



# Alfa Laval beer recovery system

## Standardised membrane filtration system



### Application

Alfa Laval membrane filtration systems provide a straightforward solution that enables breweries to both recover beer and concentrate the surplus yeast at the same time.

50–60% of the surplus yeast, equivalent to approx. 2% of the total beer production, can be filtered out and recovered as high-quality beer with no oxygen pick-up. During this process, the yeast cells are concentrated up to a level of 20% dry matter.

### Design

The specially designed beer recovery membranes are installed in the well proven Alfa Laval M39H plate and frame module with open channels.

The special FSM0.45 membranes are made of polyvinylidene fluoride (PVDF), with a pore size of 0.45µm. These inert, beverage-grade fluoropolymer membranes comply with all FDA regulations.

The membrane surface in the unit can vary from 30 m<sup>2</sup> up to 90 m<sup>2</sup>, depending on the capacity.

### Optimized flow dynamics

The Alfa Laval M39H plate and frame module has been developed specifically for cross-flow filtration of medium-to-high viscosity products that contain suspended solids. The open channel design results in good flow dynamics under low-pressure conditions. This also keeps energy consumption low.

The Alfa Laval beer recovery system provides the following features and benefits:

### Features

- 0.45µm microfiltration membranes ensure good retention of both yeast and other micro-organisms
- Plate and frame system with open channels that ensures high efficient flow dynamics
- Modular design easy to extend
- Low membrane cost
- Fully automated system which can operate continuously for 24 hours/day
- Gentle handling of yeast
- Compatible with commercially available cleaning agents
- Beer recovery from surplus yeast
- Continuous or batch process

## Benefits

- Low operating costs (labour, energy, chemicals, etc.)
- Continuous processing ensures maximum utilization and accurate yield control

- No oxygen pick-up ensures high quality recovered beer
- Well-proven, robust design results in reliable operation
- Low operating temperature
- Minimum autolysis by tank to tank operation

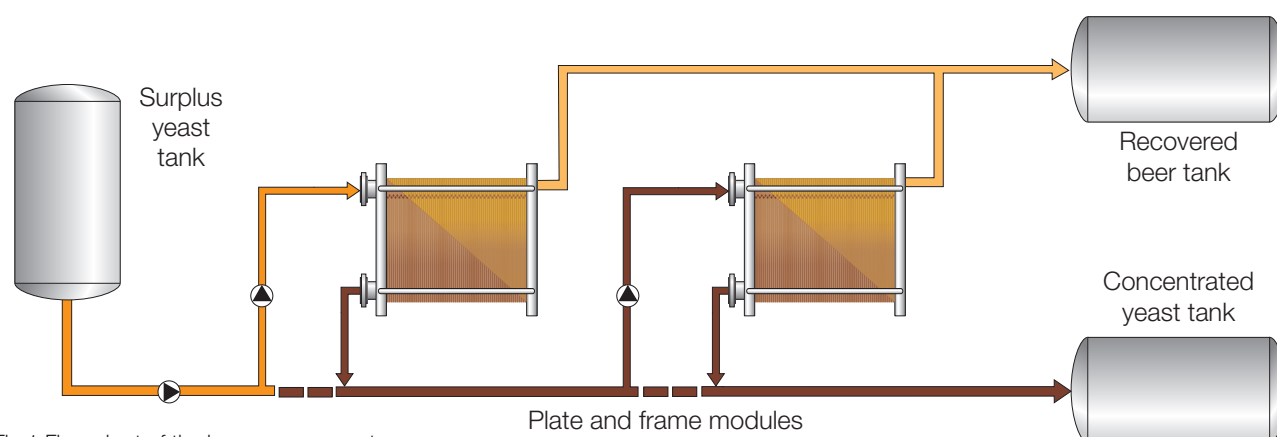


Fig.1 Flow chart of the beer recovery system

## Technical specifications for continuous process

| Plant type                                      | BRTB - C150      | BRTB - C400       | BRTB - C670       |
|---|------------------|-------------------|-------------------|
| Output concentration                            | 18 - 20% TS      | 18 - 20% TS       | 18 - 20% TS       |
| Operation temperature °C (°F)                   | 5-10 (41-50)     | 5-10 (41-50)      | 5-10 (41-50)      |
| Number of loops                                 | 1                | 2                 | 3                 |
| Number of modules                               | 1                | 2                 | 3                 |
| Membrane area m <sup>2</sup> (ft <sup>2</sup> ) | 30 (323)         | 60 (646)          | 90 (969)          |
| Power consumption kW (HP)                       | 18 (24.1)        | 34 (45.6)         | 51 (68.4)         |
| Space required, L x W x H                       |                  |                   |                   |
| Meter   | 3.2 x 2.4 x 2.0  | 4.0 x 3.5 x 2.0   | 4.2 x 4.0 x 2.0   |
| Feet  | 10.5 x 7.9 x 6.6 | 13.1 x 11.5 x 6.6 | 13.8 x 13.1 x 6.6 |
| Weight, incl. liquid kg (lb)                    | 2,300 (5,070)    | 3,700 (8,157)     | 4,900 (10,800)    |
| Capacity hl/day (US GPD)*                       | 250 (6,600)      | 500 (13,200)      | 750 (19,800)      |
| Recovered beer hl/day (US GPD)*                 | 125 (3,300)      | 250 (6,600)       | 375 (9,900)       |
| Operation time h/day                            | 24               | 24                | 24                |

## Technical specifications for batch process

| Plant type                                      | BRTB - B230      | BRTB - B460      | BRTB - B690       |
|---|------------------|------------------|-------------------|
| Output concentration                            | 18 - 20% TS      | 18 - 20% TS      | 18 - 20% TS       |
| Operation temperature °C (°F)                   | 5-10 (41-50)     | 5-10 (41-50)     | 5-10 (41-50)      |
| Number of loops                                 | 1                | 1                | 2                 |
| Number of modules                               | 1                | 2                | 3                 |
| Membrane area m <sup>2</sup> (ft <sup>2</sup> ) | 30 (323)         | 60 (646)         | 90 (969)          |
| Power consumption kW (HP)                       | 18 (24.1)        | 30 (40.2)        | 40 (53.6)         |
| Space required, L x W x H                       |                  |                  |                   |
| Meter   | 3.2 x 2.4 x 2.0  | 4.0 x 3.0 x 2.0  | 4.0 x 4.0 x 2.0   |
| Feet  | 10.5 x 7.9 x 6.6 | 13.1 x 9.8 x 6.6 | 13.1 x 13.1 x 6.6 |
| Weight, incl. liquid kg (lb)                    | 2,300 (5,070)    | 3,400 (7,500)    | 4,400 (9,700)     |
| Capacity hl/day (US GPD)*                       | 165 (4,360)      | 330 (8,720)      | 495 (13,080)      |
| Recovered beer hl/day (US GPD)*                 | 100 (2,641)      | 200 (5,282)      | 300 (7,923)       |
| Operation time h/day                            | 24               | 24               | 24                |

\* Dependent of feed properties

## How to contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at [www.alfalaval.com](http://www.alfalaval.com)