



Level



Pressure



Flow



Temperature

Liquid
Analysis

Registration

Systems
Components

Services



Solutions

AF22 In-line Sensor Provides Continuous Color Monitoring- Food

Optical AF22 series maximizes in-line quality for optimum process and product control and productivity



Checking samples in the lab



AF22 sensor with model 980 series transmitter



Basic food groups

Food and beverage processes use optical sensors to ensure quality of product and minimize potential loss and waste.

Customer profile

Food and beverage manufacturers

Application description

Manufacturing of various products which require the addition of syrups, flavorings, coatings, coloring agents, and water; plus continuous monitoring of low level impurities, interface detection and finished product.

Measured parameters

Color to APHA, Hazen, ASTM scales visible-NIR

Application challenges

The normal practice in many plants is to manually take product samples and perform visual or laboratory color measurements to ensure quality and consistency. The samples are compared to APHA, Hazen or similar color standards.

Often times, the laboratory is limited by time, sample frequency, or is adjusting for off-spec product that has already passed measurement points in a downstream buffer tank.

Solution

Fortunately, there is an in-line optical flow through sensor that can be used to monitor product color in real time with a high level of repeatability. By using an in-line optical sensor, expensive sampling and analysis can be avoided while minimizing costs for laboratory sample handling and off-spec product.

In practice, the continuous output or alarm functions can be used to alert an operator of off-spec product color levels immediately so that appropriate action can be taken - thereby avoiding potential product loss and waste while increasing productivity.

In-line, real time color measurement can be calibrated with grab samples. Simple human and electronic interfaces can be programmed to provide 4 to 20 mA analog signals or discrete contacts for quality range, set point specification, or out of tolerance notification.

The in-line measurement enhances control strategy, eliminates costly, non-hygienic and maintenance intensive sample systems, and ensures rapid reaction and adjustments to the process.

Instrument description

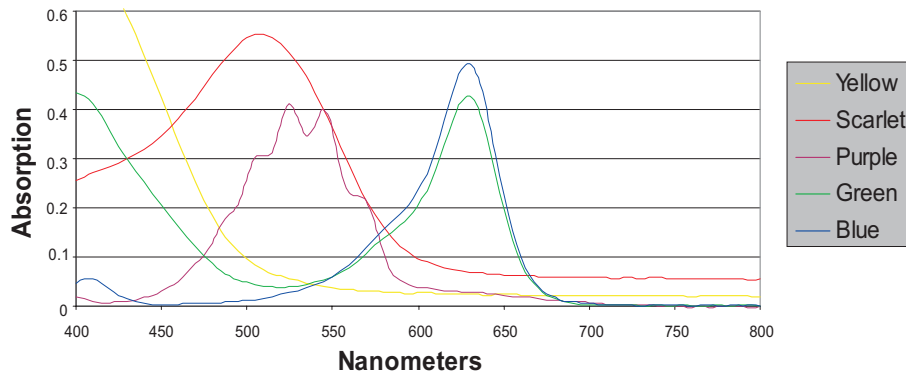
A typical installation uses a AF21 or AF22 dual beam absorbance sensor in a sample stream or process piping system with the 980 transmitter housed locally in a NEMA 4 enclosure.

Measuring principle

The AF22 series in-line sensor utilizes a dual beam measurement method that measures and computes the ratio of two light beams - reference and measurement. A light source shines visible light through the process stream via two transparent windows and some projection optics. Opposite the light source, the light received is split into two separate beams and their intensity measured. The received beams are subsequently filtered and analyzed by an intelligent processor. APHA and Hazen color measurement standards are then represented by a real-time, instantaneous 4 to 20 mA output signal or set-point alarm.

For more information, contact
Endress+Hauser, Inc.
317-535-7138
www.us.endress.com

Liquid Colors Absorption



Sensor

- Dual beam color
- 390 to 1100 nm measuring wavelength
- Line sizes 1/4" to 4"
- Tri-clamp, flange, FNPT and dairy couplings available
- Polished, 0.4 µm finish with 316L SS sanitary housing
- EPDM, Viton®, or Teflon® gaskets
- In-situ cleaning and liquid-free calibration option available
- Suitable for CIP/SIP and ambient wash down

Transmitter

- DIN rail, panel mount or NEMA 4 field enclosure available
- 650 ft maximum cable length

ISO 9001:2000 Certified

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