

IN-LINE TURBIDITY AND HAZE MEASUREMENT

Monitoring turbidity and haze of liquids and sheet is an indicator for product quality. Examples include: polymer extrusion, resins and chemical production. Real-time adjustments of the process parameters are therefore possible through immediate 'off-specification' detection.

INTRODUCTION

Turbidity and haze measurement is a well-accepted technology to check the consistency some production processes. Usually these measurements are performed 'off-line'.

The delay between sampling and obtaining the results from the laboratory can be time consuming. A significant disadvantage is that only a single measurement is generated in this time period and the concentration during, before and after the sampling point is unknown.

With the inline turbidity and haze measurements taking place directly in the process, not only is complete documentation possible, but when variations occur, immediate intervention can take place.

INNOVATION

The Equispec™ In-line Color Spectrophotometer (ICS) is a high performance instrument designed for use in an industrial process. Its excellent sensitivity and flexibility make it useful for process applications. The ICS and process probes are designed to be used in high-temperature, high-pressure and corrosive environments. It can be used to analyze liquids and solids.

The analyzer supports one or two probes with dedicated lamp compensation channels [all fiber-optic double-beam design].



Photo 1 : Equitech's Retro-Reflection Probe

TURBIDITY AND HAZE MEASUREMENT

Equitech's fiber-optic probes allow for easy access into the process. Equitech offers probes for both turbidity and haze measurements. This includes insertion/immersion probes (see Photo 1).

The spectrophotometer is integrated in a NEMA4 box with an industrial computer and touch-screen (see photo 4). The appropriate spectral range is 380-780 nm (resolution 1 nm). The NEMA4 box is made from stainless steel. It is designed and equipped specifically for use in the production environment where the ambient conditions can be dusty, vary in temperature, subject to vibration etc. The box also contains a thermoelectric cooling and heating device to eliminate the influences from ambient temperature by keeping the temperature inside the box at a constant level.



Photo 2: ICS stainless steel NEMA4 box with touch-screen

Turbidity and haze are calculated from the spectral curve, and displayed as trend charts by the EquiColor™ software (see photo 3).



Photo 3: Trend charts of EquiColor™ Software

PROCESS MONITORING

Turbidity and haze measurement is subject to influence by various factors including temperature, pressure and flow. In addition, raw material can influence the result, reflecting different lots, ratio of mixtures etc. All these factors, either singly or in combination result in modification to the quality of the produced material. For continuous process monitoring, 10 to 60 seconds is recommended as the measurement interval. Intervals as fast as 1 to 2 seconds are possible.

INSTALLED APPLICATIONS INCLUDE

Resin Production, Sheet Production,
Filter Breakthrough, Surfactants

For more information or to discuss your turbidity or haze application in detail,

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