

Application report

Turbidity before Disinfection

In water treatment, solids (turbidity) are always removed and the water is subsequently disinfected before it is fed into the distribution system. More and more often, ultraviolet (UV) light is used for disinfection. In the case of UV disinfection, the law specifies how much UV energy has to act on the water (e.g. in Germany it is at least 400 J/m^2) in order to guarantee a predetermined minimum disinfection.



UV reactor

Benefits

Measuring turbidity in the inlet pipe before or after the UV reactor allows a discharge of the water in case the turbidity is too high. Turbidity which is too high (e.g. in Germany, a maximum of 0.2 FNU is permitted) will cause measurement errors of the disinfection performance.

Increased formation of scaling on the UV lamps and thus increased cleaning effort or even exchanging the UV lamps ahead of time can thus be prevented.


Discharging the water will increase operation time between cleanings and will thus directly lower operation costs.



UV reactors with AquaScat WTM before/after disinfection

Typical application

In many water treatment plants, the turbidity of the raw water is very low and no filtration is necessary (ground water, river bank filtrate, wells, ...). This water is merely disinfected and fed into the distribution system.

The raw water flows through the UV reactor with a predetermined contact time. A sensor (UV reactor ) constantly measures the intensity of the UV light (transmission) and transforms this signal into a displayed value of J/m^2 or Watt/cm^2 .

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The intensity of light at this receiver depends on three factors:

- the intensity of radiation of the lamps
- the amount of substances in the water, which absorb UV light
- the amount of solids in the water (turbidity = undesirable light scattering)

The more solids are present in the water, the more frequently the UV lamps have to be cleaned.

At this point, an AquaScat WTM is employed in order to control discharge via the measurement of turbidity.

In applications in which no further treatment of the water is carried out, this is also the final measurement of turbidity.

Products

SIGRIST product and configuration:

- AquaScat 2 WTM or WTM-A
- Control unit for AquaScat 2 WTM/HT

Parameter settings

- Adjust water flow
- Determine threshold values for preliminary alarm and alarm together with the customer

Advantages of SIGRIST AquaScat WTM

Customer benefits

Free-fall concept. The water does not contact the optics

- no falsification of the readings and no drift because of window soiling
- very long maintenance intervals
- high turbidity can be measured

Adjustment with secondary turbidity standard

- allows verification and recalibration without formazine
- no purchasing, storing and handling of formazine