

Wastewater Treatment Plant

One of the reactions produced by the action of the micro-organisms on organic + complex inorganic materials, is the production of ammonia in both aerobic and anaerobic reactions.

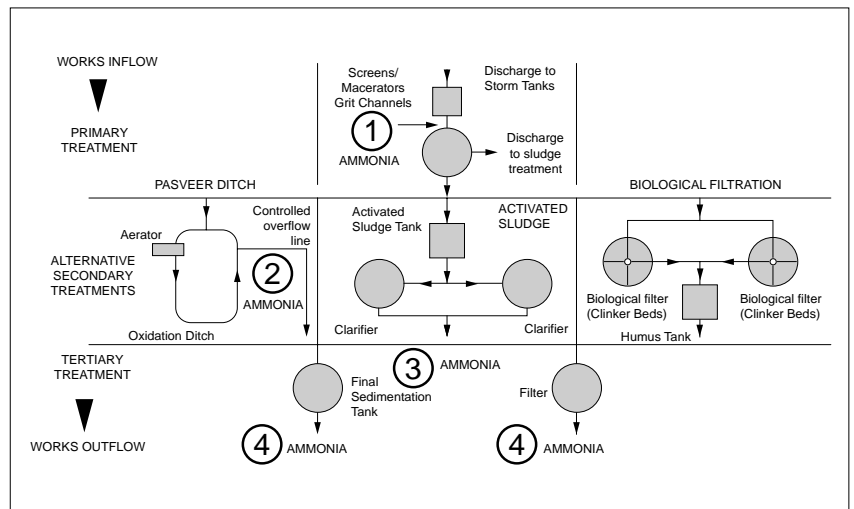
Because of this, ammonia may be monitored at a number of points around a typical sewage treatment works (as listed opposite).

At each point, the sample is drawn via a pump and ultrafiltration system for presentation to the monitor as shown in the process diagram on the next page.

- 1 at the works inflow – monitoring gives an indication of plant loading,
- 2 at the clarifier outflow – for monitoring of levels,
- 3 in the ditch prior to overflow – for monitoring of levels,
- 4 at the works discharge – monitoring gives alarm/indication of plant performance and final water quality.

Why use an Ammonia Monitor

- ▶ Ammonia is the natural product of decay of organic nitrogen compounds. It reduces dissolved oxygen levels and is toxic to plant and animal life.
- ▶ Ammonia is oxidised through nitrate in aerobic conditions by bacterial action. Under normal circumstances the oxidising process is performed efficiently and the 'balance' in the hydrological cycle is maintained.
However, the hydrological cycle becomes 'unbalanced' if large volumes of ammonia are added to a river (e.g. due to the failure of an effluent treatment plant or from industrial discharge).
- ▶ An ammonia monitor monitors the performance of the waste water treatment processes/plant and ensures compliance with local discharge consent limits and current legislation.



Why use ABB Instrumentation?

- ▶ ABB monitors have proven reliability and low maintenance requirements.
- ▶ Low ongoing reagent cost.
- ▶ Manual intervention is reduced to a four-weekly reagent replenishment and a twelve-monthly service, guaranteed through the use of specially developed long life pump tubing.
- ▶ Single consumable spares kit included with monitor contains all spares and peripherals necessary for two years operation – no hidden extras!
- ▶ Full installation, commissioning and routine servicing available.

What ABB Products are Suitable?

- ▶ **Model 8232 Ammonia Monitor**
 - Two high or low concentration alarms can be generated and sent back to main control unit.
 - Diagnostics are displayed locally and are also available as master alarms for transmission back to main control unit.
 - Current output (one as standard, second optional) can be expanded to show an expanded window of the overall range of the monitor and can be output to a local recorder or DCS system.
 - An optional serial communications link is provided, allowing the monitor to be linked to a remote computer.

- ▶ **Model 9381 Ultrafilter**
 - This is optional and only required if the suspended solids concentration in the sample $>10\text{mg/l}^{-1}$ and/or $<60\text{microns}$.
 - Sample requirements:
 - minimum pressure 1.5 bar, minimum sample flowrate 70 litre/minute,
 - the sample delivery pump must be capable of this duty.

Associated ABB Products for use on Effluent Treatment Plant

- ▶ Dissolved oxygen monitors for plant process control.
- ▶ *pH transmitters for pH control.
- ▶ *Phosphate monitors.
- ▶ *Nitrate monitors.
- ▶ *Turbidity monitors.
- ▶ Associated recorders and controllers.

** to ensure compliance with discharge consent limits*

Installation

- ▶ In this application, the sample is at ambient temperature and therefore requires no conditioning.
- ▶ Sample must be extracted from the sampling point and pumped to the ultrafilter and monitor.
- ▶ It is particularly important to note the sample requirements for the ultrafilter and to ensure that the pump is capable of this duty.
- ▶ A valve for providing suitable back pressure for the ultrafilter is also necessary.

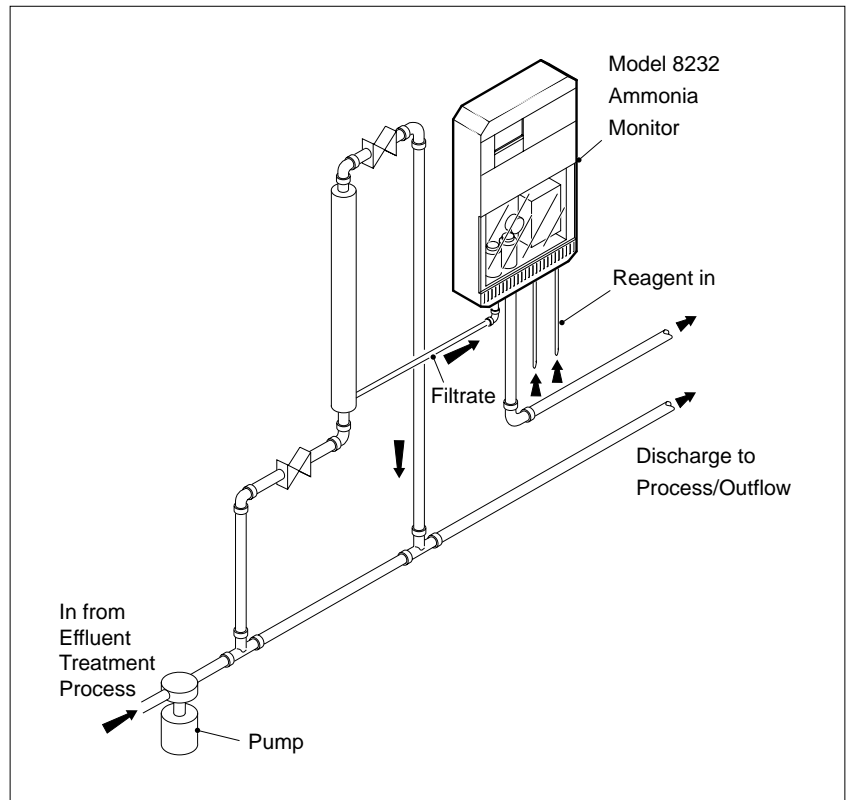


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