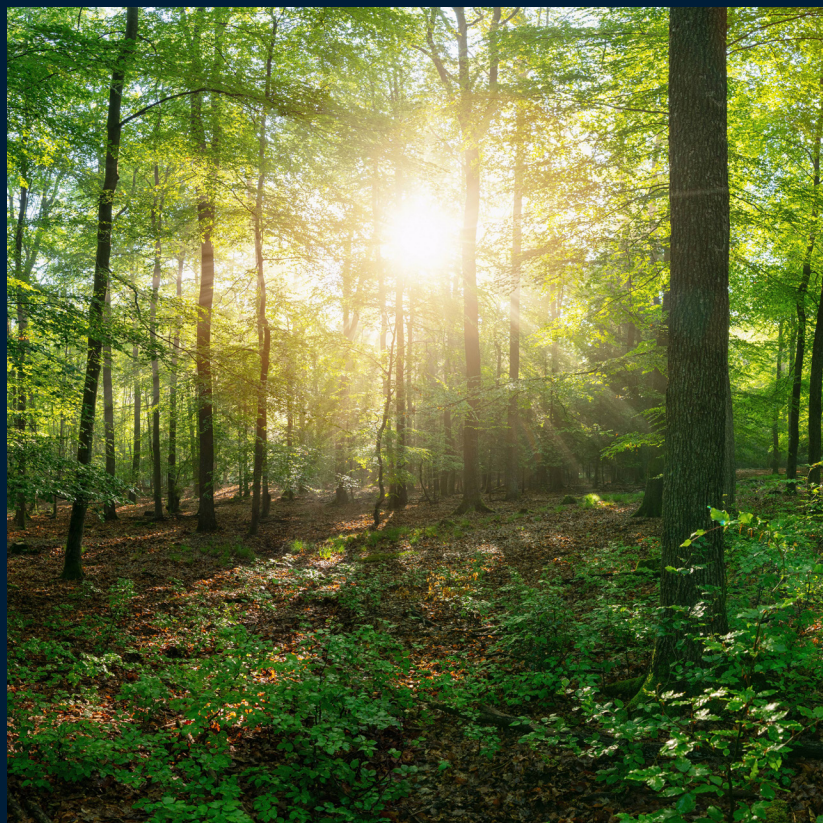
VAISALA POLARIS™

Maximize Savings in Every Drop of Chemical Recovery

Measure your process success with reliable inline monitoring.



Pulp and Paper

Embrace smart monitoring in pulp and paper mills to optimize resources, enhance efficiency, and drive the industry towards a sustainable future.

Technological advancements and environmental concerns are reshaping the pulp and paper industry. Not every addition to mill operations, however, requires an overhaul of entire processes. In fact, paper chemical companies, kraft chemical and semi-mechanical pulp mills, and paper and wood mills can optimize the use of energy, water, and materials with reliable inline measurements that install quickly and maximize uptime.

The kraft recovery process can benefit the most from real-time monitoring because of its complexity and high-resource cost. **By precisely measuring the concentration of various liquids, such as pulp slurry, black liquor, white liquor, and bleaching agents, pulp and paper mills can adjust the process parameters to achieve the desired product quality and efficiency.** Be a part of the transition to a sustainable pulp and paper industry today by leveraging smart monitoring solutions.

INNOVATE WITH INTELLIGENCE DURING CRITICAL APPLICATIONS

Weak Liquor from Pulp Washers

Optimize the consumption of pulp chemicals and usage of water during washing by measuring black liquor concentration. Maximize the efficiency of the washing process by calculating material balances in real time.

Black Liquor to Evaporators

Increase the overall capacity of evaporators by controlling the concentration of feed liquor from washers, maintaining a consistent mixing liquor. Additionally, improve profitability through reduced steam consumption.

Green Liquor TTA in Causticizing

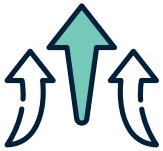
The quality of white liquor can be improved by continuously monitoring the total titratable alkali (TTA) of green liquor in the causticizing process, enhancing the quality and stability of white liquor thereby decreasing operating costs and increasing pulping efficiency.

Black Liquor to Recovery Boiler

Feeding low concentrations of black liquor solids to a kraft chemical recovery boiler burner can cause a steam explosion. It is imperative to continuously oversee black liquor content to prevent dangerously low black liquor concentrations from reaching the boiler.

BENEFITS OF INLINE MEASUREMENT

Less Energy Wasted



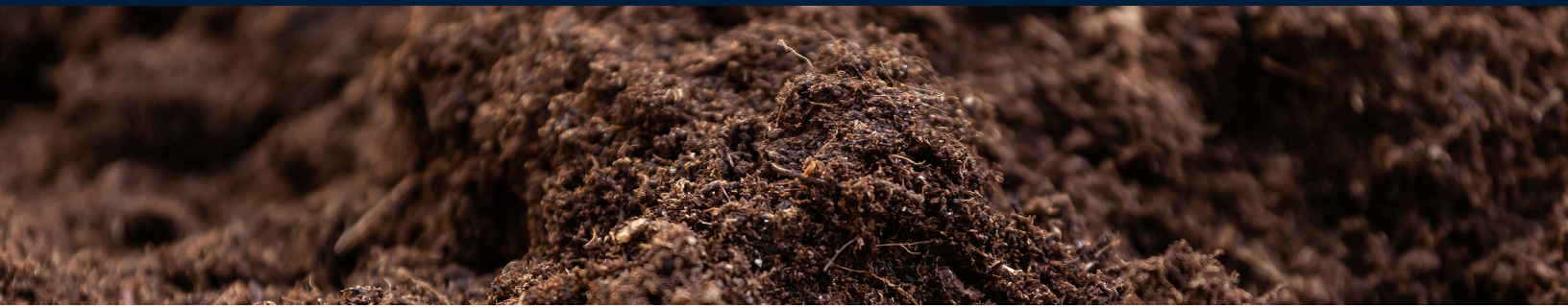
Improved Pulp Quality

Less Chemicals Consumed

Maximized Efficiency

Improved Boiler Safety

Reliable Measurements



DECADES OF STABLE & RELIABLE MEASUREMENTS START HERE

The toughest process conditions in pulp and paper require custom-engineered instrumentation like the Vaisala Polaris PR53SD Process Refractometer. Built on over 40 years of deep industry knowledge, this sensor can be installed in fiber and chemical recovery lines to effectively measure black liquor, green liquor, brown stock washing and other liquid concentrations.

Stable and reliable measurement is a core principle for Vaisala Polaris products, and the PR53SD Safe-Drive process refractometer is designed for areas where safety is critical, such as firing liquor concentration. **Mechanical safeguards ensure that if each installation step is not followed correctly the instrument cannot be activated, guaranteeing a correct fit in pressurized lines.** The design is also recommended as a Good Practice for Safe Firing of Black Liquor by the Black Liquor Recovery Boiler Advisory Committee.

Utilizing a one-of-a-kind wash nozzle enables reliable measurements in various installation positions as the PR53SD can be leveraged for fiberline to brown stock washing, evaporation, black liquor firing, slaker, and lime operations. **Advanced optical image analysis and diagnostics help users to quickly review wash performance.**

Add smart features via a ready-to-use integration with Vaisala's industry-leading Indigo520 transmitter. This solution enables critical features for demanding applications, including data logging, wash control, settings, and measurement parameters from a single interface and serves as a window to the process.


VAISALA

KEY FEATURES

1

SAF 2205 material for protection against high temperatures, challenging processes, and rapidly changing conditions.

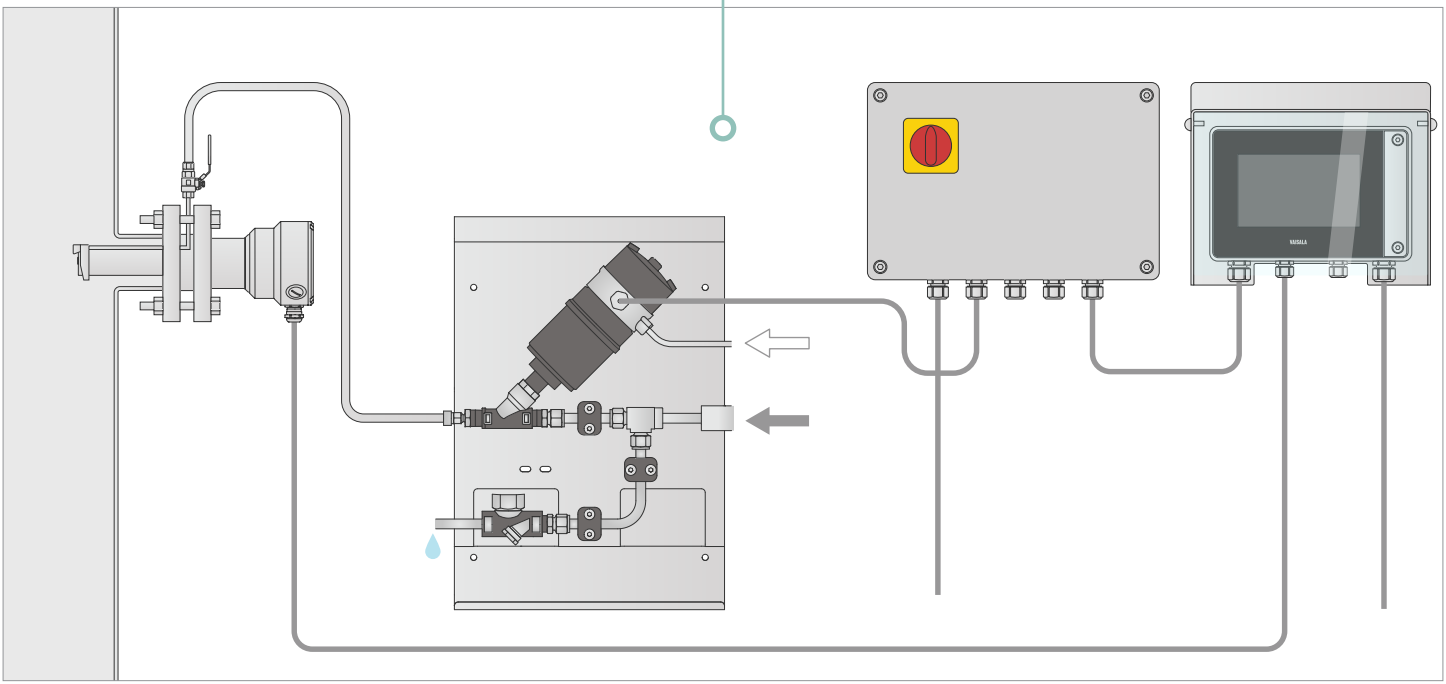
2

The Safe-Drive retractor uses visual cues to prevent installation and maintenance errors. Insert and remove from pressurized process line in a few steps.

3

Field-proven prism wash systems allow accurate measurement in black, green, and white liquor applications.

Steam Wash System Including Indigo520



4

The measurement principle responds to all dissolved solids and is not affected by bubbles, foam, particles, suspended solids or fibers.

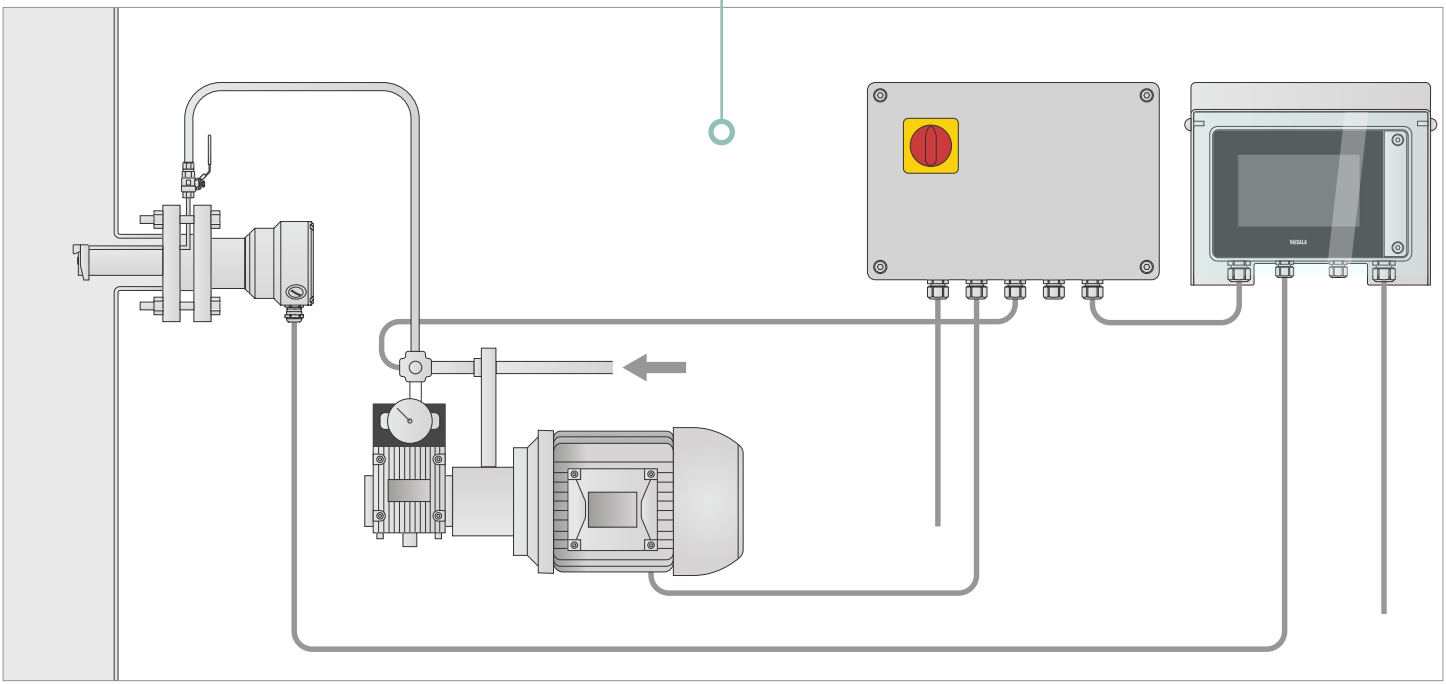
5

CORE-optics sensor is mechanically isolated from the influence of external forces such as temperature shocks, pressure peaks and vibration.

6

Rated for use in high-pressure environments according to the American Society for Mechanical Engineers and the Pressure Equipment Directive.

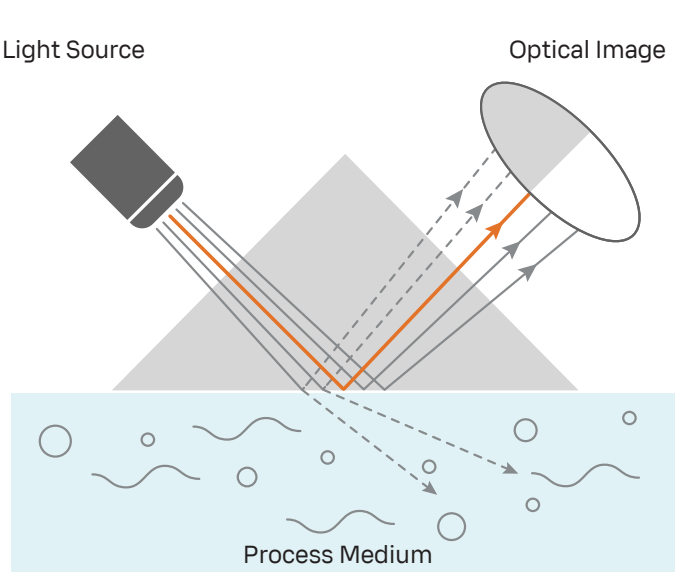
Pressure Wash System With Indigo520 For Green Liquor

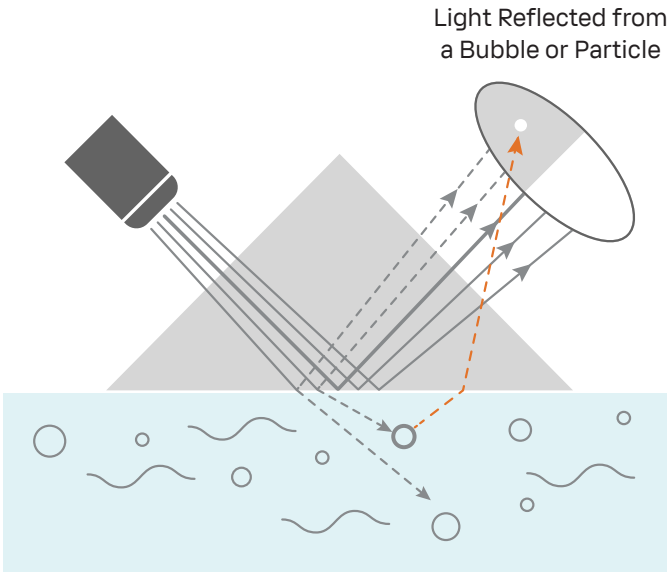


REFRACTIVE INDEX:
SHINING A LIGHT ON YOUR PROCESS EFFICIENCY

A process refractometer is based on refractive index (RI), which is a highly accurate measurement of the dissolved components in a liquid. There are three main components in the refractometer: a light source, a prism, and an image detector. The light source sends light rays at different angles to the prism and process interface. Rays with a steep angle are partly reflected to the image detector and partly refracted to the process. Rays with a low angle are totally reflected to the detector. The angle from which total reflection starts is called the critical angle, which is a function of the refractive index – and therefore correlates with the concentration of the solution.

A built-in temperature sensor measures the temperature on the interface of the process liquid. The sensor converts the refractive index and temperature into concentration units indicated in different scales. The diagnostics program ensures that the measurement is reliable.





No Influence by Particles, Bubbles or Color

SUPPORTING SUSTAINABLE MANUFACTURING, DROP BY DROP

What if improving product quality, increasing productivity, and maximizing energy efficiency didn't require a manufacturing shutdown? What if achieving sustainability goals was as simple as acquiring real-time, actionable data on production processes? What if all you needed was the right partner? At Vaisala, we give the world the means to measure what matters. Our technology enables shifting to cleaner energy, optimizing use of resources, and enhancing health, safety, and well-being. Let's start co-creating a future-proof pulp and paper industry today.

LEARN MORE AT
VAISALA.COM