H-6515

Anaerobic Digester

Purpose

The Hampden **Model H-6515** Anaerobic Digester is a bench top trainer designed to demonstrate the fundamentals of the anaerobic treatment processes. Anaerobic treatment processes involve bacteria which function only in the absence of air. These processes are becoming more popular in the water treatment industry, as they have considerable advantages over aerobic processes, including low sludge production, tolerance of stop/start operation, production of a useful fuel (methane), and relatively high throughout.

Description

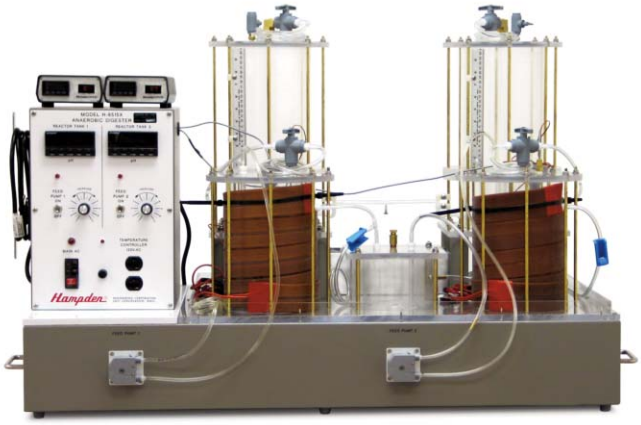
The Hampden **Model H-6515** Anaerobic Digester is comprised of two 1.3 gallon upward flow packed bed reactors, with feed rate and temperature controls to allow steady, continuous operation at up to 1.1 gallons per day.

The reactors may be operated in series or parallel. A buffer vessel between the reactors permits discharge of excess flow from the first reactor when the second reactor is operated in series, but at a lower flow rate. The flow rates to the vessels are set and controlled by peristaltic pumps. The temperature of each reactor is controlled by an electric heating tape wrapped around the external wall. The temperature distribution within each reactor is maintained to ±1°F. Reactor temperatures may be separately set at any desired value in the range ambient to 131°F.

The gas off-take from each reactor is taken to a volumetrically calibrated collector vessel operating by water displacement. A constant head, liquid seal device ensures that the gas pressure in the reactor is maintained at a constant value throughout the test run. The collected gas can be exhausted from the vessel and the volume refilled with water during a run, without breaking the liquid seal.

Liquid and gas sampling points are located at all strategic points around the reactors.

The equipment is mounted on a steel base with an integral barrier to cope with spillage and wash down. The base is finished in instrument tan texture enamel. The control panel is finished in gloss white enamel and silk screened in KEM black enamel.



Dimensions: 30"H x 45"W x 23"D
Shipping Weight: 335 lbs.

Specifications

Reactors
Two identical reactors—nominal capacity, 1.3 gal.; packed volume, 1.1 gal.; 6.25" ID diameter by 10" high.

Reactor packing
1" diameter bio-balls.

Temperature control
For each reactor—836W heating jacket with PID control from a temperature sensor positioned inside the reactor, set point within range ambient to 131°F; the jacket is thermostatically protected by a cutout set at 185°F.

pH Meter
Range: 0.00 - 14.00

Feed pumps
Two identical peristaltic pumps—variable speed using a potentiometer to 12 rpm, with flow rates from 0.04 to 1.1 gal. per day.

Gas collection vessels
Two identical—linear scale, 0–1.3 gal. capacity.

Experiment

- Preparation, warming and acclimation of an anaerobic reactor
- Demonstration of the multistage nature of anaerobic digestion
- Undertaking carbon balances
- Studying effects on purification performance of:
  - hydraulic load
  - feed ratios
  - temperature
  - nutrient deficiency
  - influent strength

Services Required

Electrical Supply
120V-60Hz @ 15A

Computer Data Logging

One interface package consisting of National Instruments I/O modules and LabVIEW® templates are provided for interfacing into a PC computer through the USB port.

Computer is included. LabVIEW® control software is included.

Specify **MODEL H-6515-CDL**

All Hampden units are available for operation at any voltage or frequency

Hampden® ENGINEERING CORPORATION

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