



Alfa Laval PurePulp 250

Disc stack separation system for food and beverage applications

Introduction

The use of disc stack separators in different food and beverage applications goes back to the end of the 1800s. Based on long experience within the food and beverage industries, Alfa Laval separators are specially designed for the requirements and demands of these industries.

The PurePulp separators are high performance disc stack centrifuges, optimally designed for three phase separation with continuous removal of highly concentrated pulp. The design ensures high solids handling capacity, high separation yield, low power consumption, and minimum oxygen pick-up.

PurePulp 250 is offered as a complete system skid that is easy to install and operate. It is fully equipped with a user-friendly control panel, valves, instruments, and other components for process and utilities control.

Application

The PurePulp range is specially designed for continuous depulping i.e. separation of fruit pulp from juice of citrus and other fruits.

Benefits

- High separation efficiency
- High solids handling capacity
- No loss of aromas
- No overheating of the feed
- Low power consumption
- Easy to operate and maintain

Design

The system consists of a separator, a process & service liquid unit, and an electrical & control system. All components are skid mounted to facilitate "Plug and Play" installation, which results in a small footprint.

The separator is designed with a bottom fed inlet and has a hermetic bowl, which is sealed mechanically to prevent oxygen pick-up in the processed fluids.

The continuous pulp removal via the heavy phase outlet ensures that it is free of any black specs and other impurities, which are removed intermittently through solids discharge.

All metallic parts in contact with the process liquid are made of stainless steel. Gaskets and seals in contact with the



product are made of FDA approved materials and are approved according to food regulations (EC1935/2004).

The separation system is designed for completely automated cleaning-in-place (CIP).

Scope of supply

The standard PurePulp 250 system includes the following main components:

- Disc stack centrifuge (PX 810HGV) with gear drive motor
- Process & service liquid unit:
 - Isolation and control valves
 - Flow meter
 - Sight glass
 - Sample valves
- Timer controlled solids discharge function
- Electrical & control system:
 - Motor starter panel with variable frequency drive (VFD)
 - Control cabinet with PLC and HMI
- Documentation

Options

Available standard options are:

- Feed pump
- Solids receiving unit (a collection device and a solids transfer pump)

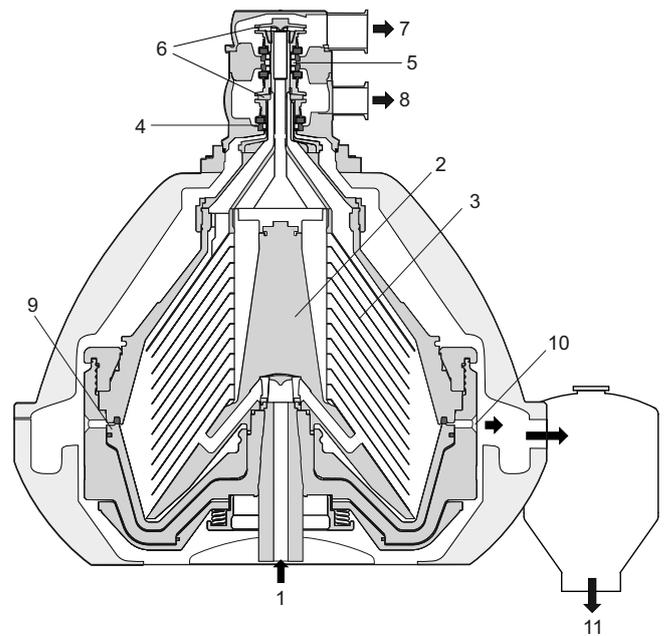
Working principle

The feed and utilities are routed in and out of the separator by the process & service liquid unit, which also controls the flow rate and back pressure of the process.

The feed enters the separator bowl from the bottom, via the drive spindle. Separation takes place within the separator bowl due to centrifugal force generated by the bowl rotating at high speed. The separated phases are pumped out continuously by the integrated impellers through the light phase and heavy phase outlets at the top of the separator.

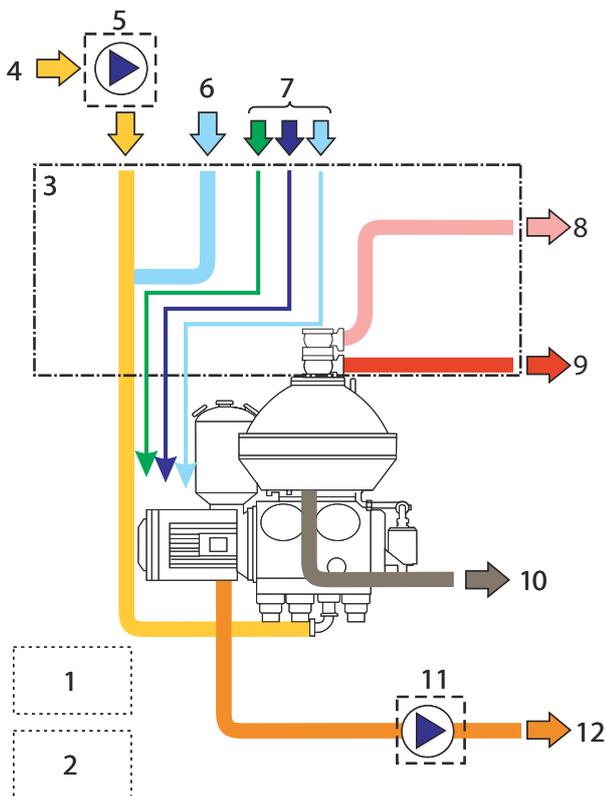
The solids collected in the periphery of the bowl are discharged intermittently, triggered by a timer, via the discharge ports. Operating water is used to control the movement of the sliding bowl bottom, which opens and closes the discharge ports. The discharged solids decelerate in the cyclone and can be pumped out of the system with the optional solids receiving unit.

The process & service liquid unit also controls the utility liquids, which are used for the separator's discharge system, flushing and CIP.



Typical bowl drawing for a solids ejecting separator. The details illustrated do not necessarily correspond to the separator described.

1. Inlet
2. Distributor
3. Disc stack
4. Heavy phase hermetic seal
5. Light phase hermetic seal
6. Impellers
7. Light phase outlet
8. Heavy phase outlet
9. Sliding bowl bottom
10. Solids discharge ports
11. Solids outlet cyclone



Typical flow chart of a separator system. The details may differ slightly between different systems.

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

Technical data

Performance data

Capacity ¹	8 000 litre/h (35.2 US gpm)
Maximum motor power	15 kW (20.1 HP)

¹ Recommended max. capacity limited by piping dimension. Actual capacities depend on operating conditions.

Main connections

Feed inlet	DIN Union DN50 DIN 11851
Light phase outlet	DIN Union DN50 DIN 11851
Heavy phase outlet	DIN Union DN25 DIN 11851
Solids outlet (from SRU)	Flange DN65, PN16

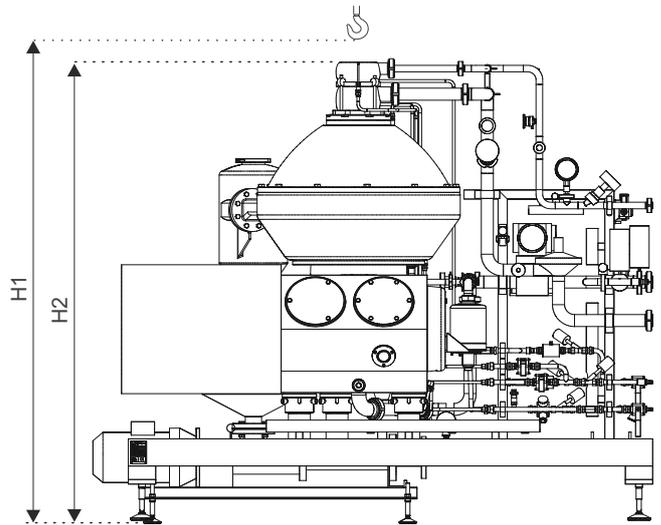
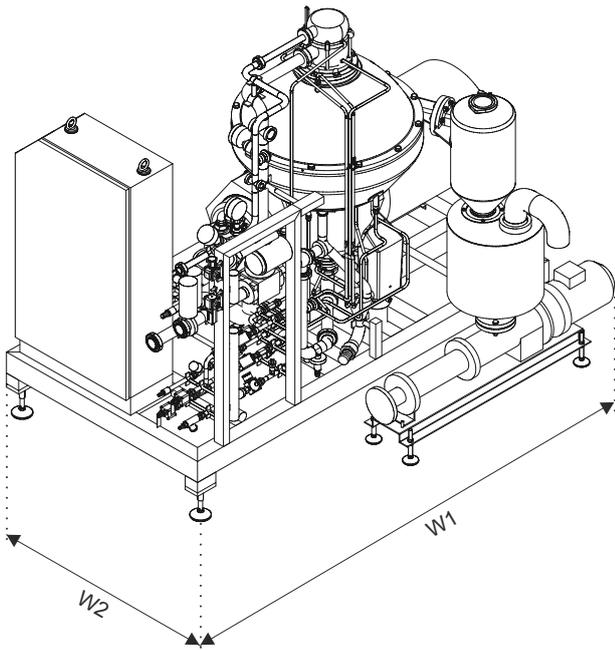
Material data

Bowl body	Duplex stainless steel, EN 1.4462, S31803
Frame top part	Stainless steel 316, EN 1. 4401, ASTM S31600
Gaskets (product wetted)	NBR and EPDM, FDA approved
Piping	Stainless steel 316L, EN 1.4404, S31603
Frame, Cabinet	Stainless steel 304, EN 1.4301, S30400

Weights (approximate)

Complete system weight incl, separator bowl	2200 kg (4850 lbs)
Separate bowl only	330 kg (730 lbs)

Dimensional drawing



Dimensions

H1 (min. lifting height)	2500 mm (8 ft 2 7/16 inch)
H2	2040 mm (6 ft 8 5/16 inch)
W1	2455 (8 ft 5/8 inch)
W2	1675 mm (5 ft 5 15/16 inch)

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