normally 100 mm. What's more, for converted products, spans as short as 50 mm can be used for testing between perforation lines.



### L&W Micrometer

Micrometers give precise thickness measurements of different end-use tissue products. It is also used for controlling manufacturing parameters of tissue base paper to produce a superior quality product. L&W's programmable micrometer is easy to use. The measurement starts when a photocell detects the presence of a sample and automatically initiates a measurement sequence, thus allowing "hands-free" operation. The Micrometer can be attached with L&W Sample Feeder for automatic feeding of tissue strips.



### Elrepho

Elrepho is the paper industry's own spectrophotometer. It measures color, brightness, opacity and whiteness of paper, paperboard, tissue, pulp, coating inks and fillers. Elrepho is designed to make laboratory work easier. L&W Color Brightness software, is optimized for shift testing and has complete user interfaces for identification, measurement, and reporting. Calculations can also be implemented to meet users' needs.



# Drives and motors



Tissue machine drives deliver the ultimate in efficiency.



ABB's Paper Machine Drive solution offers combinations of software and hardware for achieving high performance on a common ABB platform. The drives focus on a papermakers' requirements in a consistent and reliable way, with efficient interfacing to other mill systems.

**The most efficient drive and motor technologies for tissue**  
The Paper Machine Drive PMC800 is new automation for paper and tissue machinery that features unique technology.

The core of the PMC800 system is the ACS800 product platform for drives and engineered control. The ACS800 industrial drives highlight maintainability and energy efficiency:

- Fewer module types, one core module type from 250 up to 5,200 kVA
- Parallel units allow redundant operation
- Bookshelf design with plug-in connectors for fast maintenance
- Higher efficiency with the latest IGBT technology
- Advanced self diagnostics
- Small dimensions – half the size of previous products

ABB's ACS800 liquid-cooled drives reduce the energy consumed in air conditioning and cooling electrical rooms by as much as 98 percent. The temperature in inverter modules stays stable even with higher load variations, ensuring longer equipment life.

### **Control accuracy and tachless drives**

A mill's high performance processes require fast control that responds accurately to changing conditions. Requirements may

differ with the type of machine or the characteristics of the paper it's running – but the need for reliable control remains the same.

With continuous inverter and motor control development as well as the Direct Torque Control's (DTC) unique features, the PMC800 Drive System can be used completely tachless for tissue applications and at all paper machine drive points.

Proven in many tachless installations and Direct Drive installations, ABB's drive systems can handle even the most demanding production processes with consistent and dynamic control accuracy – and without any pulse encoders or additional speed feedback.

#### Extended automation for tissue machine drives

The PMC800 application software for System 800xA covers all the drive control functions needed for highly coordinated sectional drive controls and optimal web handling for tissue manufacture:

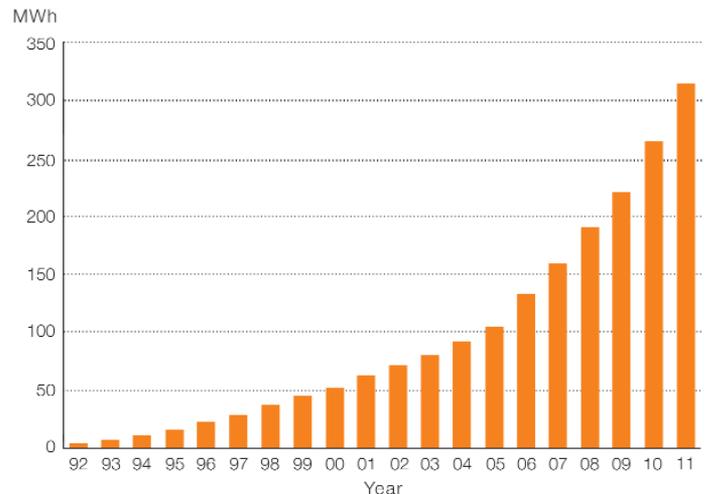
- Machine level common controls and machine section controls
- Operator device interfacing
- Drive control logics with all various run modes
- Fast speed and torque reference chain handling
- Web tension control loops
- Drive communication with current and legacy ABB drives
- Advanced status indication and diagnostics
- Drive safety and protection with proven international standards

Developed through close cooperation with paper industry machine builders, the system includes many advanced tools and functionalities. It also has excellent connectivity with automation and machine control systems via standardized OPC and fieldbus interfaces.

#### Electric motors are still the workhorses of the pulp and paper business

The PMC800 brings all the advantages of ABB's high efficiency process performance motors. Designed for lower temperature rise and an extended component lifetime, the motors provide the best possible overall efficiency. Direct drive permanent magnet motors, a special application in the standard motor frame, even make it possible to reduce mechanical drives.

ABB motors have what it takes to help mills reach new levels of efficiency and energy savings even under the most demanding conditions. Combining the best available materials with superior technology, the motors are designed to operate reliably no matter how challenging the process or application, and to have a low lifecycle cost.



#### Energy saved with ABB drives

**ABB is the world's largest manufacturer of electric motors and drives. Drives adjust the speed of motors to match the the actual demand of the application thereby reducing energy consumption by typically 20 to 60 percent. The installed base of ABB drives saved about 310 million megawatt-hours in 2011.**

ABB is one of the only leading motor manufacturers with a product range that meets and exceeds the highest levels of efficiency required by the European Union. ABB has a full range of IE2 motors and a broad range of IE3 and IE4 motors that fulfills IEC, NEMA and various global Minimum Efficiency Performance Standards (MEPS). The ABB motors actual efficiency values closely follow standards set by the International Electrotechnical Commission (IEC), making the motors' overall electrical values higher than many other high-grade motors.

Making energy-saving motors takes more than just dropping in hardware. Dimensioning of the motor arrangements has an important effect on cost and reliability and filtering harmonics also has a positive impact on a mill's bottom line costs. ABB systems and motors make it possible for papermakers to downsize to smaller motors for increased energy savings.

#### Wide use for PMC800

On an average of twice a week, ABB starts up a paper machine drive system somewhere in the world. Our track record includes more than 2,900 successful installations.

## Electrification and composite plant



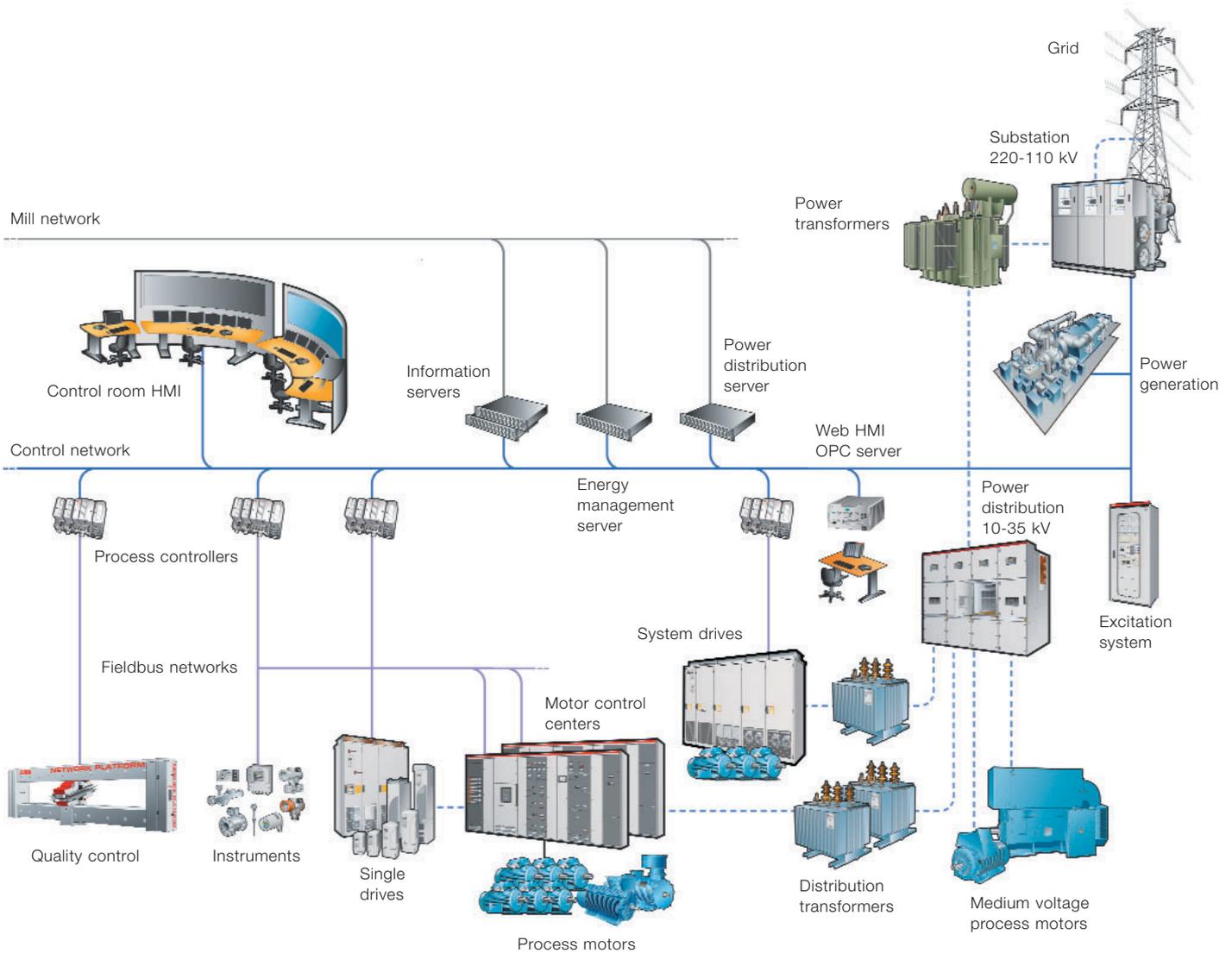
ABB's extensive experience in pulp and paper electrification and composite plant projects is your best guarantee of success. With over 200 projects in 17 countries, ABB professionals provide unparalleled experience for any greenfield or rebuild project.

Purchasing process automation and electrical systems in several separate packages instead of one integrated system often creates unnecessary work for mill personnel. If the products are not designed to work together, mills may have to spend time and money to integrate them and may experience excessive downtime and energy use.

With Composite Plant Solution, ABB provides mills with benefits that include savings in costs, energy and effort. As a leading power and automation technology company, we provide pulp and paper customers with an extensive portfolio of advanced systems, products and services. We cooperate closely with mill personnel, ensuring that each project implementation runs smoothly and effectively.

### **All-in-one EPC package**

With the ABB Composite Plant Solutions EPC package, mills can obtain engineering, procurement and construction (EPC) under a single, convenient contract. The delivery covers all of the engineering, design, construction and



Large EIA (Electrification, Instrumentation, Automation) projects require supply coordination and the total integration of products and services. This is where the benefits of the Composite Plant Solutions come in.

commissioning for the entire mill process, from the incoming power supply to field instruments and motors. Products, solutions, services and project management are also included. As a project progresses, ABB can also coordinate any additional deliveries that are needed. The ABB team is experienced at customizing orders to meet each mill's specific needs.

When the EPC package is integrated with or Full Service maintenance services, the result is a solution that dramatically optimizes a mill's production efficiency.

Using a single vendor usually reduces a mill's costs because personnel only need to manage one contract instead of many. With a single contract, a mill reduces project risk since multiple contracts can lead to work gaps and expose the purchaser to difficulties.

With the EPC package, all of the systems delivered can be seamlessly integrated. ABB systems are based on the 800 series, with only certified products and solutions using this brand. For mills, this means they will receive concise information in a familiar format, with simplified displays, easy-to-read reports and instant access to all System 800xA data.

A long term benefit for mills: ABB technology is user friendly and easy to maintain. As a result, papermakers can achieve direct cost savings and production efficiency for the life of the equipment.

# Service

ABB's full portfolio of field services and full service for products and systems – from spare parts to consulting, optimization and outsourcing – improves equipment productivity, minimizes equipment costs and extends useful equipment life.



## Proactive, not reactive

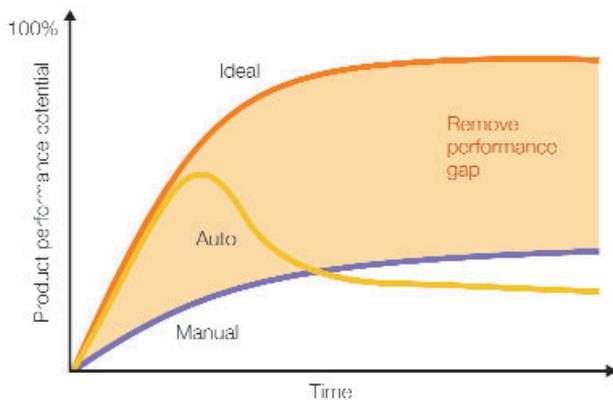


ABB enhances the performance of tissue mills by identifying key areas for production improvement. Control Fingerprint measures machine variation from MD to CD and from 100v to high frequency to identify potential control improvement areas and the origin of uncontrolled variation. This determines your best improvement opportunities and what resources are necessary to implement them. Control Service is a two-phase implementation providing innovative solutions to optimize MD and CD control processes. ABB's measurable benefits, including reduced grade-change times, increased speed and fiber savings, result from a proven methodology that analyzes the supervisory controls and implements the solution as incremental improvements.

ABB also offers:

- Project services
- Statistical maintenance activity reporting
- Online SolutionsBank
- Systems utilization report
- Training and education
- Logistics and repair
- Customer support services
- Optimization services
- Outsourced maintenance



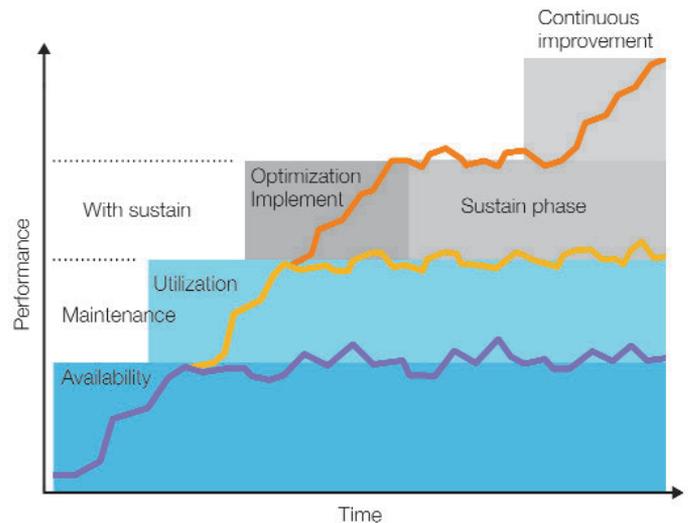
### Preventative maintenance

ABB provides preventative maintenance procedures proven to minimize downtime and increase efficiency; utilization and troubleshooting tools for quicker and more efficient quality control; technical solutions and software upgrades via the Internet; and on-site consultation with certified ABB field engineers who perform standardized reviews to establish higher levels of performance.

ABB's ServicePRO™ is an interactive software solution featuring ABB's best maintenance practices for improved reliability, increased return on assets and consistent service compliance throughout your equipment lifecycle.

Engineers use ServicePRO for scheduling and implementing maintenance work orders tailored exclusively to ABB solutions, so there is no second guessing maintenance procedures or digging deep into service manuals. Every engineer who works on your equipment benefits from knowledge gained from years of best-practice experience – delivering a proven and consistent maintenance process that gets results.

### ABB Service solutions - Service is integral to performance



### Web-enabled services

Remote services use both existing and cutting-edge technologies to leverage installed base and field engineers in ways only dreamed of just five years ago. The Internet, plus advances in communications and encryption, allow suppliers to support their installed bases, whether they are in downtown Appleton or the jungles of Sumatra.

Remote service developments are a direct result of our clients' changing needs. ABB has been told clearly in almost every industry we serve that we must continue to improve the Return on Assets of the systems we deliver. That is not to say our customers want less support, but actually more support, at lower costs.

Using the industry standard for calculating Overall Equipment Effectiveness (OEE), research shows that much higher levels of OEE can be achieved by leveraging remote service. This is accomplished by applying knowledge faster to resolve equipment issues.

Remote services are designed to leverage knowledge bases in the most cost-effective manner. As a result, ABB can ensure that the best knowledge is in the right place and time to support clients' assets.

# Contact us

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