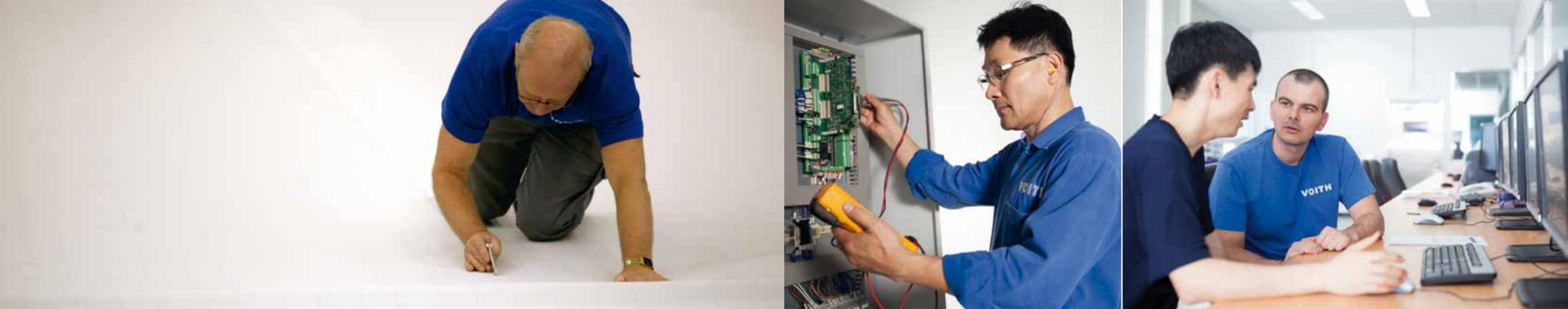


## Measuring and Diagnostic Service Guarantees reliable and safe plant operation





# Three service packages for your individual requirements

The Voith service packages are flexible and tailored to your needs to effectively use your existing systems. Get the best out of your system with either a single service package or a customized service agreement.

**Single inspection**

Troubleshooting or basic measurements offer a readily available tool to quickly get to the heart of any problem. As a result, costs can be optimized and shorter downtimes achieved, while ensuring greater operational efficiency.

**Extended Scope**

Comprehensive measurements and analysis provide the basis for planning capability, implementing the right solution at acceptable cost as well as ensuring the fast and efficient achievement of goals.

**Reliable experience**

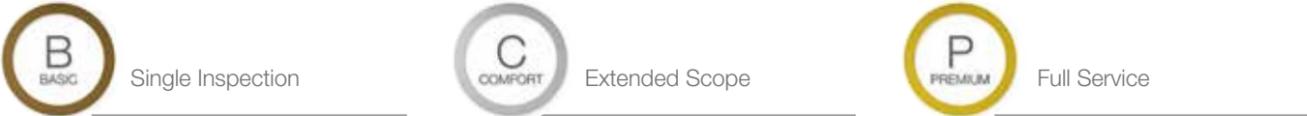
Voith has a global network of experts with more than 150 years of experience. Our customers rely on these resources to get the best results from their plant.

**Proactive service reduces costs**

The service packages are flexibly available as single service packages or service agreements. These agreements guarantee long-term functionality through status audits, checking and optimizing the individual components and recommendations for correction of the defects. This service also ensures long-term value preservation of the overall plant and is a preventive maintenance measure.

**Service package portfolio**

Customized service packages are available for all sections of the paper production line. In addition to these packages, Voith is also a competent partner in a large number of other areas.



Package scope	B BASIC Single Inspection	C COMFORT Extended Scope	P PREMIUM Full Service
	<ul style="list-style-type: none"> <li>• Troubleshooting or basic measurements and analysis</li> <li>• Checking the technical status</li> <li>• Service report with recommendations for further action</li> </ul>	BASIC service package plus: <ul style="list-style-type: none"> <li>• Comprehensive measurements and analysis</li> <li>• Service report with recommendations for further action</li> </ul>	COMFORT service package plus: <ul style="list-style-type: none"> <li>• All-round solutions including additional service personnel</li> <li>• Comprehensive rebuild surveys to improve quality or production</li> <li>• Technological advice</li> </ul>

Your benefits	B BASIC Single Inspection	C COMFORT Extended Scope	P PREMIUM Full Service
	<ul style="list-style-type: none"> <li>• Complete transparency about mechanical/technological status and functionality</li> <li>• List of corrective measures and recommendations</li> </ul>	<ul style="list-style-type: none"> <li>• Comprehensive investigations from a single source</li> <li>• Exploiting global know-how and expert network</li> </ul>	<ul style="list-style-type: none"> <li>• Everything from one source</li> <li>• Fast implementation of optimization and rebuild proposals</li> </ul>

Various add-on options for mechanical and electrical services and automation are available for all packages.



# We know your potential! Do you?

Problems on a paper machine are not always immediately obvious. Our specially designed analytical systems, closely combined with the many years of experience of Voith service personnel, help you to identify problems in good time, analyze them and solve them as a next step.

**Regardless of the location of problems on a paper machine, they always impact negatively on paper quality and the economic efficiency of the production process. Our measuring and diagnostic services are specially designed to identify problems in good time and to develop various options for action. Detailed and technically sound analyses provide you with the framework for strategic decisions to resolve problems within the production process.**

#### **Approach flow system stability**

The approach flow and the wet end form the basis for good paper profiles. If faults or malfunctions occur it may not be possible to rectify them in downstream process steps, resulting in lower quality and economic efficiency.

The stability analysis can seek out problems of this nature and prevent impaired efficiency in production. It can be used as a troubleshooting tool to avoid poor basis weight profiles or streaking. The analysis includes, for example, measuring pressure pulsations on the most important units and online transmission measurements.

#### **Analysis of CD moisture profile**

The CD moisture profile of a paper web is usually recorded automatically by the machine's quality control system and clearly represented in the analytical software. In the event of problems these standard measurements are generally no longer sufficient and may even be misleading.

Using the mobile moisture cross profile measurement system from the wire to the reel, deviations and fluctuations can be recorded while the machine is in operation and without interfering with the process. The analysis of the system then allow immediate optimization of influencing variables such as the settings on the press or steam box.

#### **Vibration analysis**

Even at low speeds, critical vibrations may still occur. It is then virtually impossible to increase production speed. The vibration analysis provides possible options for eliminating them.

Some of the measurements can be carried out during production with the machine running. In a further step, speed-up tests are performed without paper production. The critical speed of guide rolls and doctor beams is determined by means of mechanical stop tests. This test determines whether the machine parts as such or the corresponding machine frame have to be optimized or serviced.

#### **Measurement and alignment**

The misalignment of rolls impairs paper quality, resulting in vibrations and associated problems in operation. An optimum production result can only be achieved through optimum efficiency. In this context, the correct alignment plays an important role. We have the necessary experience to perform mechanical and laser optical measurements on rolls, drives, foundation rails, dewatering elements and frame components.

The analysis carried out by Voith experienced specialists can determine and positively influence those factors that can subsequently have a major impact on the cost efficiency of production.

#### **Paper profile analysis with Tapio**

Measurements with online scanners inside the paper machine only detect a fraction of the most important quality parameters and are often insufficient for a qualified paper analysis.

Our offline paper sample analysis with Tapio ensures high-resolution sampling in machine and cross direction. All important parameters can be assessed under laboratory conditions. In addition, we compare your measurement data with other samples or the grade-specific and regionspecific benchmark data from our extensive knowledge database.



Single Inspection



Extended Scope



Full Service

**Package scope**

- Vibration condition analysis as a tool for troubleshooting. Related measurements performed by experienced specialist
- Report with prioritized recommendations for troubleshooting or optimization
- Measurements of:
  - Pressure pulsations
  - Online paper transmission
  - Stock consistency stability
  - Gas content
  - Mechanical vibrations
  - Control loop stability

- Analysis as in BASIC:
- In addition:
    - Tapio MD and CD
    - Wet end chemistry
  - Report
    - Prioritized recommendations on implementation level
    - Holistic sub system analysis

- COMFORT package:
- Rebuild study for speed-up or quality improvement
  - Vibration condition analysis
  - Engineering and plant rebuild study
  - Technology study

Premium package will be offered on request.

**Options**

- Tapio MD and CD analysis
- Animation of vibration
- Analysis of chemical additives

- Animation of vibration
- Rebuild solutions for discovered problems, offered on request

- Projectmanagement for optimization tasks

## Approach flow system stability Optimal quality and runability

The faultless condition of the wet section is the basis for good paper profiles. If faults or problems occur in this area they can quickly have far-reaching consequences. One preventive measure is to perform a stability analysis of the approach flow.



# Paper moisture CD profile

## Mobile moisture profile measurements

The mobile moisture measurement system (NIR and Microwave) can be used to analyze the CD moisture profile at key points along the paper web without stopping production.



Single Inspection



Extended Scope



Full Service

### Package scope

- One cross profile measurement position, performed by experienced specialist
- Report with prioritized recommendations for troubleshooting or optimization

Analysis as in BASIC:

- In addition:
  - Tapio CD paper samples analysis
  - Second measurement position
- Report with prioritized recommendations, ready for implementation

Comfort package:

- Rebuild study for speed-up or quality improvement
- Vibration condition analysis
- Wet End process analysis
- Engineering and plant rebuild study
- Technology study

Premium package will be offered on request.

### Options

- Additional measurement position
- Tapio CD analysis
- Thermography analysis
- Paper quality optimization
- Production consulting

- Thermography analysis
- Paper technology optimization
- Rebuild solutions for discovered problems, offered on request

- Projectmanagement for optimization tasks



# Vibration analysis

## Identify critical vibrations

If vibrations are already occurring on the machine at low speeds it is virtually impossible to increase production speed. Voith experts help to find the causes and permanently eliminate them.



Single Inspection



Extended Scope



Full Service

### Package scope

- Vibration condition analysis as a tool for troubleshooting. Related measurements performed by experienced specialist
- Report with prioritized recommendations for troubleshooting or optimization
- Multi channel system with 48 or 72 channels for a short shutdown time

Analysis as in BASIC:

- In addition:
  - Speed-up tests
  - Bump tests
  - Tapio MD and CD analysis
- Report with prioritized recommendations, ready for implementation

COMFORT package:

- Rebuild study for speed-up or quality improvement
- Wet End process analysis
- Engineering and plant rebuild study
- Technology study

Premium package will be offered on request.

### Options

- Balancing of rolls in the machine
- Tapio MD and CD analysis
- Animation of vibration
- Finite-Element-Method analysis
- Permanent bearing monitoring

- Balancing of rolls in the machine
- Animation of vibration
- Finite-Element-Method analysis
- Rebuild solutions for discovered problems, offered on request
- Permanent bearing monitoring

- Projectmanagement for optimization task



Single Inspection



Extended Scope



Full Service

#### Package scope

- Measurement of complete lines from stock preparation until packaging
- Visualization and assessment of the measurement data and comparison to the narrow installation tolerances
- Reporting with detailed protocol of the results
- Discussion and definition of necessary additional action items
- Cardan shaft alignment is possible without removal

- BASIC Service package plus:
- Supervision of alignment work in case of deviations
  - Verification readings and preparation of a protocol

Please insure that tools and material as well as detailed planning for this service are available.

- COMFORT Service package plus:
- Complete Service including personal and planning

Please insure that tools and material as well as detailed planning for this service are available.

#### Options

- Detailed installation planning
- Supervision of alignment work
- Personal for alignment work
- Material for alignment work

- Detailed installation planning
- Personal for alignment work
- Material for alignment work

- Material for alignment work

## Measurement and alignment Identification and rectification of critical deviations

The demands on paper production are constantly increasing. You can continue to keep up with these requirements through a machine that is perfectly aligned.



# Paper profile analysis with Tapio Detecting quality issues

Perfect paper quality is essential for your customers. Our high-resolution offline analysis detects quality issues in your paper samples in machine and cross direction that can never be detected by the online scanner.



Single Inspection



Extended Scope



Full Service

## Package scope for sample analysis in machine direction

Analysis of one set of machine direction (MD) samples. Measurement of basis weight, ash, caliper, gloss, transmission, opacity and porosity.  
Report consists of:

- Data sample analysis
- Time signal and FFT spectrum
- Statistical KPIs

Analysis of one set of machine direction (MD) samples.  
Report consists of:

- Data sample analysis
- Benchmark incl. value assessment

COMFORT Service package plus:

- MD and CD samples analysis
- Technology assessment report

Premium package will be offered on request.

## Package scope for sample analysis in cross direction

Analysis of one set of cross direction (CD) samples. Measurement of basis weight, ash, caliper, gloss, transmission, opacity and porosity.  
Report consists of:

- Data sample analysis
- Cross profile and wave length analysis
- Statistical KPIs

Analysis of one set of cross direction (CD) samples  
Report consists of:

- Data sample analysis
- Benchmark incl. value assessment

COMFORT Service package plus:

- MD and CD samples analysis
- Technology assessment report

Premium package will be offered on request.

Please insure that samples are prepared according to Voith guideline:

- Samples in machine direction: width 120-300 mm, length approx. 2 production minutes
- Samples in cross direction: 35 cross stripes of a full reel, width approx. 500 mm



### Contact

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### Further Information



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Engineered Reliability