

Alfa Laval HBPX 6000

Disc stack separator system for protein applications

Introduction

For more than 100 years, Alfa Laval has been supplying separators for various industries. Today, Alfa Laval has the most complete and diverse offering of separators – each fully optimized for its specific duty and supplied with all auxiliary systems and key components.

The use of disc stack separators in the production of animal fats and protein from fish and meat goes back to the 1920s. The applications range from rendering of edible animal fat and fish oil to technical fat and blood separation.

The Alfa Laval HBPX range is used to separate animal whole blood into two fractions; red cells haemoglobin and plasma, with the target to recover blood plasma in the best possible quality at maximized yield.

Application

The HBPX 6000 is a high-performance separator, equipped with an optional control system, specifically designed and optimized to separate animal whole blood into two fractions.

Typical separation applications are the following:

- Fish and seafood processing
- Meat and poultry processing
- Pet food processing

Benefits

- Easy to operate
- Easy to maintain
- Robust and reliable design
- Wear resistant
- Real time adjustment vs changing flow conditions
- Gentle treatment of the product

Design

The HBPX 6000 separation system consist of a separator which can be equipped with process liquid unit as well as Electrical & control system unit, either in form of a skid or a module.

The separator consists of a frame that contains a horizontal drive shaft, worm gear lubricating oil bath, and a hollow vertical bowl spindle. The bowl is fixed on top of the spindle, inside the space formed by the upper part of the frame, the solids collecting cover, and the frame hood. The hood carries the liquid discharge connections.



All metallic parts in connection with the process liquid are made of stainless steel.

The bowl is of the solids-ejecting disc type with an automatic hydraulic operating system for discharge.

The electric motor is for variable frequency drive.

The system (optional) is modularized and it can be configured from a selection of basic and other optional standardized units and control functions. The control system includes a PLC and a user-friendly HMI to monitor and control the separation process parameters. The system can be configured for remote operation.

Scope of supply

The standard HBPX 6000 separation system includes the following main components:

- Disc stack centrifuge
- Cyclone
- OWMC (Operating Water Module Compact)
- Foundation plate
- Set of tools
- Commissioning spares

Options

- Module/Skid & control system
 - The disc stack centrifuge can be fully equipped with custom-made standard process liquid unit as well as electrical & control system unit upon customer's request.
- Service
 - Commissioning
 - Operators training (basic and advanced level)
 - Basic service agreement
 - Performance agreement

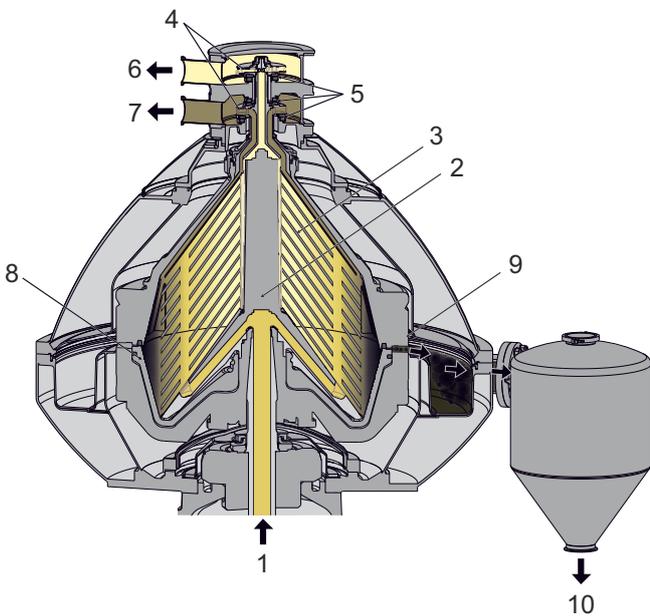
Working principle

The feed enters the rotating bowl from the bottom via the hollow drive spindle and accelerated in a distributor before entering the disc stack. Separation takes place between the discs as a result of the centrifugal force that causes the solids to move towards the periphery.

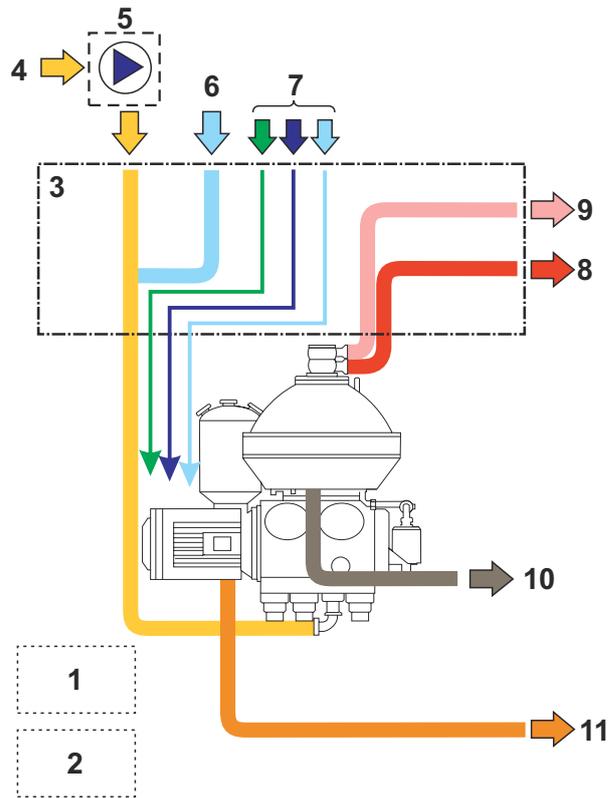
The clarified light liquid phase moves towards the centre of the bowl and leave the separator by being pumped out by an impeller. The clarified heavy liquid phase moves towards the periphery and leave via the top disc and is pumped out by an impeller.

The solids collected in the periphery of the bowl are discharged intermittently through the discharge ports and decelerate in the sludge cyclone.

A hydraulic system below the separation space in the bowl is used to control the movement of the sliding bowl bottom part that opens and closes the discharge ports.



1. Inlet
2. Distributor
3. Disc stack
4. Impeller
5. Hermetic seal
6. Light liquid phase outlet
7. Heavy liquid phase outlet
8. Sliding bowl bottom
9. Solids discharge ports
10. Solids outlet from cyclone



Typical flow chart of a separator system. The details may differ based on the actual order.

1. Control cabinet (optional)
2. Motor starter cabinet and VFD (optional)
3. Process & service liquid unit (optional)
4. Product inlet
5. Feed pump (optional)
6. Standby/Safety water
7. Utilities
8. Heavy phase outlet
9. Light phase outlet
10. Separator drain
11. Discharged solids outlet

Technical data

Performance data¹

| | |
|----------------------------|---------------|
| Throughput capacity | 6 000 litre/h |
| Maximum discharge capacity | 34 litre |
| Maximum motor power | 37 kW |
| Sound pressure level | 76 dB |

¹ Actual capacity and power consumption depend on operating conditions

Connections

| | |
|---------------------------------------|-----------------------------------|
| Feed inlet | DIN 63.5, ISO 2852 Clamp coupling |
| Heavy phase (blood corpuscles) outlet | DIN 63.5, ISO 2852 Clamp coupling |
| Light phase (plasma) outlet | DIN 63.5, ISO 2852 Clamp coupling |
| Solids outlet | DIN 200 |

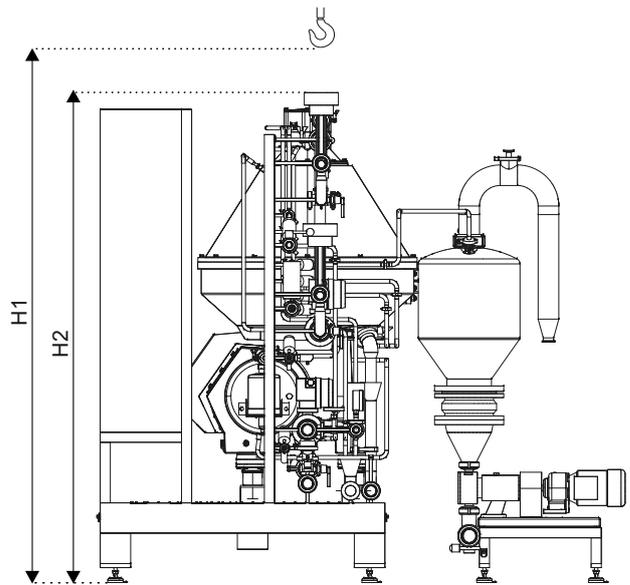
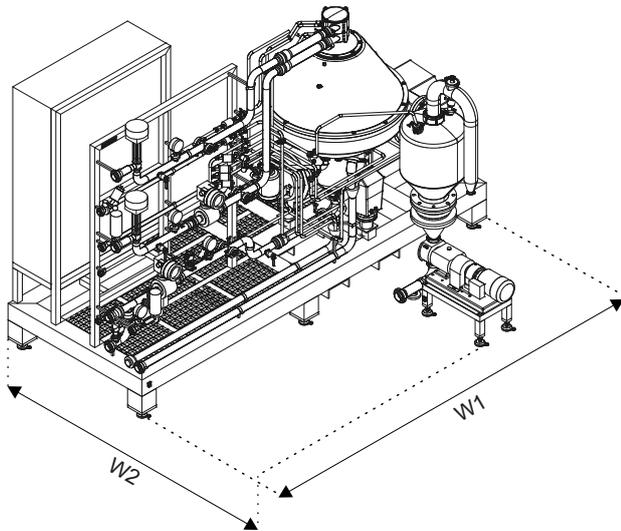
Material data

| | |
|--------------------------|--|
| Bowl body & lock ring | Stainless steel, EN 1.4501, UNS 32762 |
| Frame top part | Austenitic Stainless steel, EN 1.4401, ASTM S31600 |
| Frame bottom part | Cast iron, clad with stainless steel, EN 1.4301, UNS 30400 |
| Inlet and outlet parts | Austenitic Stainless steel, EN 1.4401, STM S31600 |
| Gaskets (product wetted) | NRB FDA |

Weights

| | |
|---------------------------|---------------------|
| Separator, bowl and motor | 2154 kg (4.749 lbs) |
| Bowl | 788 kg (1.737 lbs) |

Dimensional drawing



H1 Minimum 3150 mm (10 ft 4 1/64 inches)

H2 2347 mm (7 ft 8 13/32 inches)

W1 3600 mm (11 ft 9 47/64 inches)

W2 2456 mm (8 ft 11/16 inches)

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