

PULP AND PAPER

# Laboratory and automated paper testing

## Testing and industry-specific instruments



Leading measurement solutions  
for better quality control

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# Laboratory paper testing

In all types of production, process optimization is required for a company to stay competitive. For papermakers, it's a continuous challenge to produce the product within the given specification at the lowest possible cost.

One way to help achieve that is standardized paper testing. Whether it's the strength, texture,

stiffness, thickness, brightness, or color, ABB provides the industry with a wide range of measurement equipment for paper quality control.

With almost four decades of experience, ABB can also provide consultation on what's important to measure based on your end product and testing best practices to ensure optimum quality.



# Surface Testing

Paper is a complex product. When printing, the result depends not only on the surface roughness, but also absorption, permeability, formation and thickness.



## L&W Micrometer

gives precise thickness measurements of paper, board, corrugated board and tissue. It combines the latest materials and manufacturing procedures to ensure accurate measurements.



## L&W Bendtsen Tester

is designed for rapid routine measurements, in accordance with both traditional and new standards. The Bendtsen method, which measures surface roughness, is a popular test for newsprint and linerboard.



## L&W Air Permeance Tester

uses the latest technology to measure air permeance in accordance with the most common measuring methods.



## L&W Sheffield Tester

combines rapid routine measuring with high precision to measure surface roughness according to the Sheffield method. This can be applied to paper or paperboard, from newsprint to liner.



## L&W Cobb Sizing Tester

measures the weight increase of a sample when exposed to water for a given time.



## L&W PPS Tester

is used to measure the surface roughness of coated and calendered printing and writing paper. The results give a good overview of printability.



## L&W Moisture Tester

measures the moisture content in pulp and paper products. It can be used for production control and verification of online systems and for back-up of online moisture sensors.



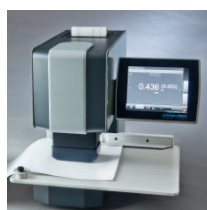
## L&W Stylus Roughness Tester Emveco

measures the micro surface roughness of paperboard and linerboard. This is known as microdeviation, a topography measurement that helps detect and analyze surface characteristics that affect print uniformity.



## L&W Elrepho

measures color, brightness, opacity and whiteness of paper, paperboard, pulp, coating inks and fillers. The measurement conforms to all established standards for optical measurements.



## L&W OptiTopo

measures surface roughness and helps predict printability using camera technology. Developed by Invenia, this method has proven to be an outstanding way to assess the correlation between paper surface and print defects.

# Strength properties

Strength characteristics of paper products are of great importance. For example, printing paper must have good runnability through the printing press and a corrugated box must sustain high loads and stresses.



## L&W ZD Tensile Tester

measures internal bond strength (a paper's strength in the thickness direction). The test sequence is fully automated, including tape application and removal.



## L&W Tensile Tester

measures all important tensile properties with precision on tissue and packaging board. It is designed with attention to ergonomics and efficiency.



## L&W Bending Tester

measures a material's resistance to bending and is designed for measurements of creased and uncreased paperboard.



## L&W Tearing Tester

measures tearing resistance according to the Elmendorf method. Pneumatic test piece clamping and automatic calculations of the measured values ensure stable and accurate test results.



## L&W Bursting Strength Tester

measures bursting strength of paper, paper board, and corrugated board. Two different versions are available depending on testing standard.



## L&W Compressive Strength Tester STFI

measures the compression strength of liner and fluting quickly and reliably. High compressive strength is important for good stacking ability of corrugated boxes.



## L&W Crush Tester

is used for compression tests of liner, fluting and corrugated board. New properties, such as flat crush hardness and energy absorbed during a FCT measurement, can be measured.



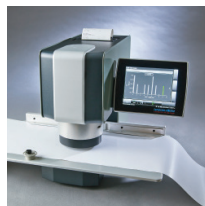
## L&W S- Tester

offers a better and easier method for strength classification of medium fluting than the CMT measurement. This method will help paper producers save time, improve quality and reduce costs.



## L&W 4-point Bending Stiffness Tester

measures the bending stiffness of corrugated board and heavy paperboard rapidly and accurately. The pneumatic clamps unique design allows warped or twisted samples to be measured without impairing results.

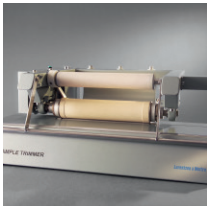


## L&W TSO Tester

measures TSI and TSO to predict the performance of paper in a sheeting process, a multicolor printing process, laser copying machines, and when manufacturing corrugated board.

# Sample preparation

There is no guarantee that the test results will be correct if the test specimens are not prepared in the correct manner, i.e. using precision, purpose-built sample cutters and punches. To ensure successful measurement results, the proper sample preparation tools must be used.



## L&W Profile Trimmer

can cut a 300 mm wide sample strip from most paper or board samples. This sample can then be tested in L&W Autoline or L&W TSO Tester.



## L&W Profile Cutter Advanced

cuts wrinkle-free sample strips to a fixed width directly from the machine reel that automatically wound onto a removable cylinder. These can be used for testing in L&W Autoline or L&W TSO Tester.



## L&W Strip Punch

provides you with precisely cut sample strips that can be used for tensile tests, fracture toughness tests, compression strength tests, RCT, CMT and CCT.



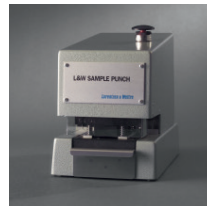
## L&W Profile Cutter Basic

cuts wrinkle-free sample strips to a fixed width directly from the machine reel. These can be used for testing in L&W Autoline or L&W TSO Tester.



## L&W ECT Cutter Billerud

prepares accurate samples of corrugated board for ECT testing. This tool, which cuts the edges parallel, is the established tool for preparing the edges of an ECT test piece, regardless of standard.



## L&W Sample Punch

creates accurate test pieces for use in tearing tests, bending resistance tests, folding strength tests. The test pieces can also be used for brightness, opacity and color testing in L&W Autoline.



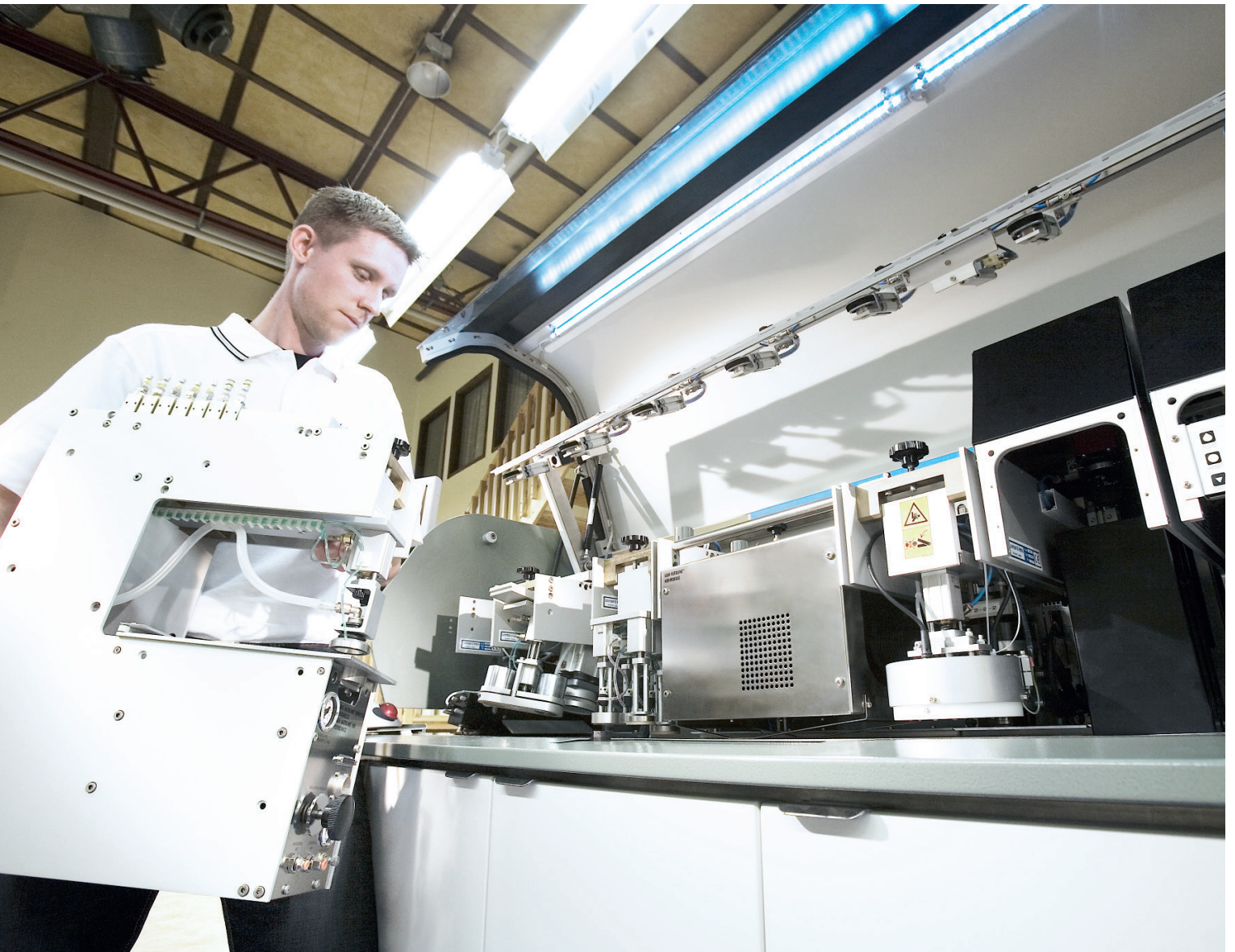
## L&W Circular Cutter

cuts circular test pieces of paper, board and corrugated board for use in flat crush tests.

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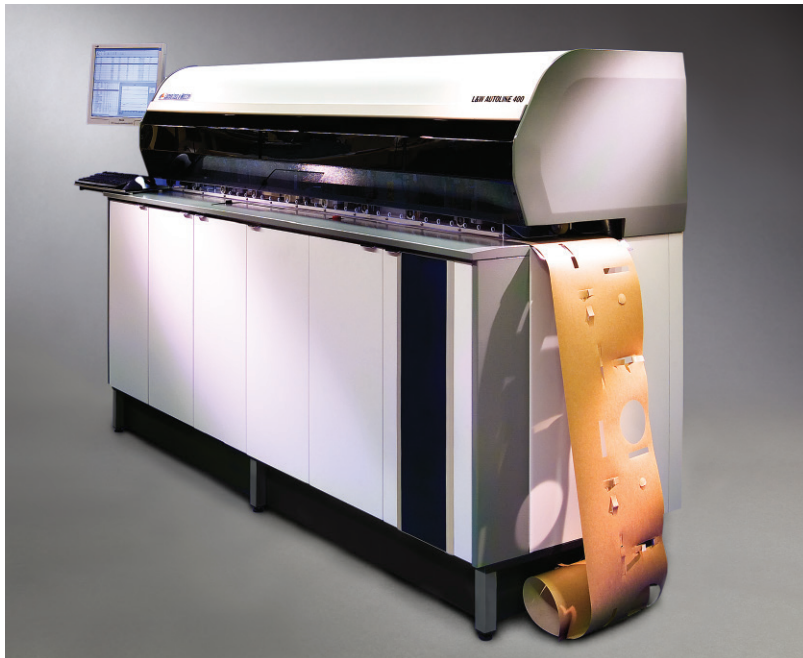
## Automated paper testing with direct feedback

Automated paper testing ensures that all reels can be tested, at multiple points across the web, in a very short period. This means that the crucial information papermakers need to maintain a consistent, high quality product is available almost immediately.



L&W Autoline is an automatic paper testing laboratory providing reliable, accurate and precise information about the quality and condition of the paper. A proven solution at more than 500 worldwide locations, L&W Autoline can perform almost all quality testing, prepare reports, archive data, and communicate with other devices that monitor process parameters with little operator involvement.

Most of the measurement methods conform to well-established industry standards, thus maintaining the continuity of information obtained from previous testing instruments. Connection to a mill-wide information network ensures that the crucial information provided by L&W Autoline can be in the papermaker's hands within minutes of reel turn up. Papermakers benefit from positive cash flow by improving quality and reducing costs.



#### **L&W Autoline 400**

Tests the entire profile measurement in an automatic sequence, and immediately presents the results on a screen or a printer, in graphic form or as tables. Operation is very simple, since all the settings can be preset. L&W Autoline 400 is configured with measurement modules that can be freely selected and combined for the desired cross-profile measurements. Most modules measure according to current industry standards.

#### **Benefits:**

- Reduced testing time enables faster problem resolution for increased profitability.
- Comprehensive CD profiles allow maintenance of high quality for all rolls produced.
- Decreased testing variations and increased testing volumes provide more reliable paper quality information.
- Tests conform to TAPPI and ISO standards to ensure accurate acceptance testing.

#### **Reliability based on 40 years of experience**

The quality of the paper testing portfolio is a testament to the reliability and innovation of Lorentzen & Wettre, who pioneered automated paper testing in the 1970's. This is further validated by the thousands of L&W paper testing instruments in use today, as well as L&W Autoline systems at nearly 500 customer locations worldwide.



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