MONITORING EXCELLENCE.

SIGRIST
PROCESS-PHOTOMETER

Application report

Colour of Liquid Sugar

During manufacturing of various soft drinks as Coca-Cola, lemonades, juice, sugar solution is added. Usually bulk sugar is supplied and dissolved for the addition. If the colour value of the sugar solution is above 25 ICUMSA*, one can taste the Melanoids (compounds of the molasses) in the final product. Due to this reason, the sugar solution is decolourized in a filtration process with Kieselguhr and activated carbon to remove the unpleasant and untasty by-products. After filtration, the colour might not exceed 25 ICUMSA.

Benefits

Quality:

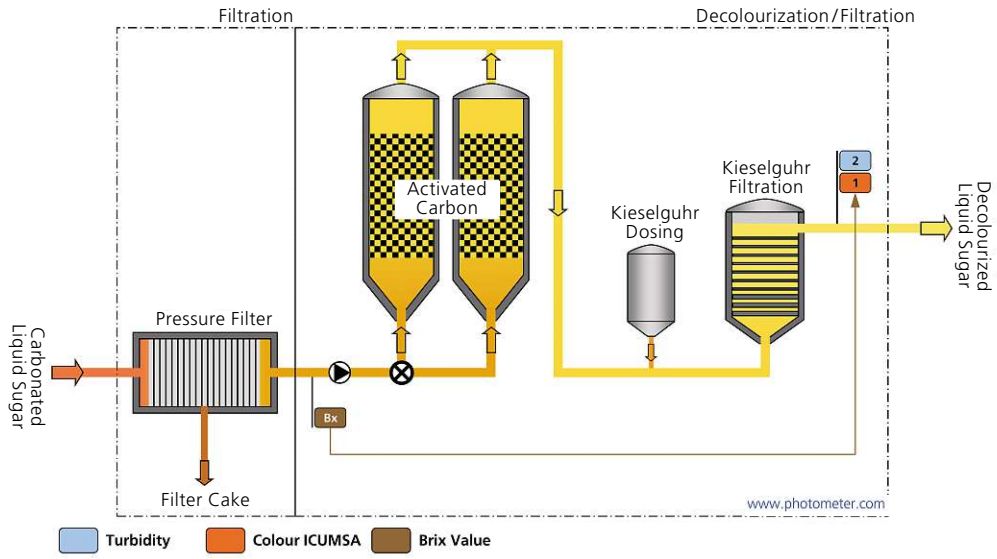
- Quality monitoring of the final product
- Monitoring of a process to manufacture an optimized product quality

Economic:

- Prevention of defective rejects
- Prevention of a negative market feedback by substandard product quality.
- Here the customer might estimate by himself the losses caused by a faulty batch

Typical applications

At the output of decolourization and filtration process, the online colorimeter ColorPlus is used. The ICUMSA value is calculated from the colour measurement of ColorPlus and the density of sugar (Brix value (refractive index)). If the Brix value (refractive index) varies, it will be measured online and the value will be transmitted to the SICON controller. A constant Brix value (refractive index) can be programmed directly into the controller.



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Products

SIGRIST Products and configuration for this application

- ColorPlus In-line
- ICUMSA colour measurement in sugar at 420 nm
- Turbidity compensation at 700 nm is recommended

- ColorPlus in-line basic instrument 2 VIS
- LED ColorPlus 420 nm configuration
- LED ColorPlus 700 nm configuration
- OPL-Bit window borosilicate ColorPlus in-line; 2 pieces
- Set EPDM seals for OPL-Bit: ColorPlus; 2 pieces
- OPL Bit ColorPlus; according measuring range; 2 pieces
- SICON Control Unit
- Terminalbox ColorPlus

ColorPlus with SICON

*The ICUMSA value is calculated from the colour standard in extinction and the dry weight (refractive index) with the following formula:

$$\text{ICUMSA units} = 1000 \cdot \varepsilon_{420} = 1000 \cdot \frac{100 \cdot E_{420}}{L \cdot °Bx \cdot d}$$

ε = extinction coefficient
E = extinction (reading)
L = path length in cm
Bx = refractive index
d = density

Advantages of SIGRIST ColorPlus In-line

Benefits

- Main advantage of the ColorPlus for this application is the possibility to internally calculate and provide the ICUMSA colour value, which consists of the absorption value and the externally measured Brix value (refractive index). This is preventing additional expenditure in the PLC system.
- Turbidity compensation by second wavelength

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