

METTLER TOLEDO APPLICATION NOTE

Bacteria Growth Control Using Turbidity Measurement

BACKGROUND

Turbidity is measured in the production of medicines containing purified antigen through classical aerobic bacteria fermentation from an initially fully clear and particle-free fermentation medium. Turbidity measurement in this type of application leads to more accurate control of the fermentation as well as a more consistent and reproduceable quality.

THE PROCESS

First the zero productivity point, corresponding to 100% transmission, is adjusted in the clear solution before fermentation. Empirically established values for slope and turbidity development during the fermentation for the different products must be carefully studied on a smaller scale and the values entered directly into

the transmitter. If necessary, these values (zero and slope) are adjusted after the first cycles in the fermenter. Optimal final turbidity values of the respective fermentation (corresponding to the optimal fermentation yield) are set for each channel. This allows transfer of the medium from the seed fermenter to the production fermenter to be carried out fully automatically at the opportune moment, and the final fermentation stage to be interrupted at the optimal point of time. This results in the most efficient use of the fermenters, consistent and reproducible quality and maximum yield, saving both time and money.

INSTRUMENTATION

Standard sterilizable stainless steel turbidity sensors are recommended for this application in conjunction with an InFit[®] 761-25CIP housing. The transmitter of choice is the FSC 402.

PRODUCTS

Turbidity Transmitter FSC402/II

- Covers a complete range of applications in chemical processes and biotechnology
- Menu driven dialog allows simple operation and calibration
- Transmitter features two independent measuring channels, two relays and one current output per channel, which are galvanically isolated.
- Transmitter allows a high process safety due to the optical transmission of the signal

In-Line Turbidity Sensor

- Construction and simplicity of mounting guarantee low maintenance costs
- Kalrez[®] seal is extremely resistant to chemicals and CIP cleaning process
- Use of optical fibers for the signal transmission increase the safety of the process

InFit[®] 761-25CIP Housing

- Steam-sterilizable & autoclavable for hygienic and CIP/SIP applications
- Meets 3-A guidelines and EHEDG Certification to ensure maximum cleanability
- Exclusive o-ring positioning guarantees perfect sealing, permitting full CIP procedures to be performed without any compromise of sterility
- Specially designed smooth surfaces of the housing and o-rings prevent the adherence of microorganisms
- Recommended for use with Mettler-Toledo safety weld-in sockets to provide the highest level of protection for personnel, equipment and the environment