

Precise total consistency and turbidity measurement OnC ConSens







Introduction

Consistency measurement in paper manufacturing is one of the most important parameters used to control and stabilize the paper production.

The OnC ConSens 720 is an optical consistency and turbidity measurement that can cover a wide range of different applications in the pulp and paper industry. It has five predefined fiber models that are pre-calibrated for typical applications in different measurement ranges.

In secondary fiber applications, especially for packaging grades, the raw material can lead to fluctuations in freeness, ash content, fiber length, contaminants, and other factors.

Different from other measuring methods like shear force or optical sensors, the OnC ConSens 800 utilizes a microwave sensor that is independent from raw material properties.

Optical consistency and turbidity sensor

OnC ConSens 720

The maintenance-free optical sensor OnC ConSens 720 is ideally suited for measuring the total consistency including stock, ash and fines in paper pulp suspensions, water loops and slurries.

Application

The CS 720 smart sensor allows unattended operation in a wide range of process conditions. The sensor is especially used for those cases where measuring methods based on shear force are inadequate due to the measuring principle. The consistency or the alternative selectable turbidity are measured optically by means of a four-beam pulsed light using diffuse reflection in the infrared spectrum.

OnC ConSens 720 is extremely robust, and it is also low-maintenance. Its large measuring range and high level of accuracy make it ideal for a large number of applications in the pulp and paper industry as well as in water and slurry application.

Measuring the total consistency

Total consistency measurement in paper manufacturing is used in a wide range of different applications for different paper grades. For this reason, the OnC ConSens 720 has five pre-defined fiber models that are pre calibrated for typical applications. The range covers virgin pulp and secondary fiber applications as well as thin stock and white water measurements.

The ConSens 720 contains all the sensoric principles (90° scattered light method, 135° backscattered light method, four-beam pulsed light method) in the sensor head and allows best possible adaption for the measuring task. The sensor has two independent sensor units that are arranged in parallel. The application-dependent evaluation of the two signals results in stable measurements.

OnC ConSens 720



OnC ConSens 720



Reliability

The advanced optical multi-channel measurement system has a wide measuring range from 0 % to 10 %. The maintenance-free sensor head with hardened surface and sapphire windows enables an easy-to-operate and intuitive parameter setting. The sensor is factory calibrated and standard applications are pre-calibrated, thus enable a fast and easy startup.

Signal converter – OnC UniCom 950

The OnC UniCom 950 digital multi-channel signal converter for optical consistency and turbidity sensors offers all the benefits of a first-class converter platform that is ingeniously simple yet offers maximum process reliability.

Characteristics of the OnC UniCom 950

- 2 channels for 2 pieces CS 720 for consistency or turbidity measurement
- Communication (2 x) 4 to 20 mA HART, optional Profibus DP, Ethernet with web server
- Intuitive menu interface with graphical display
- Data logger function
- Optional digital inputs / outputs or current inputs for signal transfer from other devices
- Fast and easy adjustment of measured values

OnC UniCom 950



Design features

- **Factory-calibrated sensor**
- **Applications from white water to medium consistency are directly selectable**
- **All sensor principles (90°, 135° and four-beam pulsed light) are contained in the sensor head**
- **Interference factors are compensated**
- **Sensor housing in stainless steel with sapphire window and wear protection**
- **No moving parts and no wear parts**
- **Integrated temperature measurement**

Product benefits

- **Best device on the market regarding value for money**
- **Total consistency measurement considering fibers, fines and ash content**
- **Easy to install, direct after pump, no straight pipe section required**
- **Low maintenance required**
- **Reliable measurement for different fiber compositions in a wide measuring range 0 to 10 %**
- **Independent of flow rate**

OnC UniCom 950



Microwave consistency sensor

OnC ConSens 800

Different from other measuring principles like shear force or optical sensors, this microwave sensor is independent from the raw material properties like fiber length, freeness, fines, ash content and color.

Application

The operational principle of the sensor is based on a precision measurement of aqueous suspension of the dielectric constant in the microwave range. It is designed for harsh environmental conditions in the Paper industry. The sensor is almost maintenance free because there are no moving parts.

An electronic pressure gauge can be delivered to monitor the required pressure (min. 1.5 bar). This continuous online measurement of total consistency is specially developed for the pulp and paper industry. The sensor is ideally suited for recycled fiber applications and board & packaging grades.

Signal converter – OnC UniCom 800

- Microprocessor-based signal converter
- Big color touchscreen display with USB interface for historical data storage and trending
- GUI for intuitive and easy operation and sensor calibration
- Multiple languages selectable (e. g. en, ru, de, fr, es, pt)
- Ethernet interface for remote access
- M12 connector for pressure transmitter connection via M12 cable
- Multi-variable signal output for consistency, temperature, conductivity, pressure
- Signal output: 4 to 20 mA (4x)
- Power supply to converter: 100 to 240 V AC
- Power supply sensor: 24 V DC from converter

OnC ConSens 800



OnC UniCom 800



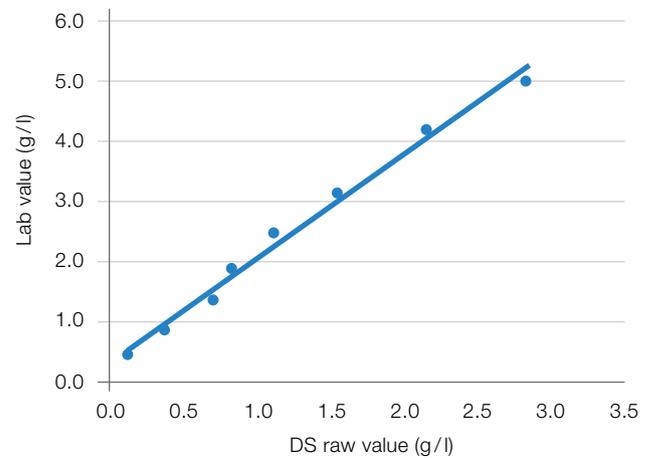


Optimal correlation to laboratory

The diagram shows the minimum deviation from the measured values to the laboratory values over a wide measuring range.

The measured values are optimally positioned if they are as close as possible to the line of the laboratory values. This achieves a high degree of correlation, and the deviation of the measured value from the laboratory value is thus low over the entire measuring range

OnC ConSens 800



Design features

- Diameters: DN80, DN100, DN150, DN200, DN250, DN300
- Sandwich version for easy installation into the pipe
- One-time calibration is sufficient after initial startup
- Easy calibration and stable and reliable operation
- No moving parts and no wear parts
- No maintenance required

Product benefits

- High accuracy measurement of total consistency
- Wide measurement range 0 to 16 %
- Not sensitive to the composition of raw material > fiber type, fiber size (SR), fiber composition, color, additives and fillers
- Flush inner parts with no risk of spinnings or deposits
- Independent of flow rate
- No straight pipe section required, no need for laminar flow



Accessories

Accessories are a complementary component to the product range of Voith. Therefore, a large range of accessories is available for our consistency sensors.

Installation and mounting set for OnC ConSens 720

Mounting set for OnC ConSens 720 (1) consisting of:

- Welded socket
- Adaptor
- Triclamp connector
- Gasket
- Blind cover
- Optional plug for welding socket

Optional:

Mounting set with ball valve (2) for easy retraction of the sensor without emptying the pipe.

OnC PressSens 110 for OnC ConSens 800

- Electronic pressure gauge and transmitter in one instrument
- Analog output 4 to 20 mA and alarm contacts
- Robust design in stainless steel
- Front flush ceramic measuring cell with process connection G1"
- Protection class IP69K
- Digital and analog indication

OnC SampleValve 500 for OnC ConSens 720 / 800

- Sample valves for installation direct to process pipes
- Available in 2 sizes: DN25 and DN40
- Manual version and automatic version with pneumatic cylinder available
- Used for calibration of quality measurements like consistency, ash and brightness

OnC ConSens 720



OnC PressSens 110

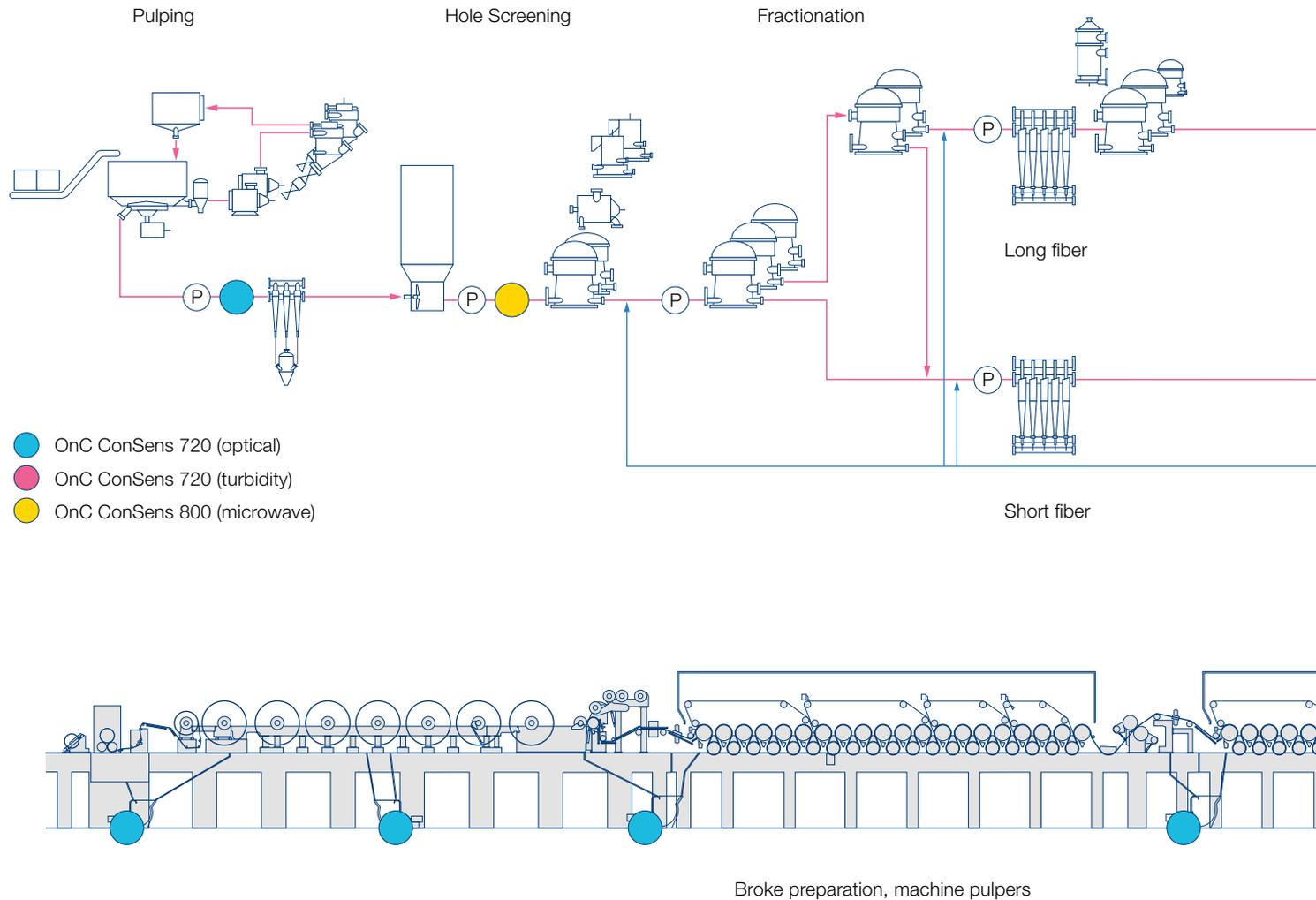


OnC SampleValve 500



Application consistency measurement

Example from an OCC stock preparation with Test Liner PM



Pulping

OnC ConSens 720 with wear-resistant sensor head and sapphire windows ensures a maintenance-free measurement even with high reject content.

Hole Screening

OnC ConSens 800 ensures a precise consistency measurement, which is independent from raw material variations and fluctuations that very often appear after the pulping system. Stable consistency is a requirement for the optimal function of the hole screening system.

Broke preparation

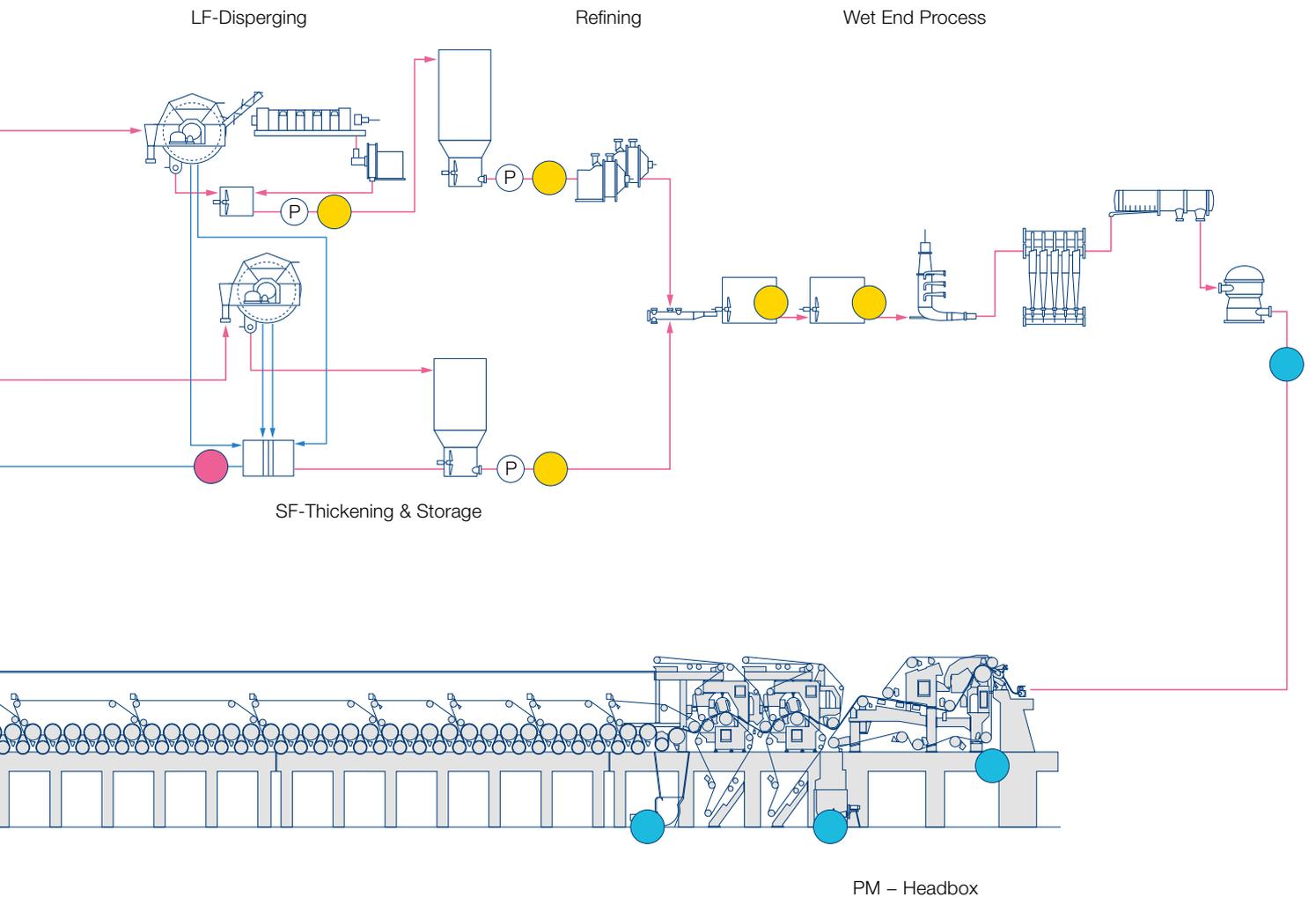
OnC ConSens 720 is not dependent on flow nor is it sensitive to undissolved fiber flakes. The sensor is inserted into the pipe at a depth of 5 mm. This prevents the pipe from blocking.

Machine pulpers

OnC ConSens 720 has a wide consistency range and is ideally suited for this application.

LF-Dispersing

OnC ConSens 800 will provide accurate measurements at high consistencies up to 16 %.



Refining

OnC ConSens 800 delivers specific refining energy control with high accuracy regardless of the raw material variations.

SF-Thickening & Storage

OnC ConSens 800 is the best choice when it comes to process conditions like at the MC-Storage towers discharge where we dilute from 12 % consistency down to about 5 % consistency.

LF & SF-Thickening

For continuously monitoring the different water qualities produced from the Disc Filters the CS 720 is ideally suited. Without calibration effort the turbidity measurement delivers

information on disk filter filtrate quality which is crucial for overall process stability and machine runnability.

Wet End Process

OnC ConSens 800 is used for blending and machine chest consistency controls. This, together with the retention control, is the basis for a stable basis weight.

PM – Headbox

OnC ConSens 720 retention control measures white water 1 and headbox consistency. This is a low consistency in-line application that controls the white water 1 consistency, which is needed for a stable basis weight.

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