

PULP AND PAPER

L&W Freeness Online

Lorentzen & Wettre Products | Pulp measurements



L&W Freeness Online is a reliable, repeatable and cost-effective online system for measuring, monitoring and controlling freeness in pulp processing. It reduces production costs, through lower energy consumption by eliminating over refining. It also creates the best possible continuous and uniform pulp furnish for the paper, board or tissue machine.

L&W Freeness Online (cabinet) L&W Freeness Online measures Canadian Standard Freeness (CSF) or Schopper-Riegler (SR) for full control of the refining process. Well-proven pulp samplers connected to the process automatically take samples of 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 four samplers and can handle a process consistency of up to 8%.

Easy to place and maintain

L&W Freeness Online is designed to be robust and reliable. The electronic cabinet is IP65 classified, this high IP-classification makes it possible to place the unit close to the refiners or the production lines. It is designed to work well in demanding process environments. L&W Freeness Online has a touch screen, integrated water hose, electronics separated from the measurement chamber, and all components easily accessible from the front, all to ensure high uptime and a minimum of maintenance.

Features and benefits

- Energy savings from refiner optimization
- Optimize use of incoming pulp
- Easy to control grade changes
- Uniform furnish minimizes web breaks
- Optimize machine speed by optimizing freeness set point
- Fast and accurate measurement
- Few moving parts and easy to maintain
- Robust unit that is easy to place close to refiners

Data transfer

After a measuring cycle is complete, the result is transferred through analog output (4–20 mA) to the mill's DCS system for immediate action of the operator, if needed.

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
- 1 liter sample is analyzed
- Compensation for consistency and temperature
- Water measurement between samples
- Double measurement set-up

Measurement principle

Operational 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. 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 dewaters. 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 or SR 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.

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.



or drainage

Technical specifications – L&W Freeness Online, code 717	
Inclusive	L&W Freeness Online,
Measurement	toden server and electronics
Screen plate	97 holes per cm ²
	hole diameter 0.5 mm (0.02 in)
Measuring range	CSF: 700–20ml SR: 10–90 SR°
Measurement frequency	3–5 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	1-4 samplers
Installation requir	rements
Power	100-240 V
Water	Filtered to 25 µ or better with sufficient flow rate
Water pressure	0.3-0.8 MPa (3-8 bars)
Water temperature	20 ±10°C
Water	Average water consumption for
consumption	L&W Freeness Online including 2 samplers: 2.43 L/min (3500 L/24 hours)
	(82.2 fl oz US/min)
Instrument air	ISO 8573-1 Air class 2-4-3
Air pressure	0.55–0.7 MPa (80–102 psi)
Hoses for	Air: Ø6mm (1/4in) water resistant
samplers	polyurethane ether (PU) or polyamide (PA)
	polyurethane ether (PU) or polyamide (PA)
Sample	Ø 15 mm (19/32 in) water resistant
transportation:	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
Sampling	
Recommended no. of sampling points	2-4 (Possible to add more samplers)
Pulp consistency in pipe	max. 8%
Min. pressure	with:
in pipe	consistency 1–3%: 1 bar
	consistency 3–5%: 1,5 bar consistency 5–8%: 2,5 bar
Distance between sampling point	max. 100 m
Options	
	Schopper-Riegler measurements
Dimensions	
L&W Freeness	1250×1750×500mm
Online	(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 standa	urds
ISO 5267-2, ISO 5267-1 and TAPPI T227	

Inside L&W Freeness Online



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