

AEROBIC DIGESTER – W11

The continuous activated sludge process has been successfully employed in public health engineering installations for nearly a century.

The Armfield Aerobic Digester is a benchtop unit designed as a comprehensive study facility of this process.

A synthetic waste water feed may be used to gain a working knowledge of the operational parameters and purification efficiencies.

BENCH TOP CONTINUOUS ACTIVE SLUDGE DIGESTER

W11 control



W11 digester detail



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Issue: 2

URL: <http://www.armfield.co.uk/w11>

Applications

ChE CE IP

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Description

Waste water is drawn from a floor-standing feed tank (not supplied) by a DC motor-driven peristaltic pump. Rotational speed – and thus flow rate – is accurately set by a ten-turn potentiometer.

The pump delivers the feed to the reactor vessel through a transparent lid. Air is supplied at a measured rate by a small compressor, and discharges into the base of the reactor via a spider-arm dispenser. This design prevents blockages and produces sufficient bubbling for stirring and reaction. The liquid level in the reactor is maintained at a constant value of five to ten litres, by an adjustable overflow device connected to the outer annular chamber of the vessel. Discharge is by gravity to a floor-standing product tank (not supplied).

The reactor temperature is maintained by a three-term controller, which varies power to an immersion heater within the vessel. Any temperature between ambient and +35°C may be selected, the best conditions being a few degrees above the diurnal maximum in the user's laboratory.

Dissolved oxygen and pH probes and meters are included.

The reactor lid contains a gas exit port, suitable for sampling the gases for subsequent analysis.

Features / benefits

- ▶ Small Scales bench mounted design
- ▶ Provides demonstration of continuous activated sludge process

Learning objectives

- ▶ Acclimation of a completely mixed biological reactor
- ▶ Measurement of COD and MLSS changes as criteria of performance
- ▶ Establishing the stoichiometry and kinetics of aerobic processes
- ▶ Gas/liquid mass transfer
- ▶ Residence time distributions
- ▶ 100% scale-up to industrial requirements
- ▶ Studying the effect on effluent quality of:
 - Inflow substrate concentration ('loading rate')
 - Liquid flow rate and reactor volume ('detention time')
 - Air flow rate
 - Temperature
 - pH stability
 - Nutrient deficiency

Requirements

Scale

1Ph PC USB



▶ Electrical supply:

W11-A:	220-240V/1ph/50Hz
W11-B:	120V/1ph/60Hz
W11-G:	220-240V/1ph/60Hz

- ▶ Plastic feed and product tanks – capacity typically 30-50L, floor standing (not supplied)
- ▶ Synthetic waste water (not supplied)

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

Packed and crated shipping specifications

Volume	0.50m ³
Gross weight	40Kg

Optional accessories

- ▶ CW17 – Chilled Water Circulating Unit

Ordering specification

- ▶ A 10L bench mounted aerobic digester, complete with peristaltic feed pump, air compressor and temperature control system
- ▶ Dissolved oxygen and pH probes and meters are included
- ▶ The reactor comprises a cylindrical porous liner held in position with sealing rings between the lid and the base to facilitate removal for cleaning and replacement
- ▶ Suspended solids are held within the reactor volume, while treated water permeates through the porous liner into an outer annular exit chamber
- ▶ The water level is maintained by an adjustable constant head overflow device
- ▶ This digester system is designed to operate safely and reproducibly for periods of several days
- ▶ The equipment is mounted on a moulded plastic base, equipped with an internally moulded drain channel, designed to cope with spillages and washdown water
- ▶ Operational manual with teaching exercises

Ordering codes

- ▶ **W11-A:**
- ▶ **W11-B:**
- ▶ **W11-G:**
- ▶ **CW17** (optional)

Warranty

Armfield standard warranty applies with this product

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.

An ISO 9001:2015 Company



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Aftercare

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