

VOITH

Reliable automation solutions for the paper industry



Always local, all around the world

For over 40 years, our employees have dedicated themselves to the automation of paper mills. As a partner to the paper industry, Voith has a wide experience in solutions for the specific problems of paper manufacturing. Our engineers are constantly looking for new ways to make production more efficient and simplify the work of the paper manufacturers.

We have locations all around the world and offer our customers global products of the highest quality, along with excellent service.

Worldwide contacts

for your questions on automation solutions







Reliable solutions for your entire facility

These customers trust our Process Line Package:

- Palm Paper, Lynn PM 7
Newsprint paper (England, 2009)
 - Asia Pulp & Paper, Hainan PM 2
Fine papers (China, 2010)
 - Oji Paper, Nantong PM 1
Fine papers and coated, wood-free papers (China, 2010)
 - Perlen Papier, Perlen PM 7
Newsprint paper (Switzerland, 2010)
 - Moorim Paper, Dong Hae PM 1
Fine papers (South Korea, 2011)
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When raw materials, water and chemicals come together, it is the automation products from Voith that have long done the precision work. Field instruments optimize the dosages, fill levels and pressure values of water, steam, stock suspensions or chemical additives. Additional measurement and control systems ensure the correct flow rates and temperatures.

Robust scanners and precise sensors measure all the data for the paper web online, including moisture, basis weight or thickness. Hardware and software capture these data and control the quality of the paper with actuators. All data are also available to the paper manufacturers in real time or as a trend. Thus, they are always informed about deviations and can react as needed.

System-related data, such as energy consumption or machine conditions, can also be seen at a glance. Monitoring systems obtain information from a variety of motors and drives which help to ensure the harmonious flow of production. The Voith drive concept allows simple operation, reduces breaks and increases machine safety.




- 1 Lynn PM 7 from Palm Paper, equipped with the Process Line Package from Voith
- 2 Voith LSC Scanner
- 3 Customer-oriented solutions



Automation products bring high performance to the entire process in order to efficiently use the ever faster and wider paper mills. Paper rolls are manufactured at an optimum winding quality from the running paper web. At the end, modern winders with open control systems, digital regulation and safety PLC ensure the perfect cut.

The meticulous care and maintenance of the modern automation landscape is indispensable for an error-free production run. Experienced service personnel from Voith support paper manufacturers through regular maintenance and initiate remedial measures if problems arise. A comprehensive range of training courses for the paper mill's staff is an ideal addition.

The interaction of all these products and services ensure the flawless and simple operation of the entire facility, from stock preparation to finishing to the wastewater treatment plant. As a complete provider for the automation of paper mills, Voith is proud to be able to offer its customers this security with the Process Line Package.



Automation products from Voith – The right solutions for your system

Along with the automation of complete systems, rebuilds and upgrades of existing automation systems are also important operative areas for Voith.

Our products should meet the highest quality demands, protect employees from accidents and have as little environmental impact as possible. In the following pages, we would like to give a detailed introduction to the focus of our work and also present a selection of our solutions. You can find a complete overview of our current product portfolio at **voith.com/paper**.





Environment and safety

For the future of your company

Environment and safety are the critical topics for the future of modern paper manufacturers.

Until a few years ago, the terms environment and work safety were reserved for politicians, environmental organizations and unions. Today, it has long been recognized that these topics bring cost advantages along with benefits for the environment and society. Thus, the paper industry is increasingly investing in new production processes which preserve the environment and protect workers.

As a partner to the paper industry, we aim to contribute to the environmental balance of our customers with Voith automation technology. There are now a variety of Voith products which help to make production both responsible and thus cost effective. Phasing out the use of radiation in scanners and sensors is a particularly important job for us.

Finding alternatives to radioactive materials is also of great importance for employee safety. But this is not the only potential source of danger. Working directly next to running machinery is also a real potential hazard. To avoid exposing workers to these dangers unnecessarily, we develop products which make their work easier and safer. Because any work accident is one too many!



Your benefits

- No risk to operators from radioactive materials
- Radiation safety officers and special measures are not necessary
- Simple maintenance without costly exchange of radioactive material – annual exchange of the infrared lamp is sufficient
- Pre-calibrated for precise measuring immediately after installation

Voith LSC TecoScan

Voith LSC TecoScan is a new quality measurement system which offers a clear investment framework combined with minimal service costs during its entire life-cycle. Thanks to its robust design, Voith LSC TecoScan offers high availability and the lowest possible maintenance costs. The robust design of the scanner guarantees incomparable dimensional stability and precise measurements throughout the entire lifecycle. Fiber weight and moisture can be measured using just one sensor and without any sources of radioactivity.

Voith LSC TecoSens

Voith LSC TecoSens is one of the first non-radioactive sensors for the simultaneous online measurement of moisture and fiber weight. The sensor is based on the proven infrared moisture sensor and measures the absorption of infrared light at four characteristic wavelengths. Combined with optimized optics and sophisticated algorithms, the sensor provides a superior signal-to-noise ratio and outstanding sensitivity.

Voith LSC TecoScan and TecoSens were specially developed to meet the demands of tissue makers.



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- 1 Voith LSC TecoScan
- 2 Voith LSC TecoSens
- 3 OnQ FormingSens



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OnQ FormingSens

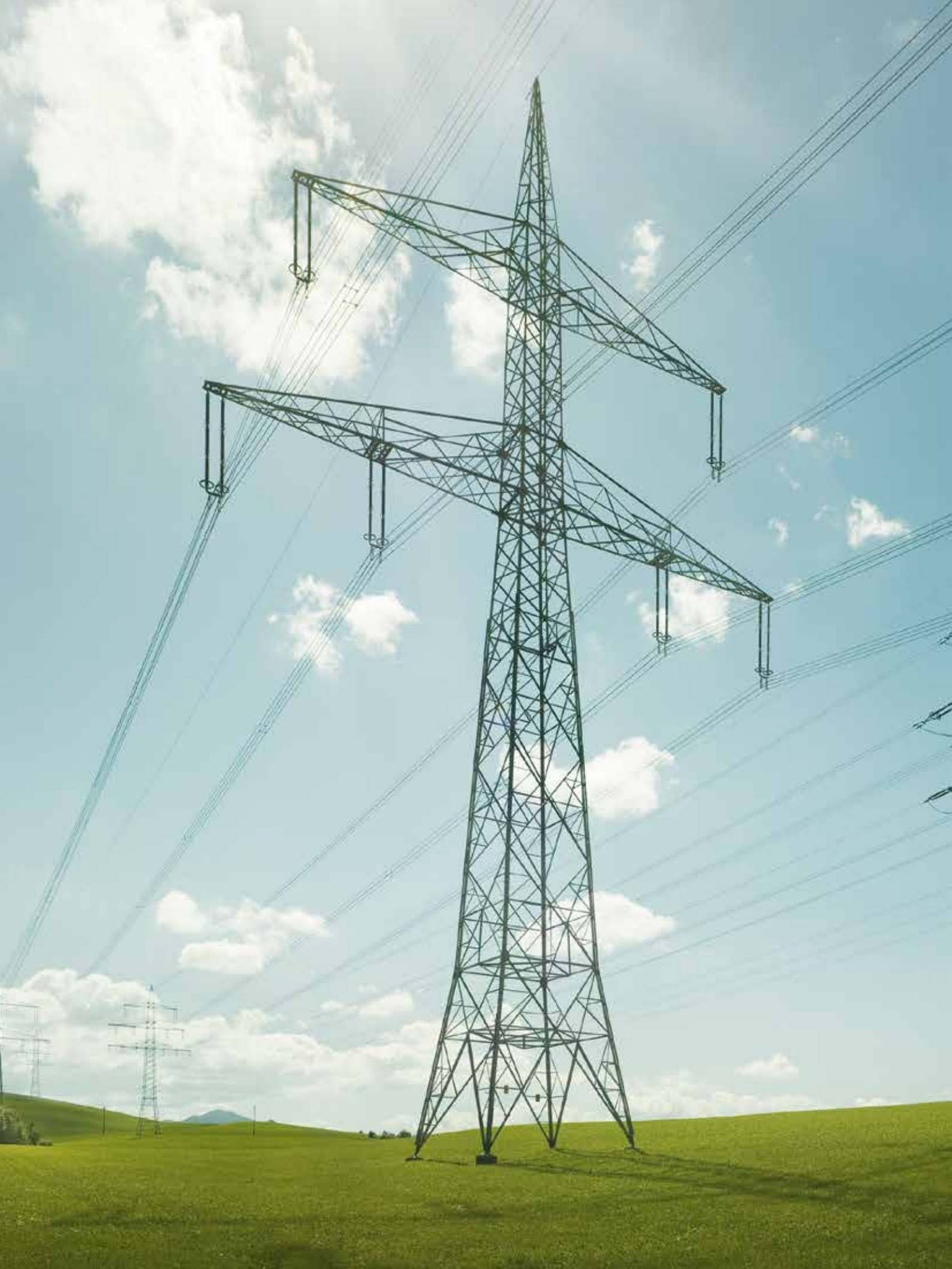
The water weight and resulting dry content at the end of the forming section are important parameters for the optimal operation of the former. These values are usually taken periodically using manual measuring instruments.

However, since the factors that influence the process in the former are constantly changing, such as the performance of the vacuum elements or the condition of the forming fabrics, the water weight should be continuously monitored. This is why Voith has developed a sensor that measures the water weight continuously using high-frequency microwave technology with the highest level of accuracy.

Due to its large measurement range, the sensor can be used for nearly all basis weights and former types. OnQ FormingSens has a contact surface made of smooth, low-abrasion ceramic material. Long-term practical testing has shown that it does not damage the screen or leave marks on the paper. As the sensor has no moving parts and does not require maintenance, the operating costs are also negligible. Due to automatic temperature compensation, the sensor's measurements are reliable and reproducible, even when there are highly fluctuating ambient conditions at the former. As an option, the dry content measured at the end of the forming zone can be displayed if the sensor is connected to an existing quality control system.

Your benefits

- Shorter start-up process after down-times through faster threading
- Measurement allows optimization of couching for multi-layered headboxes
- No radioactivity from the many standard portable measuring instruments
- No risk to operators from manual measurement
- Optimum dewatering of the forming fabric over the entire lifecycle



Energy savings

Keep an eye on your energy costs

Rising energy costs mean paper makers seek economical machines as well as detailed and user-friendly consumption monitoring.

We already pay attention to low energy consumption in the development of our products. Along with electrical energy, thermal energy and steam consumption are also important topics for Voith. Because every unused kilowatt hour ultimately benefits the environment and the paper mill's bottom line.

However, paper mills do not always have the option of immediately replacing all their energy-inefficient machine parts. In addition, it is often difficult to precisely locate the actual energy wasters. It is helpful here to be able to see the energy consumption of the individual components in the entire system.

Energy-intensive maladjustments on larger sections, but also on individual motors and drives, can be easily found and corrected through energy monitoring. Your experienced Voith employees will be glad to help you solve these complex problems when there are time and personnel constraints.



Your benefits

- Extensive databases allow constant monitoring of the real-time energy costs and their development
 - Information on inefficient energy use is accessible quickly and easily
 - The transparent database simplifies the decision making and the monitoring of the results of the measures taken
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OnV EnergyProfiler

Energy costs are approximately 10–20% of the total costs in paper production. The composition of the energy mix varies depending on the grade. With the OnV EnergyProfiler software, the energy consumption of a production facility is visualized and localized. Measurement data for electricity, rpm, steam, and amount of condensate, which are available in the process control system, form the basis of the system.

Successful energy management involves constant monitoring of detailed process sections along with the analysis of the entire system. These small optimization steps result in major savings overall, both in energy and corresponding costs. OnV EnergyProfiler allows such extensive energy management as its analysis tools are highly flexible.

Paper manufacturers and experienced Voith employees work through the energy values and production data together to come up with a set of recommended actions. The goal of these recommendations is to achieve energy efficient production at the lowest possible cost. Paper engineers from Voith are ready to help with this challenge if needed.



- 1 OnV EnergyProfiler
- 2 OnQ ModuleSteam
- 3 OnQ ModuleSteam steam zones can be individually adjusted through the internal edge adjustment

OnQ ModuleSteam

Poor moisture CD profile and inadequate dry content after the press impair paper quality and energy consumption. The OnQ ModuleSteam steam box, preferably in combination with OnQ Profilmatic, already gives optimum moisture CD profile control in the press, thus improving the quality, runnability and profitability of the machine.

By steaming the paper web with OnQ ModuleSteam, which effectively reduces the viscosity of the water in the stock, the effectiveness of the press nip is considerably increased. As a result, a great deal of energy can be saved in the drying cylinder, allowing higher speeds, an increased dry content, and thus a significant rise in production.

With especially simple maintenance, the OnQ ModuleSteam steam box offers an extraordinary potential for increased dry content and profiling thanks to its steam zones. With its minimal space requirements, OnQ ModuleSteam can easily be retrofitted into existing press sections. Its special design also allows the smallest zone widths in the profiler zones.

Your benefits

- Increased paper quality through improving the moisture CD profile already in the press
- Increased dry content after press and/or increased speed
- Saving of drying capacity and thus energy



Economy

The best choice in the long run

A low purchase price is only half the story. With our products and services, costs remain low throughout the entire lifecycle.

Given globalization and tougher competition, products with the lowest purchase price seem a good choice at first glance. But with longer term planning, the costs incurred over the entire lifecycle of a product should be taken into account. Otherwise, unplanned expenses will soon exceed the original budget.

Voith focuses on a wide variety of economic criteria in product development. Along with lower energy consumption, we also offer the lowest possible maintenance costs, for example by avoiding radioactivity, or preventing unplanned downtimes after sudden web breaks.

This way, we support our customers in manufacturing paper of the highest quality at the lowest possible cost and being economically successfully in the long term.



Your benefits

- Quick diagnosis of moisture streaks, felt damage and conditioning intervals
 - Reduced energy consumption in the press and dryer section and lower felt wear
 - No dependence on felt suppliers for measurements
 - No safety risks to personnel during manual measurement
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OnV FeltView

It is very important to have a quick diagnosis when there are moisture streaks, damage to the felt and conditioning intervals in the press. Optimized felt conditioning reduces energy consumption in the press and dryer section and minimizes felt wear. OnV FeltView visualizes the press and felt behavior and provides support during routine operation and in optimizing the settings.

For this reason, the system continually takes online measurements of the felt moisture and permeability for the clothing in the press. OnV FeltView is a single-sided measurement system with the highest positioning precision, whose sensor head ensures continuous and reproducible measurements using pneumatic contact pressure.

The moisture sensor is based on microwave technology. It determines the felt moisture based on changes in the dielectric constant, which show the current amount of water in the felt. In order to determine the permeability, the pressure difference between a water jet penetrating the felt and a reference pressure is measured.



1 Reliable data thanks to OnV FeltView

2 OnV FeltView

3 OnC WebDetect



OnC WebDetect

Reliable detection of web breaks can prevent serious damage to the machine, reduce unnecessary downtimes and thus increase production volumes. The web break detectors in the single-row dryer section that are currently available on the market do not offer one hundred percent functionality. That is why Voith has developed a solution which is more reliable than any before it: OnC WebDetect.

The sensor uses reflected visible and infrared light to detect breaks. The measurement principle is based on a spectroscopic procedure which takes into account the special optical characteristics of the paper web and the dryer fabric. Even with low color differences between the paper web and dryer fabric, such as in test liner production, the system works without a hitch.

Thanks to a referencing procedure on the fabric and paper, changing paper properties (like moisture and basis weight fluctuations) or aging and discoloring clothing cause no problems. Due to the easy integration of OnC WebDetect in the process control system, the referencing can be performed directly and conveniently from the control room.

Your benefits

- No damage to the machine from unrecognized breaks
- Reduction of unnecessary downtimes after false positives
- Increased production thanks to the most precise and reliable web monitoring



Quality

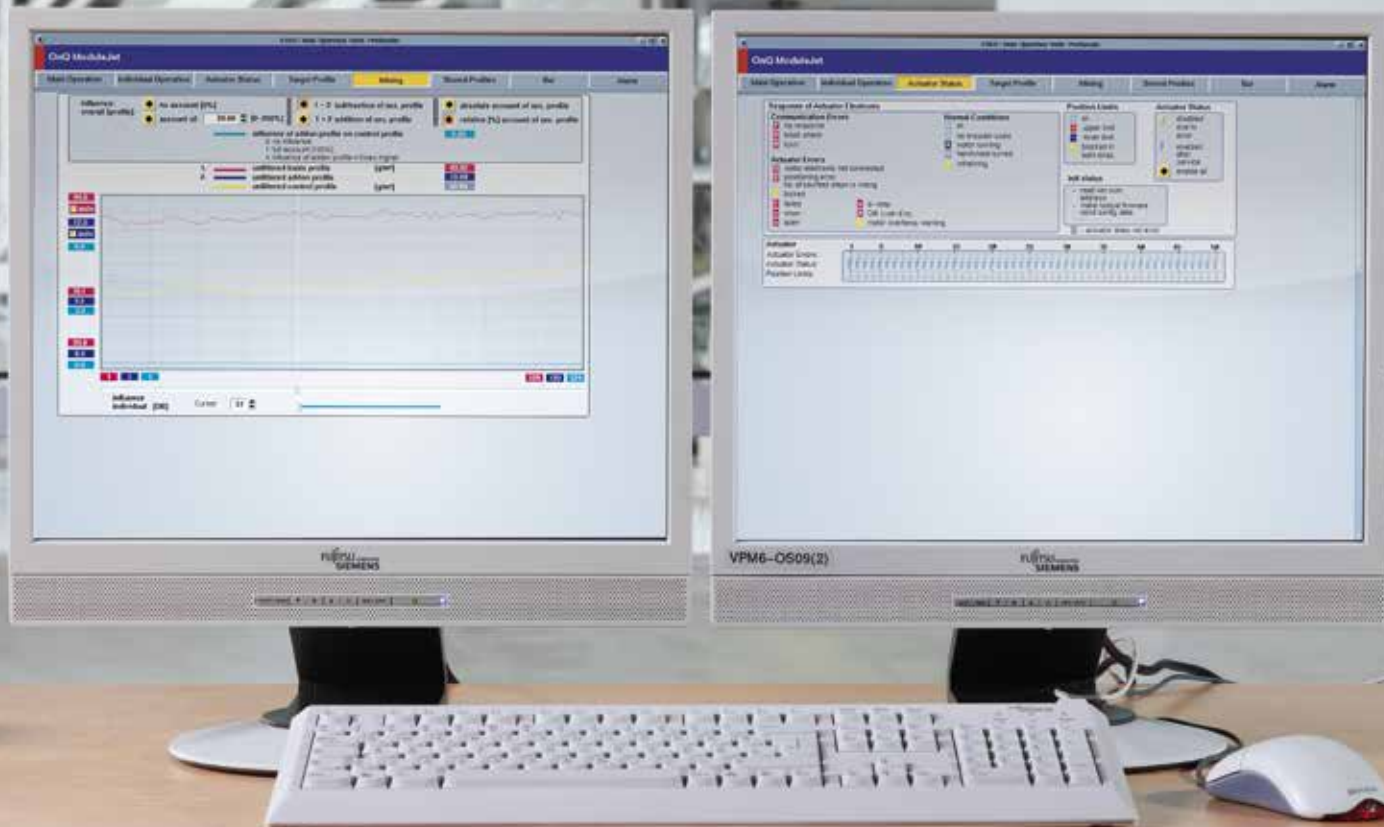
The highest standards for your system

Decades of experience and Voith's reputation are an obligation. Quality is not just a word to us, it is the basis for your trust.

Our products are an important and lasting investment for paper mills. This means trust is the most important foundation for our long-term business partnerships. This trust is built on the security that we will still be at your side as a partner decades from now, but also on the reliability of all the products and services we provide.

In an industry like paper production, such great trust cannot grow out of short-lived deals. For Voith, the basis of this trust is the quality of our products and services. Thus, all automation products are oriented toward the special requirements of paper manufacturing and are always of the highest-quality workmanship.

The production of top-quality paper also requires total compliance with precisely defined parameters. Our precise measurement and control systems are designed for the complex interrelationships of paper manufacturing, and make it easy to implement your specifications. That way, you can fully meet the high demands of your customers.



Your benefits

- Separate motor unit protects against white water
- Efficient communication and control with just one electronic unit on up to eight actuators
- Actuator exchange during operation possible without parameterization
- Protection class IP67 (ambient temperature up to 70° C and protected against water jets)
- Extensive and detailed diagnosis through fast and secure field bus based on Ethernet

OnQ ModuleJet

High quality paper with low broke rates demand precision work, especially in the headbox. OnQ ModuleJet is an automatic control system and guarantees good and smooth basis weight CD profiles, especially in combination with the Profilmatic control software. In addition, the actuator system provides short settling times after faults.

This way, the production of broke is reduced and paper makers are offered a series of diagnosis options, amongst others trend display, trend correlation and calculation of shrinkage curves. Furthermore, customers can request timely support from Voith automation experts at any time via a remote access server.

The OnQ ModuleJet actuator has been used for CD profiling in headboxes with dilution water technology over 30,000 times. That the control system has stood the test of time is shown by the response and maintenance rate of OnQ ModuleJet. This was already outstandingly low and the latest model especially impresses with full availability and no failures.



- 1 Smooth basis weight CD profile thanks to OnQ ModuleJet
- 2 OnQ ModuleJet
- 3 OnV FlocSpotter



OnV FlocSpotter

The formation plays a crucial role for paper makers, because it is a significant factor in the smoothness of the paper web and thus determines a series of further quality parameters, such as printability. In order to achieve a high degree of control over the sheet formation process, the formation has to be measured as early as possible.

That is why Voith developed OnV FlocSpotter, a formation sensor which is used directly in the wire section. It is especially good for board and packaging grades, because it allows formation measurement in each individual layer in multi-layer machines. With graphic papers, fluctuations in the stock load or the process parameters can also be reacted to more quickly.

These functionalities are not offered by the existing standard formation sensors on the reel. Furthermore, all the OnV FlocSpotter data are automatically transmitted to the OnView system for trending and reporting in real time. This allows a comprehensive correlation with other machine, process, and quality data.

Your benefits

- Quality problems are identified in the wire section allowing the fastest possible corrections
- Formation boundaries are defined for constant quality, also saving raw materials, chemicals or energy
- Lowest maintenance outlay thanks to robust, self-cleaning protective housing



Reliability and availability

Always at your side

Smooth production demands systems with the highest availability and reliable control of machines and paper web.

„Engineered Reliability“ is a promise we keep. Only when the complete automation of your paper mill is functioning reliably can we be satisfied with our work. That is why we focus on the customer in product development and design new products and services together with our long-term partners in the paper industry.

Thus we have been able to gain a lot of experience in the past and optimize the monitoring of production and machine data. And a complete system conversion does not have to be accompanied by long downtimes and high production losses. We will help you with the smooth transition of your old system, for example when providers discontinue their products.

To round out our offer for you, we also offer reliable service packages. We can support your team by telephone or via remote control and, if necessary, send in experienced service personnel. This way, a high degree of availability can be achieved for the automation environment. Because you should be able to rely on us at any time!



Your benefits

- Control modernization without loss of production
 - Availability of replacement parts and system
 - Safe and predictable investment
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Your benefits

- Reduced damages and downtimes with scheduled maintenance
 - Increased productivity through targeted maintenance scheduling
 - Best quality thanks to combined technology and stock monitoring
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OnC StepCore57

SIMATIC S5 systems have been discontinued by the manufacturer. The availability of replacement parts and system availability can therefore no longer be guaranteed. With OnC StepCore57 or PCS7, Voith offers a gradual migration of the controls from SIMATIC S5 to S7, flexibly adapting to customer needs. During the conversion, software verification is performed on the operating system. The S5 and S7 process signals are automatically compared, recorded, evaluated and presented in OnView. With this software verification, the system is guaranteed to run just as it did before the controller was migrated.

OnV ConditionMonitoring

Fluctuations in rolls, especially on the calender or yankee, can lead to quality fluctuations in the paper and, over time, to mechanical damage. OnV ConditionMonitoring monitors the condition of the machine and localizes the causes in the event of problems. The monitoring includes a high-frequency online analysis which permanently examines important quality data such as basis weight, thickness and moisture. Process disruptions are recognized quickly and automatically and are immediately assigned. Appropriate corrective measures can thus be carried out right away.



- 1 OnV ConditionMonitoring
- 2 OnC StepCore57
- 3 On-Site Service



OnS Service Packages

With constant conditions and regular maintenance, automation systems should function for years without problems. However, the necessary maintenance personnel are not always available or previously unknown malfunctions appear when parameters are changed. In such situations, it is advisable to have an experienced consultant at your side who can apply knowledge gained from other paper plants.

To decrease the risk of downtimes and lost profits from sudden events, Voith offers a variety of service concepts, which can be compiled according to the specific requirements of each production line. OnS OnCall offers support for emergencies by telephone or remote control from Voith automation experts with contractually set callback times.

OnS PreVide includes troubleshooting directly on the system within a predefined time period as well as regular preventative maintenance visits. The focus of the OnS AllRound service package is on continuous partnership with simultaneous technical and technological development of the system including guaranteed performance values.

Your benefits

- High system availability with regular maintenance
- Constant system optimization by well-trained personnel
- Constant high product quality through preventative maintenance



Products

Product info

CalTronicFlex	Control system for machine operation and Nipco rolls in the calender
NipcoSet	Control system for Nipco rolls in the calender and the press section
OnC AirDistributors	Pneumatic air distributors for valve air supply
OnC AirFilter	Single and double air filter stations and individual filters
OnC AirRegulator	Air filter regulation station
OnC AirValve	Solenoid valve blocks, pneumatic valves and pneumatic components
OnC BallValve	Ball valves for a variety of applications
OnC ConDrive	Infeed and frequency converters integrated into switchgear cabinets
OnC ConSens	Consistency measurement with multi-beam pulse near-infrared light system
OnC DiscValve	Various butterfly valves with control and shut-off functions
OnC DriveControl	Main drive control for calender and winder
OnC DriveCommand	Drive control system fully integrated into the MCS (Siemens PCS7-based)
OnC DriveSystem	System consisting of OnC DriveCommand, OnC ConDrive and OnC MoDrive
OnC FlowSens	Various types of magnetic induction and vortex flow meters
OnC LevelSens	Level sensors and switches with varying measurement principles
OnC MoDrive	Electric motors for paper machine drives
OnC PressSave	Extension of existing press hydraulics for increasing machine availability
OnC PressSens	Pressure and differential pressure sensors for liquid level, pressure or vacuum measurement with ceramic and metallic diaphragm
OnC SegmentValve	Various ball segment valves with control and shut-off functions
OnC StepCore57	Conversion of old systems to S7 or PCS7 using modular design principle
OnC TempSens	Resistance temperature measurement devices and thermocouple temperature sensors
OnC TransValve	Transmitter exchange valve for pressure transmitters
OnC WebDetect	Web break detection system based on infrared light for dryer sections



Products

Product info

OnQ BleachControl	Control system that improves constancy of brightness in the final stock to reduce the target brightness
OnQ EnviroScan	Single-beam scanner with moisture and sheet temperature measurement for harsh environments
OnQ FormingSens	Microwave technology-based online measurement of the water weight in the wire section of various former types
OnQ GradeControl	MD control system with a variety of functions: basis weight, moisture, coating weight and/or speed change control
OnQ GradeManager	Model-based MD control for fast grade change with different features: coordinated grade change control, grade table
OnQ ModuleCoat	Coat weight profiling system designed for blade coater applications
OnQ ModuleIR	Moisture profiling and drying system which selectively applies infrared energy to the sheet to optimize moisture profiles
OnQ ModuleJet	Basis weight CD profile control for headboxes with Voith dilution water valves
OnQ ModuleNip	Caliper and gloss profiling control for Nipco calender rolls
OnQ ModulePro	Air atomization moisturizer system for the correction of deviations from the moisture profile, for curl correction and for rewetting with the finest and highest spray quality
OnQ ModulePro compact	Air atomization moisturizer system for the correction of deviations from the moisture profile and curl problems in the dryer with fine and high spray quality
OnQ ModuleSpeed	System for coat weight profile control for CD film coating applications
OnQ ModuleSteam	Steam box for improving the dryer efficiency and the moisture profile at installation positions in the press, over the wire and at the couch
OnQ ModuleStep	Basis weight CD profiling system for headboxes with conventional slice lip
OnQ ModuleTap	Basis weight CD profiling system for headboxes with dilution water ball valves



Products

Product info

OnQ ModuleTherm	Caliper profiling system applying hot or cold air to a calender roll
OnQ WetEndControl	Optimization of the chemical dosage used in the approach flow (retention, gas, charge)
OnS AllRound	Continuous partnership with the technical and technological development of the plant and guaranteed performance
OnS FindSet-net	Analysis tool for motorized CD actuators (OnQ ModuleJet, OnQ ModuleStep, etc.,)
OnS OnCall	Emergency support by automation experts based on a fixed contract with set callback time
OnS PreVide	Troubleshooting on site within a contractually set period in the event of emergencies and preventative measures for long-term high system availability
OnS ProfilmaticTraining	Training program for operation and maintenance personnel for installed Profilmatic systems
OnV ConditionMonitoring	Tool for maintenance of the entire paper mill which detects process errors and provides information on the machine condition (primarily for the stock analysis), in order to plan downtimes and improve the runnability of the machine
OnV FeltView	Measurement system for moisture and permeability of press felts
OnV FlocSpotter	Camera-based forming sensor for use in the wire section of board and packaging paper machines and in the dryer section of graphics machines
OnV RollMaster	Tool for display, optimization, diagnosis and analysis of all parameters relevant for the winding quality
OnV VirtualSensors	Soft sensor for real-time prediction of quality parameters (OTRO, strength, porosity)
OnView Platform	Server for capturing, archiving and compressing of machine, reel, shift, day and grade data in a database for a period of up to one year
OnView Portal	Interface for the secure access to all the various sources of machine and process data, tailored to the visualization needs of paper manufacturers
VariLoad	Rider roll control for winders with two drums



Products

Product info

VariTronic Tec	Technology upgrade for winders with one or two drums
Voith ComCore	Platform concept for all Voith QCS applications
Voith LSC Ash sensor (Total)	Ash content measurement using the absorption properties of iron-55 and XRF spectroscopy
Voith LSC Ash sensor	Ash content measurement using the absorption properties of iron-55
Voith LSC Ash sensor (total content and composition)	Measurement of the total content and composition of the ash using absorption properties and fluorescence of iron-55 and XRF spectroscopy
Voith LSC Basis Weight Sensor	Basis weight sensor with krypton-85 source either for light or heavy grades
Voith LSC Basis Weight Sensor (Pm)	Basis weight sensor with promethium-147 source
Voith LSC Basis Weight Sensor (Sr)	Basis weight sensor with strontium-90 source
Voith LSC Thickness sensor (Dual Air Bearing)	Non-contacting sensor for online caliper measurement of board and packaging paper grades
Voith LSC Thickness Sensor (LightTouch)	Contacting scan sensor which allows the online measurement of the paper caliper
Voith LSC Color Sensor	Traversing color sensor which measures the color, whiteness and concentration of optical whiteners
Voith LSC Gloss Sensor	Single-sided gloss sensor which measures the surface quality of (calendered) paper
Voith LSC Moisture Sensor	Dual-sided microwave moisture sensor (reflection)
Voith LSC Moisture Sensor	Infrared transmission moisture sensor (permeability)
Voith LSC QuantumSens	Non-contacting caliper sensor for graphical paper grades
Voith LSC Scanners	Scanners, including O and C scanners, single-sided scanners and respective sensors
Voith LSC TecoScan	Measurement system specially designed for the needs of tissue manufacturers without any radioactive sources
Voith LSC TecoSens	Sensor specially designed for the needs of tissue manufacturers that measures moisture and fiber weight online without any radioactive sources

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for Generations