The purpose of the Armfield Aeration Unit is to permit study of the oxygen transfer characteristics of diffused air systems and the physical and chemical parameters that influence their oxygenation capacity. These studies are a necessary prelude to the understanding of the biological treatment of waste waters.
Description
The Armfield Aeration Unit comprises an open tank equipped with a propeller stirrer. Air is supplied via a compressed air line through a pressure regulator valve, and through a flow meter to a diffuser positioned within the tank.

A variety of diffusers are included. The dissolved oxygen content of the water in the tank is measured by means of a dissolved oxygen probe, which includes direct reading of water temperature.

Mounted on the base is the clear 27-litre acrylic water tank. On the front of the tank is a depth scale and at the base a drainage tap. The digital stirrer control includes speed and torque measurements. This is supported by a metal bar. Sparger tube, treble airstone and single airstone may be separately attached to the aerator tube. Variable-speed adjustment of the stirrer paddle provides different levels of turbulence in the tank.

Features / benefits
- Electronic flow sensor
- Dissolved oxygen (DO) meter with water temperature measurement

Software
The ArmBUS software enables the operator to select the appropriate stage of the process and a mimic diagram with measured variables is displayed. The speed of the pump can be varied to meet the required flow rate.

Results are saved in a log, which can be viewed and manipulated with the ArmBUS results viewer. Results can be printed or exported in a spreadsheet format, which can be opened in a wide range of packages for further analysis.

Learning objectives
- Effects of oxygen transfer under non-steady state conditions
- Measurement of the absorption coefficient $K_s$ and the oxygenation capacity $R$
- The effect on $K_s$ and $R$ of:
  - degree of fluid mixing
  - water temperature
  - gas flow rate
  - depth of water
  - diffuser arrangement
  - water composition

Optional accessories
- Air compressor (AC1)
- Triple beam balance with 0.1g sensitivity (ordering code: INST 059)

Technical details

| Feed pump: | 24V DC, peristaltic, 0-30rpm corresponding to 0-40 L/day |
| Air compressor: | 120V/240V, 0-3.0 L/min (STP) |
| Reactor vessel: | 10L maximum capacity |
| pH meter range: | 0.00 to 14.00 |
| DO meter range: | 0-100% saturation, resolution: 2% |
| Reactor heater: | Toughened glass, electrical immersion 200W |
| Temperature controller: | 3-term PID (temperature limit set at 35°C) |

Overall dimensions

| Length | 1.00m |
| Width | 0.50m |
| Height | 0.50m |

Volume 0.50m³
Gross weight 40Kg

Ordering codes
- W10-MkII
- AC1 (optional)
- INST 059 (optional)

Knowledge base
> 28 years’ expertise in research & development technology
> 50 years’ providing engaging engineering teaching equipment

Benefit from our experience, just call or email to discuss your laboratory needs, latest project or application.

Armfield standard warranty applies with this product