

Typical monitoring points for turbidity in a potable water treatment plant. The measurement at each point is a guide to the efficiency of the various stages of treatment in removing turbidity.

1 Raw Water

Raw water monitoring provides an indication of the solids loading entering the treatment plant. Some river sources can change rapidly and the turbidity reading allows manual or automatic adjustment to the coagulant dosing required to treat the water. Raw water turbidimeters are exposed to fouling due to the nature of the sample. *System 467X/2 will be ideal for this application. For exceptionally high turbidity values (> 250NTU) System 467X/3 would be used.*

2 Clarifier Supernatant

Clarifier supernatant turbidity measurement enables the efficiency of the clarifier to be monitored by the plant operator. Early warning of the floc blanket break-up or incorrect coagulant dosing can be given. *System 467X/1 or 467X/2 will be used.*

3 Filter Backwash Water

This is a common application. The turbidity of the backwash water goes through a predictable cycle as shown on the right. By monitoring this cycle the minimum amount of water is used to achieve the wash. *System 467X/3 will be ideal for this application.*

4 Filtered Water

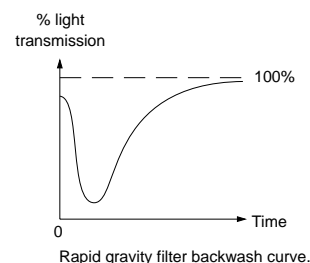
Filtered water turbidity measurement is particularly important to ensure correct operation of the filters. When the filter becomes inefficient the turbidity will rise.

The greatest need for monitoring the filtered water is to guard against breakthrough at the filters, as this could allow organisms, such as *Cryptosporidium* to enter the supply. The ability to measure extremely low turbidity values – less than 0.1NTU – is essential. *System 467X/1 is designed to meet this requirement.*

Significant numbers of units are bought for this application. ABB have an edge because of the extreme sensitivity and accuracy at low levels which 467X/1 provides.

5 Final Water

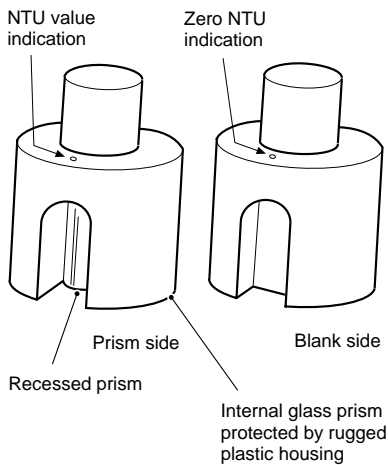
Final water turbidity after the disinfection contact tank is generally monitored to provide a final quality check before distribution, again *System 467X/1* would be used.



Why use turbidity monitoring equipment?

- ▶ To measure the incoming turbidity level on the treatment plant and assess the loading on the plant.
- ▶ To determine the efficiency of the clarifier.
- ▶ To monitor the effectiveness of the filters.
- ▶ To ensure low turbidity at the final detection point.
- ▶ To know and record the quality of the final product for compliance purposes.
- ▶ Provides accurate measurement below 0.1NTU – essential on final water monitoring.

Why use ABB Instrumentation?



Dry Standard 7997/050

- ▶ Simple robust sensing system – minimal maintenance and easy calibration.
- ▶ Dry calibration standard has many advantages, e.g.:
 - Obviates the use of formazine – is safer, ensures repeatable accurate results and eliminates operator error.
 - Dry standard is transferable between the same sensor systems – reduces cost.
 - Choice of dry standards – enables calibration to be carried out near or close to expected operating range and maximises accuracy.
 - Very robust – designed to avoid physical damage for long life performance.
 - Dry calibration standard storage container – to protect the standard when not in use for long life performance.
- ▶ Ultra-low back scatter – enables true zero setting to be used ensuring accurate low level performance.
- ▶ Virtual life time zero, very stable electronics using LED technology – avoids risk of electronic drift.
- ▶ Auto cleaning on all systems except low level monitor – extends maintenance periods and optimises performance on dirty water applications.
- ▶ LED technology – reduces risk of algae buildup as no heat is generated.
- ▶ Suspended solids capability – unit can be calibrated in mg/l or ppm in addition to NTU/FTU.
- ▶ Robust no fuss emitter and receiver – no special positioning required, can easily be removed and replaced for maintenance purposes. Double sealed with silica gel driers to avoid internal condensation.
- ▶ High immunity to temperature fluctuations – unique design minimises error due to temperature change.
- ▶ IP66/NEMA 4X Wall mounted transmitter – to work in demanding environments.
- ▶ IP66/NEMA 4X Front cover on panel mount version – no additional protection necessary.
- ▶ Back lit LCD display – easy to read in all environments.
- ▶ Choice of 0 to 10, 0 to 20 and 4 to 20mA isolated current O/P.
- ▶ Serial interface option available.
- ▶ Non-volatile memory – no battery back-up required.

What ABB products are Suitable?

For Raw Water Monitoring

- ▶ Models 4670/101 or 4675/101 are the most likely to be suitable.

For Clarified Water

- ▶ Models 4710/101 or 4765/101 and possibly the /200 version depending on the range required.

For Final and Filtered Water

- ▶ Models 4670/101 or 4675/101
- ▶ Remember to offer the appropriate dry standards (7997/050 or 7997/087).

Associated ABB Instrumentation Products

- ▶ pH on raw water.
- ▶ pH control of coagulation.
- ▶ pH of final water.
- ▶ Ammonia on raw water intake and on final water.
- ▶ Fluoride monitoring.
- ▶ Phosphate monitoring on final water.
- ▶ Colour monitoring of intake and final water.
- ▶ Flow measurement and recording.

Installation

- ▶ It is vital that the installation is carried out as detailed in the installation manual.
- ▶ It is particularly important that the flow rate through the system is controlled by a regulating valve on the sample outlet (especially on low level systems) to avoid any problems caused by degassing – see ① below.

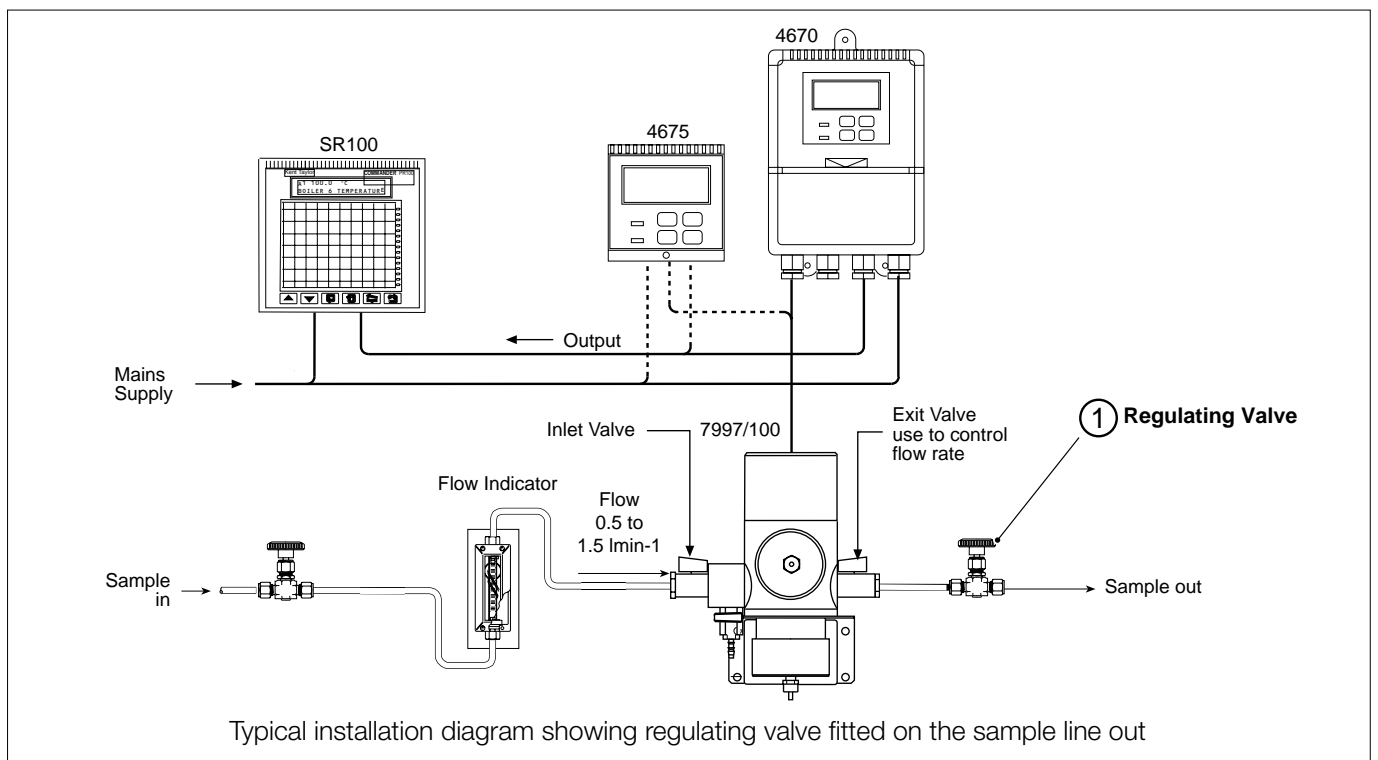


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