

PULP AND PAPER

L&W Freeness Online

Process measurements



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L&W Freeness Online
(cabinet)

Overview

L&W Freeness Online delivers a fast sampling rate for Canadian Standard Freeness (CSF) or Schopper-Riegler (SR, MSR) measurements, providing more detailed and frequent information than manual sampling to enable full control of the refining process. As a small footprint solution that is both easy to use and maintain with few moving parts, ABB offers exceptional reliability making this one of the lower total cost of ownership options with the highest accuracy and availability.

ABB's well-proven pulp samplers automatically collect pulp before and after refiners to ensure that the target set point value is being met. L&W Freeness Online can be connected with up to eight samplers and can handle a process consistency of up to 8%. Data is available on the unit touch screen, integrated with 800xA or via OPC for third-party DCS.

The continuous, online freeness measurements provided by ABB's system enables fast response to process variations helping to reduce production costs, eliminate over refining, and decrease energy consumption for paper, board or tissue producers.

Easy to place and maintain

L&W Freeness Online is designed to be robust and reliable, and works well even in demanding process environments withstanding the harshest conditions.

Paper makers have limited information from infrequent manual samples to try and optimize refining. ABB's L&W Freeness Online is an automated, reliable and cost-effective measurement system for the wet end. With an accurate and comprehensive assessment of freeness in real time, mills can close the control loop, create uniform pulp furnish and eliminate over refining.

The electronic cabinet is IP65 classified, which makes it possible to place the unit close to the refiners or the production lines. L&W Freeness Online has a touch screen, integrated water house, and separates electronics from the measurement chamber. All components are easily accessible from the front ensuring high uptime and easy-but-minimum maintenance.

Features

- Automatic online process sampling at up to 8 measurement points
- Measures according to ISO and TAPPI standards
- Frequent data with up to 300 measurements per day enabling operators to correct control actions
- Automatic opening and cleaning measurement cell
- Few moving parts
- Integration with ABB Ability™ System 800xA

Benefits

- Provides fast and accurate measurement
- Optimizes use of incoming pulp
- Enables closed loop control for more consistent quality
- Helps optimize refining and reduce energy consumption
- Improves machine runnability with more uniform pulp furnish
- Excellent correlation to lab measurement results
- Low maintenance requirements and costs

Control system integration

L&W Freeness Online offers integration to 800xA with dedicated faceplates, alarm handling and trending of measurements – making immediate action by the operator easier. OPC connection to third-party DCS is also available.

Measurements according to standards

The measurements of L&W Freeness Online relate to TAPPI (T-227) and ISO (5267-1 and 5267-2) standards in the following ways:

- Diluted to correct consistency (0.3% or 0.2% depending on standard)
- Screen plate identical to standard
- One liter sample is analyzed
- Compensation for consistency and temperature
- Water measurement between samples
- Double measurement set-up

Measurement principle

The sample is pushed to the dilution tank, where the sample is diluted to approximately 0.3% for CSF or 0.2% for SR or MSR (Modified Shopper Riegler). To reduce analyzing time, the next sample is pushed forward and is held in its pipe until the sample before it is finished.

The first sample is then transported to the freeness measurement chamber where a pulp pad is created over the screen as it dewateres. The dewatering rate is measured with an ultrasonic sensor. The second sample is then moved to the dilution tank.

Mathematical operations are made to calculate the corresponding CSF, SR or MSR value. The result is compensated with the correct consistency from the optical sensor and the temperature is measured and compensated for as well, according to standards.

The pulp pad is cleaned out from the freeness chamber by air and water to create turbulence; then it is flushed to drainage. The second sample is transported to the freeness chamber for measurement.

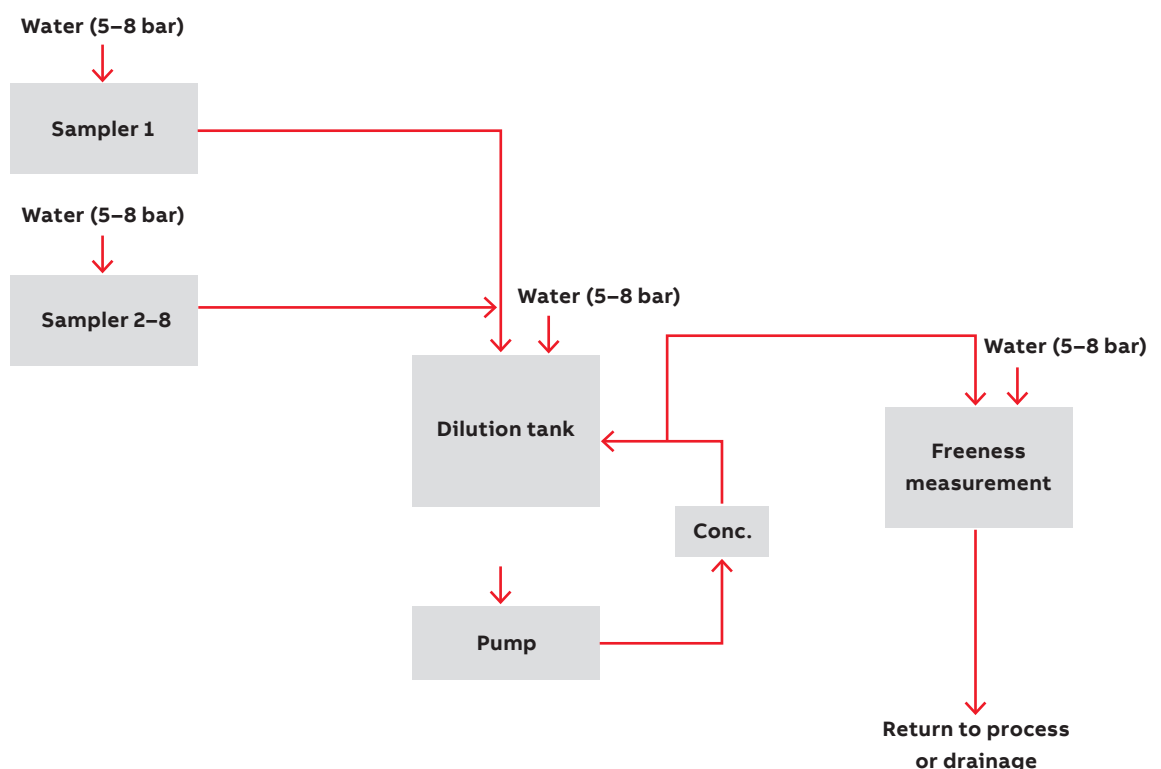
Further optimize with fiber measurement

Get a complete picture of dewatering status and fiber quality in real time by adding L&W Fiber Online. ABB also offers a combination unit that provides both fiber and freeness measurements.

Learn more

For decades, as leading supplier of freeness laboratory instruments, we have the knowledge, products and experience to help our customers achieve their measurement objectives. Please contact us to learn more about how our products can help optimize your production.

Operational principle



Technical specifications – L&W Freeness Online, code 717	
Inclusive	L&W Freeness Online, touch screen and electronics
Measurement	
Screen plate	97 holes per cm ² hole diameter 0.5 mm (0.02 in)
Measuring range	CSF: 700–20ml SR: 10–90 SR° (MSR)
Measurement frequency	4–6 minutes/sample
Consistency	Controlled and adjusted to 0.2% or 0.3%
Temperature	Compensating for temperatures differing from 20°C (68°F)
Number of samplers	1–8 samplers
Installation requirements	
Power	100–240 V
Water	Filtered to 25 µ or better with sufficient flow rate
Water pressure	0.5–0.8 MPa (5–8 bar)
Water temperature	20 ±10°C
Water consumption	Average water consumption for L&W Freeness Online including 2 samplers: 2.43 L/min (3500 L/24 hours) (82.2 fl oz US/min)
Instrument air	Air supply shall follow standard ISO 8573-1 Air class 2-4-3
Air pressure	0.5–0.7 MPa (5–7 bar)
Hoses for samplers	Air: Ø 6 mm (1/4 in) water resistant polyurethane ether (PU) or polyamide (PA) Water: Ø 16 mm (5/8 in) water resistant polyurethane ether (PU) or polyamide (PA)
Sample transportation:	Ø 16 mm (5/8 in) water resistant polyurethane ether (PU) or polyamide (PA)
Cables for samplers	5 × 0.38 mm ²
Enclosure class	Safety and water protection IP65
Connections	
Data output	4–20 mA OPC UA
Sampling	
Recommended no. of sampling points	2–4 (Possible to add more samplers)
Pulp consistency in pipe	max. 8%
Min. pressure in pipe	with: consistency 1–3%: 1 bar consistency 3–5%: 1,5 bar consistency 5–8%: 2.5 bar
Distance between sampling point and cabinet	max. 100 m
Options	
	OPC DA to UA Gateway Vortex cooler
Dimensions	
L&W Freeness Online	1250 × 1750 × 500 mm (49.2 × 69.9 × 19.7 in)
Sampler	400 × 340 × 310 mm (15.7 × 13.4 × 12.2 in)
Net weight	
L&W Freeness Online	217 kg (478 lb)
Sampler	4 kg (8.8 lb)
Applicable standards	
ISO 5267-2, ISO 5267-1 and TAPPI T227	

Inside L&W Freeness Online

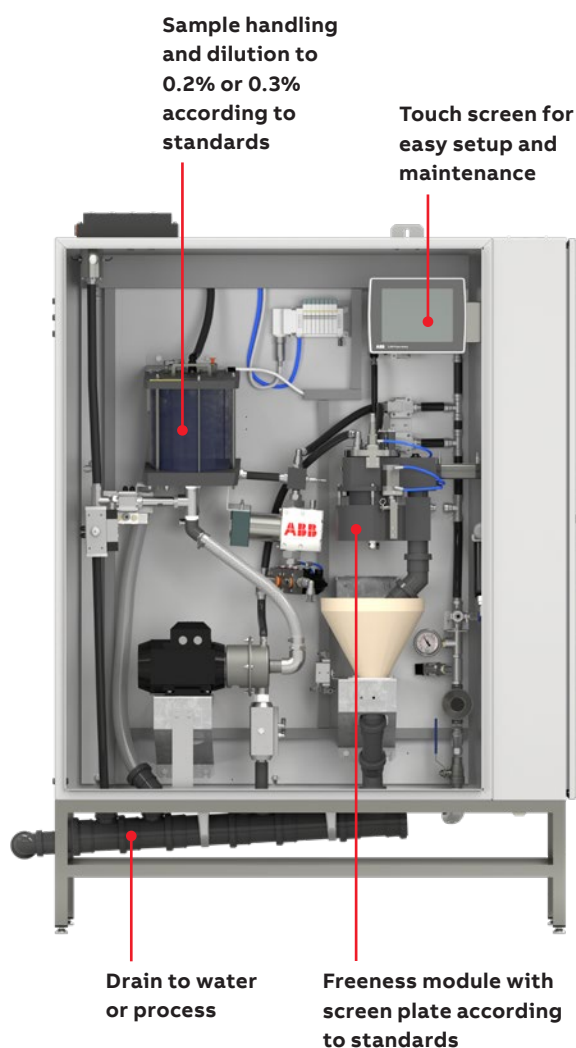


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