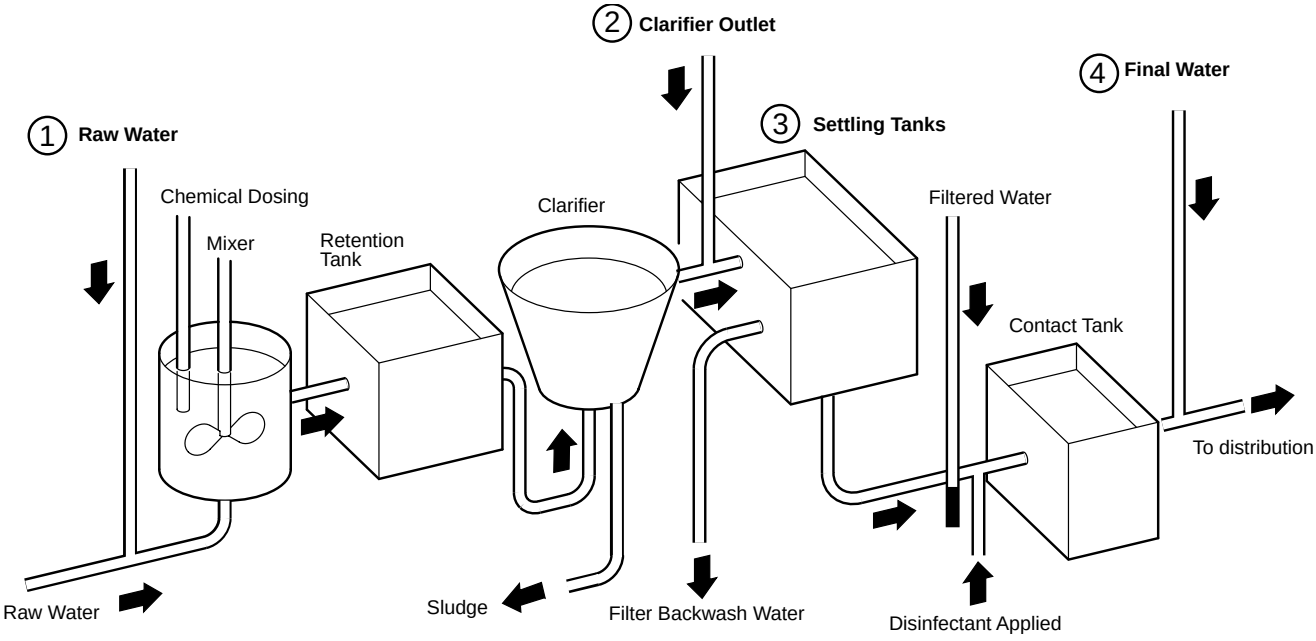
Application Guide
AG/AI–021_2

Predictive Control of Coagulant on a Potable Water Treatment Plant



① **Raw Water**

Raw water monitoring is potentially the most important measurement. By monitoring the quality of the incoming raw water, a feed-forward signal to the coagulation control system can optimise the dose to achieve the desired water quality with the minimum of chemical addition. Cost savings of 10% per annum are achievable – saving the customer as much as £50k p.a.

② **Clarifier Outlet**

Monitoring absorbtion at the clarifier outlet can provide valuable information about the effectiveness of the coagulation control system to the plant operator. It can provide early warning of coagulation control failure – enabling early corrective action to be taken.

③ **Settling Tanks**

This process in the treatment of potable water can be continuosly monitored using the low range version as a means of confirming that the plant is operating satisfactorily.

④ **Final Water**

Monitoring the final water using the low range version will provide further assurance of compliance wth water quality standards.

Monitoring at all of the above locations provides a comprehensive overview of the operation of the plant.

Why use UV Absorption Monitors for Predictive Coagulation Control?

- To provide predictive coagulent control by measuring the incoming load to the treatment plant and reduce the amount of chemicals dosed.
- To measure the effectiveness of the coagulation dose.
- To assess the process efficiency by monitoring the outlet from the settlement tanks.
- To verify plant performance by monitoring after the sand filter.
- To give further verification of water quality by monitoring the final water.

Why use ABB Instrumentation for Predicitive Coagulant Control?

- Accurate and sensitive – demonstrated to outperform colour monitoring, which has traditionally been used for the purpose.

  – lower capital outlay – £3.8K less including the saving on the filter.

  – lower power consumption – may save £200 p.a. when compared to an Aztec colour monitor.
- Requires no reagents – minimises running costs (saves at least £500 p.a.).
- No pumps, tubes or mixing chambers – simplicity of design, which lowers the cost of ownership.
- Automatic light source intensity compensation – stable, no-drift performance reduces the frequency of calibration.
- Automatic turbidity compensation – eliminates the need for labour intensive sample filtration procedures except in extreme applications.
- Automatic cleaning (key feature) – optimises performance and minimises maintenance.
- Long life light source – this expensive component could last up to 10 years.
- Loss-of-sample-flow failure alarm – instrument fails safe and warns user of loss of sample flow – vital on this key measurement.
- Isolated 4 – 20mA current output, expandable to allow a critical part of the operating range to be picked off – greater resolution over the critical range.
- High immunity to temperature fluctuations – unique design minimises errors due to variations in temperature.
- IP66/NEMA 4X wall-mounted transmitter – designed for use in harsh environments.
- Back-lit LCD display – easy to read in badly lit environments.
- Non-volatile memory – eliminates the need for battery back-up.

What ABB Products are Suitable ?

- 7320/200 complete system for raw water/river monitoring.
- 7320/3000 for Predictive Coagulation control.
- Turbidity on raw water, after the clarifiers, after the filters and final water.

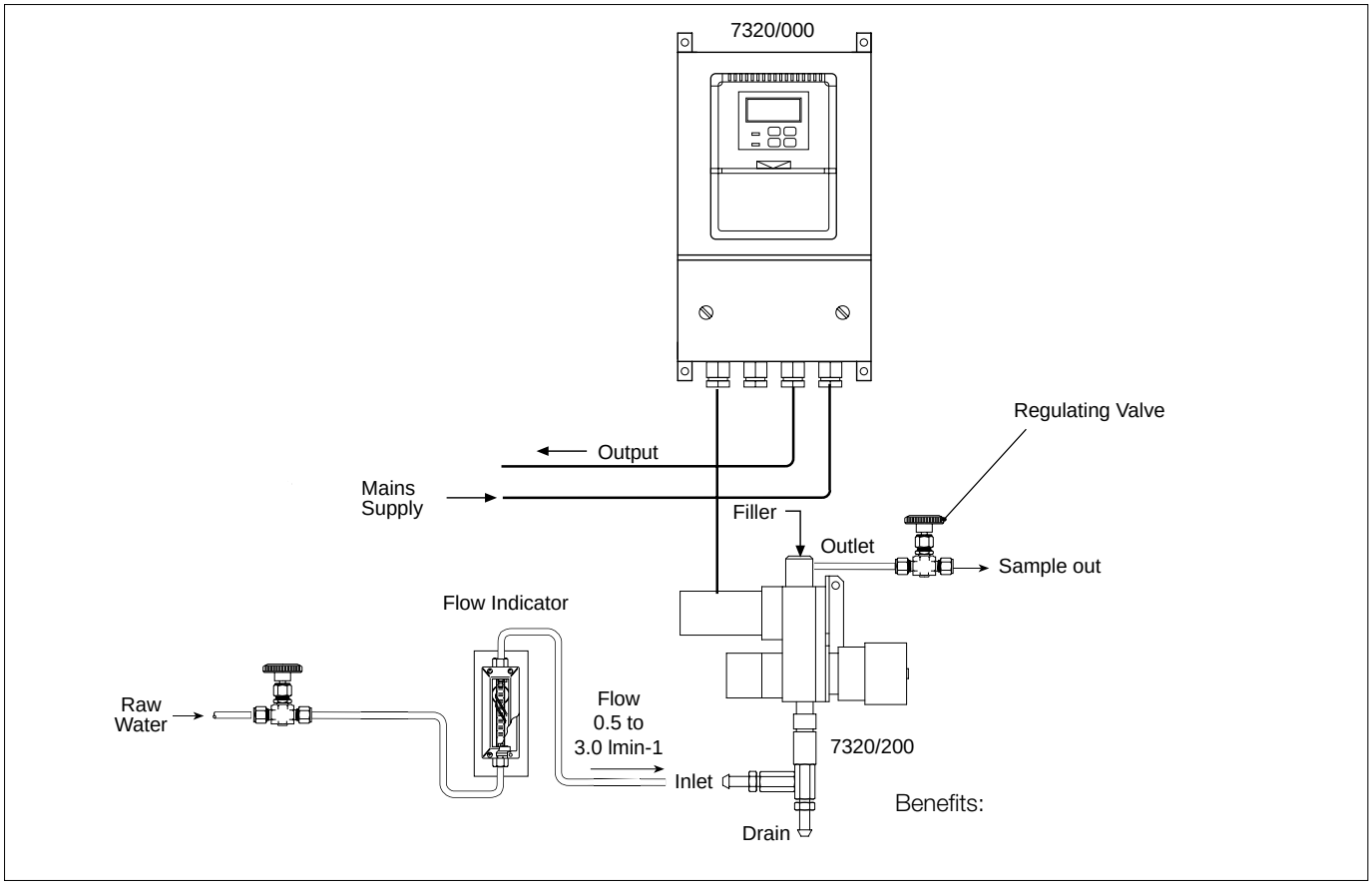
Associated ABB Products for use in Potable Water Treatment Plant

- pH control of the coagulation process.
- pH of raw water and final water.
- Ammonia on raw water intake and on final water.
- Fluoride monitoring of final water.
- Phosphate monitoring on final water.
- Nitrate monitoring.
- Flow measurement and recording.

Installation

- Avoid air bubbles by regulating the flow down-stream of the monitor.
- Ensure the flow rate is within the limits stated in the specification sheet.
- Ensure there is sufficient room to allow removal of the flow system to permit annual replacement of the wiper blade.
- Ensure there is sufficient head room to make calibration convenient.

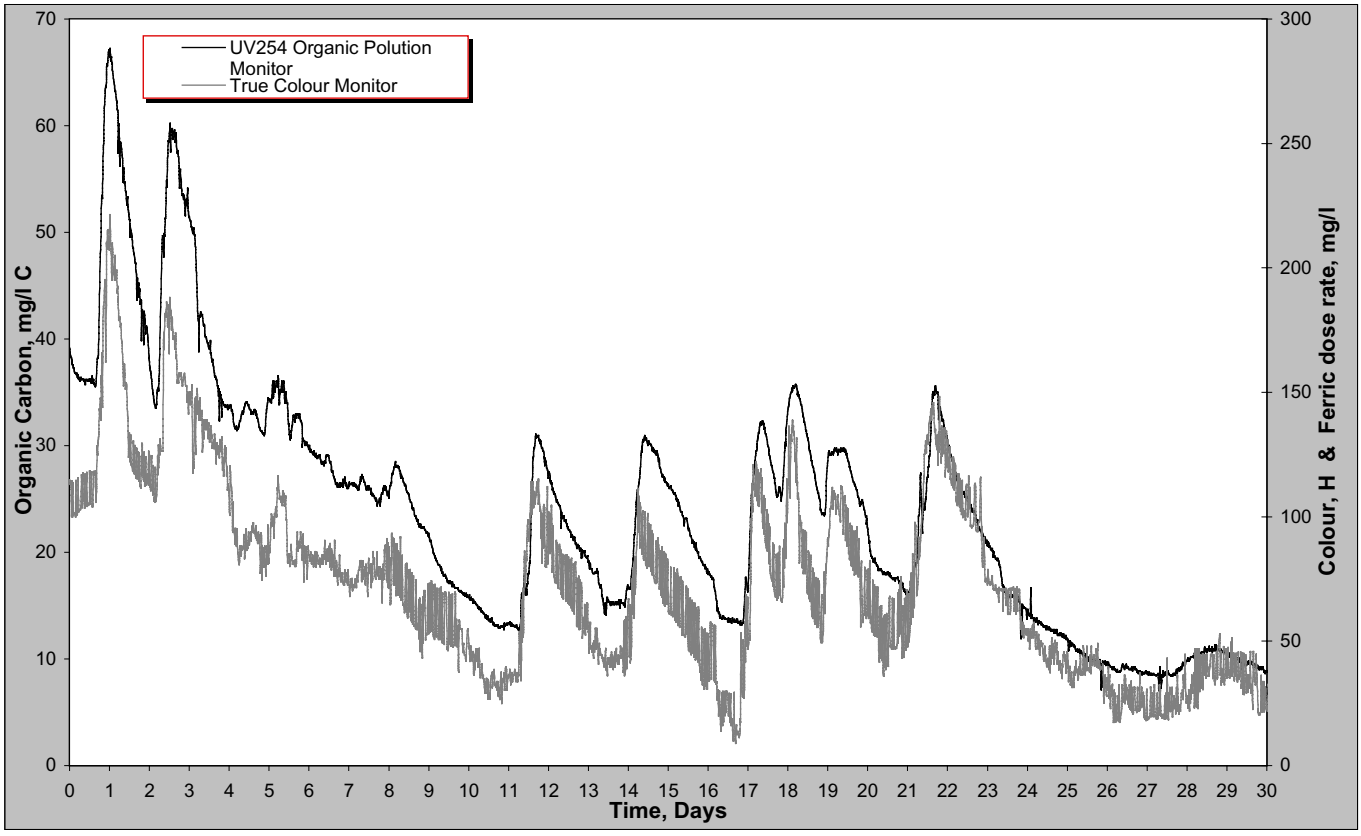
Note. The flow indicator is not essential for optimum system performance.



Comparison of Colour/UV Absorbtion

- Lower capital cost – up to 40% saving
- Reagentless operation – virtually zero running costs
- Auto-cleaning – reduced maintenance
- Low power consumption – based on 6p KW/hr can save £2K over 10 years
- Extremely low maintenance – reduced operating costs
- Up to 10% saving on coagulant – can save up to £50K p.a.

– Greater Assurance of Water Quality



AG/AI–021 Issue 2

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Printed in UK (12.03)

ABB Limited
Oldends Lane, Stonehouse
Gloucestershire
GL10 3TA
UK
Tel: +44 (0)1453 826661
Fax: +44 (0)1453 827856

ABB Inc.
125 E. County Line Road
Warminster
PA 18974
USA
Tel: +1 215 674 6000
Fax: +1 215 674 7183