KPM Process Measurements

- Easy to use
- Low cost of ownership
- Self-diagnostic products
- Leading-edge design
- Local service
- High precision
- Unique measurement solutions

Innovative thinking that solves traditional pulp and paper consistency problems
Successfully manage and control consistency
KPM has key competence concerning applications for consistency transmitters, samplers and sheet break detectors. The products are easy to use, offering several features for a minimum of maintenance and low cost of ownership. KPM’s target is to introduce new revolutionary products to the market continuously, to help customers to improve their processes. KPM’s products will help achieve considerable savings on fibre, energy and chemical costs, while improving production efficiency and paper quality. All products are supported by a global network of sales and support offices, which facilitates immediate support according to customers’ needs.

The best solution for accurate consistency control
KPM consistency transmitters offer an application specific solution to manage and control consistency in the best possible way. From the comprehensive product range (rotary, blade, microwave and optical) the best solution for each application can be selected without compromise. All KPM consistency transmitters are unique innovative products, covered by several patents.

Reliable sheet break detection
KB² Fibre-Optic Sheet Break Detector is the new generation sheet break detector that with the latest RGB technology enables 50% more light with effective power LED. This allows longer measurement distances and operation in high ambient light conditions. It is the perfect choice for installations in unclean, steamy and high temperature environments or where the space is limited.

“We have the knowledge, products and experience to help customers achieve measurement objectives.”
KC/5 Rotary Consistency Transmitter

KC/5 Rotary Consistency Transmitter is the most advanced consistency transmitter unit in the market. With its revolutionary direct-drive servo motor, KC/5 is a rotary transmitter that requires no compromises. Excellent consistency measurement performance, light weight design, simple installation and dramatically reduced maintenance makes KC/5 the new standard for rotary consistency transmitters. Its sophisticated maintenance menu includes friction measurement, reverse direction rotation to check zero point and automatically remove foreign objects.

Thanks to its patented built-in gate valve assembly, the transmitter can be installed and removed while the process is running without having to shut down or drain the line. Through KPM’s “state of the art” torque measurement technology the KC/5 provides quick and accurate consistency measurement. The sensitive and wide-range measurement sensor is applicable to all consistencies between 1.5–16%.

Installation cost is low since it is easily completed compared to traditional transmitters, and less maintenance is required. It does not need a 3-phase power supply neither contactor, nor motor starter in the electric room. All required hardware is included. Only single phase standard AC power supply is needed.

KC/5 is field repairable. No special training or special tools are needed. With no drive belt to change, KPM’s direct-drive servo motor is maintenance-free. KC/5 is easy to use and operate. Start-up is very simple and can be done by mill’s instrument personnel.

KC/7 Microwave Consistency Transmitter

KC/7 Microwave Consistency Transmitter delivers highly accurate total consistency measurement based on true-phase measurement method of microwave signal. True-phase technology is the latest invention in the microwave field, to measure consistency.

KC/7 Microwave Consistency Transmitter is unaffected by variations in pulp grade (fibre length, freeness, kappa, brightness, colour, and shives) unlike other transmitters based on optical and shear force technologies. It is applicable close to the paper machine, after mixing chest and machine chest, and it is especially recommended at paper machines for mixed furnishes and fillers. In pulp production it is applicable before first bleaching stage, after bleaching before drying machine, at mixed pulps and fillers, broke and recycled pulps. KC/7 Microwave Consistency Transmitter is resistant to changes in process conditions such as flow rate, pressure, temperature, and turbulence.

With no moving parts the transmitter’s reliability can be guaranteed. Self-cleaning ceramic windows reduce contamination and since there is no need for regular preventive maintenance the running costs are low.

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**KC/3 Blade Consistency Transmitter**

KC/3 Blade Consistency Transmitter, is a reliable and maintenance free transmitter. Its patented, shock resistant seal-less transfer mechanism with unbreakable diaphragm makes it the only transmitter in the market with no moving parts, o-rings or seals in the transfer mechanism, making it impossible for process liquid to leak inside sensor. All wetted parts are constructed of titanium. It is a 2-wire transmitter with modern HART® technology, and no external power supply is needed.

Its wide measurement range (consistency 2–16%) implies that one transmitter type fits all applications with appropriate blade type. A unique highly sensitive eddy probe measures shear force accurately. All parts in KC/3 Blade Consistency Transmitter are field changeable and most of them can be replaced without removing KC/3 from the line. No regular maintenance is required. As a result of the seal-less transfer mechanism – no special training or special tools are needed; the customers themselves can repair it.

One-point calibration sequence is used, and included built-in features are: time-stamping of samples for later evaluation and calibration, calibration calculation with multiple points and statistics, and remote selections for different pulp grades. Start-up and calibration is very easy, due to the one-point calibration sequence, and can be done by mill’s instrument personnel.

**OC Optical Consistency Transmitters**

Optical consistency transmitters are the best choice for low consistencies 0–2%Cs. The measuring principle is based on the ability of suspended particles to absorb and reflect/transmit NIR-light (near infrared). The OC sensors are constructed of 316SS with sapphire glass lenses, to withstand the most aggressive media. The sensor pressure class is PN25 for by-pass sensors and PN16 for in-line sensors.

The OC 20/70 can be installed directly to the process pipe in a similar way as blade type consistency transmitters. The OC by-pass consistency sensors are developed to measure fiber consistency in liquids from 0.001–2%. The OC P03/25 has polarizing measurement making it suitable for paper machine retention measurement, where there are variations in ash content.

The sensors have a 20 mm (OC P03/25 has 3 mm) gap between the lenses, which produces a self-cleaning effect due to the increased velocity. The OC 20/25 has a special meter 20/25-LC for mill effluents and OC 20/25-K for white liquor dregs measurements. The sensors are pre-calibrated for quick and easy start-up. After installation, one-point adjustment is performed against a laboratory test. The OC display unit has four selectable calibration curves for applications with varying furnishes.
KPM offers a retention measurement system for paper machine retention monitoring and control. KRT Retention package is applicable for paper and board machines with or without ash addition. All needed hardware is included in the system where separate configuration for headbox and whitewater measurements are available. KRT Retention package measures total consistency of the headbox and whitewater sample. Measurement range is 0–1.5% Cs. The measuring principle is based on the ability of fibers to depolarize light.

KRT by-pass sensors are connected to the headbox and the whitewater with sample valve and plastic PFA sample line. The whitewater sensor includes an automatic backflush valve that keeps the sensor and sample line clean. The whitewater sensor can also be equipped with a deaeration device and a sample pump. The sensors measure total consistency of the sample and the consistency signals are connected to DCS, where retention is calculated.

The sensor has a 3mm gap between the lenses, which produces a self-cleaning effect due to the increased velocity. In addition, automatic flushing with 3-way valves can be supplied to keep the sensors clean without maintenance. Each sensor can have four remotely selectable calibration curves for applications with varying furnishes.

The sensor is constructed of 316SS with unbreakable stainless steel sample funnel. The sensor pressure class is PN10. The display unit and sensor have protection class of IP65 (Nema 4X) and do not need protective housing to stand difficult conditions at the paper machine wet end.

KPM Pulp Samplers provide representative sampling from the process line safely and eliminates human error. The sampler breaks through the water layer inside the pipe, eliminating dewatering from the sampling process.

All pulp samplers have a unique metal-metal piston and cylinder without o-rings or seals, which guarantee long lifetime. A separate water connection allows cleaning of the sample valve after a sampling. Flushing ensures a repeatable and representative sampling procedure. As the samplers does not have seals, KPM pulp samplers are maintenance free.

Accurate and repeatable laboratory result is vital for consistency transmitter calibration, and representative samples are the base for laboratory analyses. KPM pulp samplers make sampling harmless and in a clean action way, and of course give a representative sample.
KB² Fibre-Optic Sheet Break Detector

KB² Fibre-Optic Sheet Break Detection system is designed to monitor sheet breaks in harsh environments, it is proven with hundreds of installations around the world. The non-contact sensor is placed above or under the web to be monitored. Thanks to the air purged system in the sensor head, keeping the sensor head free from dirt, steam or high temperatures, KB² is suitable for installations in harsh environments or where the space is limited. In addition to open-draw applications the breaks can be detected against felt, wire, or even against a cylinder.

KB² has both, RGB or Infrared light sources to perform superiorly with all paper and board grades and applications regardless of colour. The RGB colour measurement can handle all sheet, wire and felt colours providing reliable break detection.

KB²’s digital signal processing technology measures all signals a thousand times per second. KB² is immune to ambient light changes by measuring the backlight intensity. The break detection delay is very short, a minimum of 15 ms – with digital filtration the user can select how many measurement cycles should be used for break detection.

KB² unit’s large display and logical user interface allows easy setup of the break detection by selecting the measurements which give the highest signal difference. Break signal and maintenance alarm are wired to the PLC or DCS. The 4–20 mA current outputs for the signal levels are also available as an option.

The fibre-optic cable is located inside the straight stainless steel sensor head (which is 1.5 m long). Between the sensor head and the display unit the fibre-optic cable is located inside the stainless steel flexible conduit. Purge air is lead trough the conduit to keep the sensor head windows open.
KPM products comprise applications for consistency control, sampling and sheet break detection – and represent the most progressive solutions of the field. All products are supported by KPM and Lorentzen & Wettre global network of sales and support and of course expert consultancy services. KPM is a part of the ABB Process Automation division.