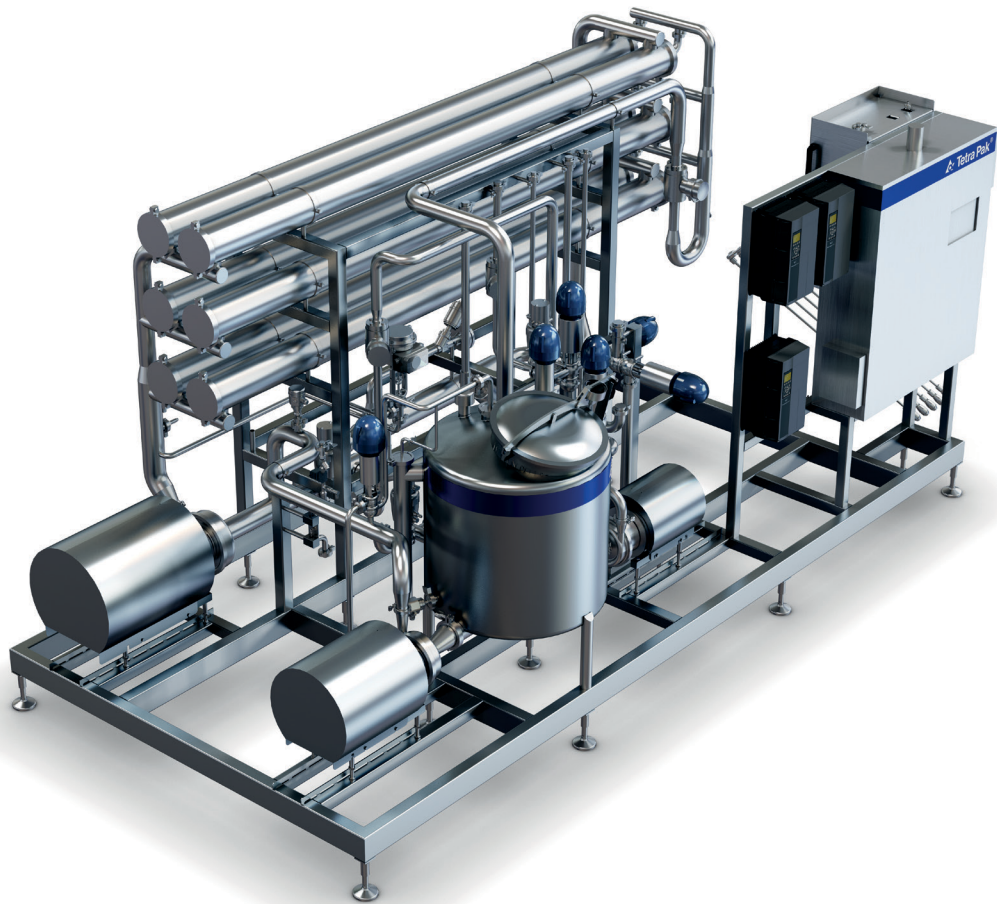# Tetra Pak® UF system P

For milk and whey, global version except US

Application

Tetra Pak® UF system P is a pre-engineered system for concentrating protein in milk and whey streams. It uses ultrafiltration, a membrane filtration process that concentrates milk or whey proteins in dairy streams, allowing processors to make value-added dairy products such as high-value protein concentrates that can be sold or used as an ingredient in more refined products. It removes removes water, minerals and lactose from the milk and whey streams.

Highlights

- In cheesemaking, it enhances product quality and consistency, raises product yield, and optimizes rennet dosing accuracy.
- It facilitates expansion into protein-enriched products, milk and whey drinks, lactose-reduced products, and the production of milk protein concentrate (MPC) and whey protein concentrate (WPC).
- It enables dairies to increase the value of their milk and whey streams.

- The pre-engineered design offers a price-competitive alternative to customized ultrafiltration systems and comes with a faster delivery time.

Tetra Pak UF system P is easy to install and integrate into a dairy plant. A compact footprint minimizes space requirements, and the system is easy to maintain. It is designed to Tetra Pak's rigorous hygiene standards.

Working principle

Product enters the UF system's balance tank and is pumped into the recirculation loops. The permeate (water, minerals, and lactose) is removed as the product passes over the membrane surface. The concentrated protein fraction exits the system as retentate/concentrate. The permeate exits the system through permeate lines where it is pumped out of the system. HMI setpoints control flows, concentration factor, and temperature. Production includes a building solids timer and product displacement. Tetra Pak UF system P is designed for production mode operation up to 20 hours a day.

Scope of supply

Main components

Tetra Pak® UF system P uses Tetra Pak standard sanitary components designed to the highest dairy industry standards. It is built with Alfa Laval pumps and valves and E&H transmitters and magnetic flow meters.

Control system

Tetra Pak UF system P is controlled via an Allen Bradley or Siemens PLC. Tetra Pak UF system P is flow controlled while monitoring pressure and temperature. The IP 66 control panel has an integrated HMI touchscreen.

Tetra Pak UF system P is prepared for remote operation and plant connectivity, with sequencing for production and CIP. HMI setpoints control flows, concentration factor and temperature.

Options

• Chemical dosing unit
• Concentrate plate cooler
• Secondary water supply
• Pre-filter
• Permeate pump
• Refractometer
• Mix-proof valves
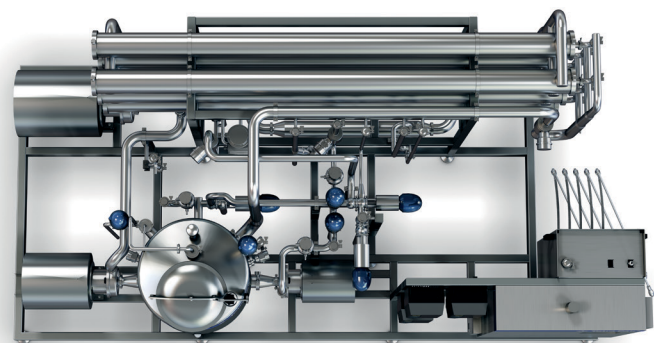
Technical data

Nominal capacities*	Skim milk at 9.2% TS	
	1.5X	2X
UF configuration (1 loop)	16,000	9,000
UF configuration (2 loops)	34,000	20,000

Nominal capacities*	Sweet whey at 6% TS	
	WPC 35	WPC 50
UF configuration (1 loop)	8,500	6,000
UF configuration (2 loops)	18,500	14,500

* kg/hr

Processing parameters and service media

Product temperature	10°C
Chilled media (ice water)	2°C –> 7°C
Steam	3 barg
Water – as per water requirements	3 barg

Material (product contact)

AISI 316L stainless steel (for product contact)
AISI 304 stainless steel (the frame)

Dimensions*

Skid dimensions, configuration A	Height	Width	Length
Feed/loop section skid	2,270	2,170	4,560

Skid dimensions, configuration B	Height	Width	Length
Feed section skid	2,550	1,310	4,950
Loop section skid	2,500	1,150	3,820

* millimetres

Environmental data*

Data per 1,000kg/hour

Electricity	2.5 kWh
Cooling	1.8 kWh
Heating [1]	0.7 kWh
Carbon footprint [2]	1.83 kg CO_2
Water	57.5 litres

* Based on 20 hrs production, 4 hrs CIP – 14.5m³/h sweet whey capacity.
(1) Related to CIP.
(2) Indicative value based on world average CO_2 emissions from electricity generation and natural gas for steam production.

Tetra Pak®
PROTECTS WHAT'S GOOD