

A typical sewage works has four main stages of treatment. Modifications to these stages may be made based on the effluent conditions, but most works comprise the following four sections:

- ▶ Primary
- ▶ Tertiary
- ▶ Secondary
- ▶ Sludge

Sewage works are frequently divided into types, normally based on the method of the secondary treatment, with similar installations for the remainder of the treatment.

The type employed in most modern works is the activated sludge system which involves a culture of bacteria and other organisms in water. In the presence of sufficient air, this culture multiplies and feeds on organic material in the

sewage, oxidising it to carbon dioxide, water and nitrogen compounds. Recycled sewage, rich in micro-organisms is added at the rate of 800 to 1500mg/l of inflowing effluent and the additional oxygen required for efficient oxidation is provided by one of two methods:

- 1) **Mechanical or Surface Aeration**
Pumps or agitators are used on the surface of the tanks and the rate of aeration can be controlled by varying the speed and depth of the immersion of the agitator, or speed of the pump.
- 2) **Diffusion**
Using perforated pipes or domes in the base of the tanks. In this case the rate is controlled by varying the speed of the compressors which force air through the diffusers.

Why use a Dissolved Oxygen Monitor

- ▶ Monitoring the dissolved oxygen at the aeration tanks ensures that optimum process conditions are maintained. Controlling the aeration equipment between close D.O. levels minimises the energy consumed. Considerable cost savings can be achieved.

Why use ABB Instrumentation ?

- ▶ ABB dissolved oxygen instrumentation has proven reliability and low maintenance requirements.
- ▶ Full installation, commissioning and routine servicing is available (in the UK this is covered by the **Assist**™ Customer Support Programme).

What ABB Products are Suitable ?

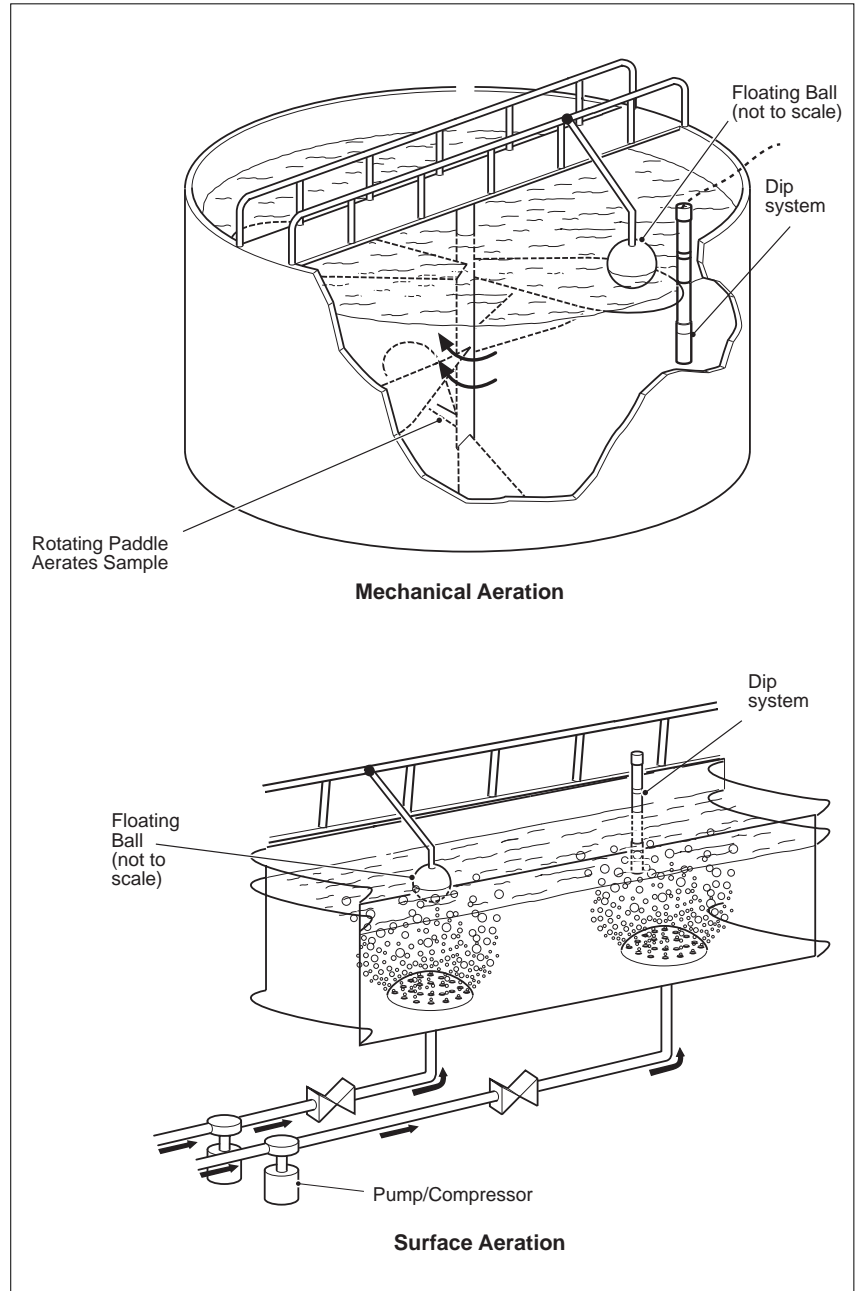
- ▶ **Model 4640 Dissolved Oxygen Transmitter**
- ▶ **Model 9408 Measuring System**
 - Mounting configurations available:
 - dip type, or
 - floating ball type.
 - Unique oxygen sensors provide unrivalled reliable operation
 - long life and minimum maintenance.
 - Comprehensive diagnostics with inbuilt software protection
 - ensures security and confidence in operation.
 - Salinity and atmospheric pressure correction capability as standard
 - enhances the flexibility of operation.

Associated ABB Products for use on Effluent Treatment Plant

- ▶ *pH transmitters for pH control – type 4630.
 - ▶ *Phosphate monitors – type 8242.
 - ▶ *Nitrate monitors – type 8236.
 - ▶ *Turbidity monitors – type 4670.
- * to ensure compliance with discharge consent limits*

Installation

- ▶ Basic installation configurations for both mechanical and surface aeration and diffusion type installations are shown below.
- ▶ In this application, the sample is at ambient temperature – no preparation required.
- ▶ In this installation, where the sample level varies, a 'floating ball' type measuring system must be used.



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