PULP AND PAPER

KPM KRA and KRT Retention Measurement

Testing and industry-specific instruments

Retention control is important to papermakers due to the large influence it has on paper quality variability reduction. Stabilization of the wet end also reduces the amount of sheet breaks. ABB's ultimate solution for monitoring and control of paper or board machine retention is KPM KRA and KRT Retention Measurement. The modern design coupled with the highest volume of individual measurements available ensures long-term use and accurate measurements.

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KPM KRA and KRT Retention Measurement is a complete system including all needed hardware for installation and a low maintenance operation.

Retention Measurement System
ABB offers two options for paper and board machine retention monitoring and control: the KPM KRA sensor measures total consistency and ash consistency, while the KPM KRT sensor is for total consistency only. The measurement range for total consistency is 0–2.0 percent Cs and 0–1.0 percent for ash consistency.

Features:
- Accurate total consistency and ash measurement for headbox and white water
- Latest optical sensor technology
- Robust stainless steel construction

Benefits
- MD variation reduction in
  - Basis weight
  - Moisture content
  - Ash content
- Web break reduction
- Faster grade changes and start-ups
- Optimization of retention chemicals

Robust design and construction
The sensor is constructed of 316SS with an unbreakable stainless steel measurement cell, enabling the sensors to withstand harsh environments. The display unit and sensor have protection class of IP65 (Nema 4X) and do not need protective housing to withstand difficult conditions at the paper machine wet end.

KPM KRA or KPM KRT bypass sensors are connected to the headbox and the white water stock with sample valve and FEP sample line. White water sensor can also be equipped with deaeration module and sample pump. The measurement results are connected to the DCS, where retention is calculated.

Maintenance-free operations
Automatic flushing with water can be included to keep the sensors clean without maintenance. The optical sensor has a 3 mm gap between the lenses, which produces a self-cleaning effect due to the increased velocity. The white water sensor also has self-cleaning due to an automatic backflushing module.

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The robust stainless steel sensor measures total consistency and ash consistency.

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03
The system is easy to use, set up and operate with the display unit.

Technical specifications - KPM KRA, KPM KRT retention sensor	
Sensor type	Retention sensor with optical consistency transmitter
Sensor pressure class	PN10
Measurement range	• KPM KRT total consistency 0–2.0%, minimum 0.005%, 50 ppm • KPM KRA total consistency 0–2.0%, minimum 0.005%, 50 ppm • KPM KRA ash consistency 0–1.0%, minimum 0.005%, 50 ppm
Process temperature	10–60° C (50–140° F)
Process pressure	Max 10 bar (140 psi)
Sample flow rate	Minimum 10 l/min (2.5 gpm)
Process connection	Sample valve, diameter 21.3 mm with ¾” tube connector
Sample line	Fluorinated ethylene propylene (FEP) recommended, max 4 bar (58 psi)
Output signals	3 × 4–20 mA, active, consistency, ash consistency (KPM KRA) and temperature
Binary inputs	4, closing dry contact, process stop, grade change (2), sampler input
Binary output	1 x closing or opening dry contact for general alarm
Power requirements	• Headbox sensor: 90–264 VAC 50/60+3 Hz; 20 VA • White water sensor: 100–115 VAC or 200–240VAC, 50/60+2 Hz; 800 VA
Ambient temperature	0–50° C (32–122° F)
Flushing water	Mechanically or chemically purified, temperature 25–60° C (77–140° F) Same as sample or max 20° C (68° F) warmer Pressure 2–6 bar (30–90 psi)
Sealing water	Needed when sample pump included Same water will be used for flushing when pump included
Instrument air	Pressure 4–8 bar (60–120 psi), oil-free
Interconnect cable	From sensor to display unit, included automatically, 1.0–2.0 meters
Sensor materials	Wetted parts AISI 316, wetted tubing FEP, display polycarbonate
Comformance	73/23/EEC, 89/336/EEC, EN 61000-6-4:2001, EN 61000-6-2:2001, EN 61010-1:2001
Enclosure class	IP65 (Nema 4X)
Dimensions (L × W × H)	Headbox sensor 380 × 765 × 1170 mm (15 × 30 × 46”) White water sensor (with deaeration module) 511 × 765 × 1170 mm (20 × 30 × 46”)
Weight	Headbox sensor 26 kg (57 lbs) White water sensor 48 kg (106 lbs)

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ABB OY, KPM
Kettukalliontie 9 E
FIN-87100 Kajaani
FINLAND
Tel: Tel: +358 10 22 11
E-mail: fi-kpm@fi.abb.com

abb.com/pulpandpaper

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