MBPX 810H

Separation system for fermentation and biotech industries

Applications

The MBPX 810H fully hermetic separation system is used for removing suspended solids with particle sizes of approximately 0.5 to 500 µm from a liquid having a lower density than the solids. The solids content is usually in the range of 0.1-20% by volume.
The main applications are bacteria, rDNA products, enzymes, cell cultures and vaccines. It is also suitable for industrial fermentation processes where microbial cells are used for production of acids, chemicals, fuels, etc. Applications that require low oxygen pick-up can also take advantage of the hermetic features offered by the MBPX 810H separator.

Design features

The MBPX 810H separator is equipped with the following features

- Fully hermetic design for minimal shear stress, absence of oxygen, low power consumption and low noise level.
- Adjustable discharge volume ensuring discharge of solids with high dry matter content, thus minimising product losses or down-stream processing costs.
- High separation capacity due to the bowl geometry.
- Designed for easy cleaning-in-place (CIP).
- All product wetted polymers and seal rings compliant with FDA regulations or USP Class IV regulations.
- FDA compliant materials in the mechanical seals.
- Variable speed to facilitate performance optimization.
- A cooling system with a cooling jacket for the bowl enclosure including the solids collecting receptacle, and a cooling coil for the lubrication oil bath.
- Anchoring feet and vibration dampers.
- All liquid wetted parts are in high grade stainless steel.
- Monitoring kit with sensors for bowl, speed, vibrations and operating water pressure. As option, a cover switch for preventing the motor from being started unless the separator top part has been properly mounted.
- Choice of large or small disc stack to accommodate low or high solids loading.
- Enhanced surface finish to less than 0.8 µm Ra for product contact parts, as an option.

Complete system

The MBPX 810H separation system is flexible and designed to meet industry standards.

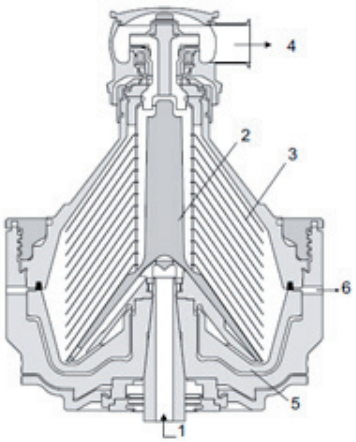
- The separator is mounted on a fixed base frame with process piping for service liquids and process liquids entering and leaving the separator.
- Clamp connections for improved hygiene.
- Control system with a PLC and HMI, suitable for connectivity (Profibus or Ethernet) with a supervising control system.
- Automatic CIP possibilities.
- Automatic flow control with magnetic flow meter and flow regulating valve.
- Back-pressure control.
- Optional - turbidity monitoring, replacement buffer liquid addition, solids receiving unit, mass flow meter (replacing magnetic flow meter) and temperature sensor on supernatant outlet provide enhanced installation flexibility to customer.
- Enhanced documentation supporting cGMP qualification is available and FAT is performed before shipping.

Operating principles

The feed is introduced to the rotating centrifuge bowl via a hollow spindle (1) and is accelerated in the distributor (2) before entering the disc stack (3). It is between the discs that the separation takes place.

The liquid phase moves towards the centre of the bowl, from where it is pumped out under pressure by means of a built-in pump (4). The heavier solids phase is collected in the periphery of the bowl and is discharged at preset intervals through a cyclone.

The solids discharge is achieved by a hydraulic system below the separator space of the bowl. When at present intervals, the sliding bowl bottom (5) is forced to drop down, solids ports (6) are opened for the solids to be discharged.



Typical bowl drawing for fully hermetic solids-ejecting centrifuge in timer-triggered clarifier execution. Drawing details do not necessarily correspond to the centrifuge described.

Utilities for MBPX 810H separation system

Electric power consumption, max.	17 kW [1]
Flushing & Operating water; max. momentary flow	3 000 l/h
Consumption	Up to abt. 200 l/h [2]
Cooling water, recommended flow	120 - 150 l/h
Seal cooling water	60 - 120 l/h

[1] At a feed rate of 10 m^3/h. Actual consumption depends on feed rate, feed characteristics and applied back-pressure on liquid outlet.
[2] Consumption is very dependent on selected flushing regime & discharging frequency.

Shipping data (approximate)

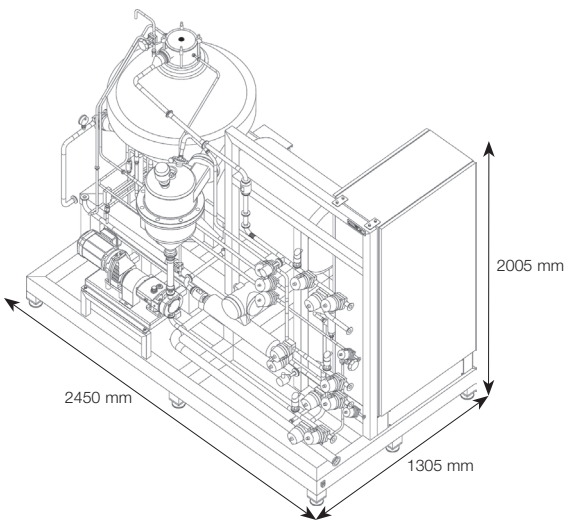
Complete system with bowl and motor. Packed on pallet or in case

Net weight				2 300 kg
Gross weight	pallet	2 400 kg	case	2 800 kg
Volume	pallet	8 m^3	case	10.5 m^3

Technical specification, MBPX 810H separation system

Max throughput capacity	15 m^3/h [1]
Max solids handling capacity	300 or 540 l/h [2]
Feed temperature range	0 - 100 °C
Feed inlet pressure required, max.	300 kPa [3]
Liquid outlet pressure available upto	520 kPa [4]
Installed motor power	18.5 - 25 kW
Sound pressure	80 dB(A) [5]

[1] Actual throughput capacity depends on amount and type of solids in the feed, viscosity and required degree of clarification.
[2] Wet solids.
[3] Valid for water at throughput capacity 5 m^3/h, and at max. back-pressure on liquid outlet.
[4] Valid for water throughput capacity 5 m^3/h.
[5] According to EN ISO 4871.



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