

PILOT FERMENTATION

Bubble column test fermenter system

The VOGELBUSCH pilot fermentation system is designed to test both feedstocks and micro-organisms for their suitability in submerged fermentation under certain defined conditions.

The key part of the system is a rack with 6 bubble columns that are made of glass. Each column has a gross volume of 17 litres.

The rack is equipped with all necessary devices for measuring and control of fermentation parameter, such as pH probes, temperature probes, partly pO₂ probes, as well as an automatic antifoam system and provisions to compensate evaporation losses.

To expand the capacity of the system further racks can be added.

A special advantage of this cost efficient system is the verification of several parameters in parallel within the same cycle.



In this way test series can be carried out in a timely manner to optimize processes, for instance by addition of nutrients, trace elements and inhibitors.

This pilot fermentation is employed by VOGELBUSCH for test series with *Aspergillus niger* to validate the fermentation parameter for citric acid plant design. The same system is in practical use in the laboratories of industrial citric acid production sites.

FACT SHEET | PILOT FERMENTATION SYSTEM



Installation requirements

The VOGELBUSCH pilot fermentation system is designed for applications with non pathogenic organisms. Intended use of a GMO strain requires prior clarification of local regulations to comply with, e. g. by placing the system into a containment room.

Fermentation system

Rack including bubble columns, instrumentation, electrical equipment, pipes, turning device, etc.

Space	1 st rack: 5m x 6m, min. 2,8m high Additional racks each 3m x 6m
Compressed air	Pressure 1,9 bara Air flow: 70 Nm ³ /h Air must be oil-free Main air supply line to be equipped with coarse and sterile filter. Piping to be done that in-line steaming of sterile filter is possible
Steam	Pressure 3 barg Capacity 40 kg/h
Demineralized water	Conductivity max. 2 µS/cm Capacity app. 5 l/min Pressure min. 0.2 bar Ion exchange cartridge directly connected to tap water piping is suitable
Cold water	For filling of thermostated water bath and general purposes
Hot water	For general cleaning purposes
Electricity	AC, standard voltage 230 V (if required 110 V); 50 Hz
Room venting	min. 10 air changes/h

Raw material preparation

Including vessels, cation exchange column, pumps

Space	3 x 4 m Can be placed next door.
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Auxiliary equipment

(typical laboratory equipment which can be supplied on separate request)

Autoclave with a volume of app. 120 litres

Autoclave (mini sterilizer) with a volume of app. 14 litres

AAS: type: graphite tube

HPLC: isocratic

Laminar flow box

Microscope

Autotitrator