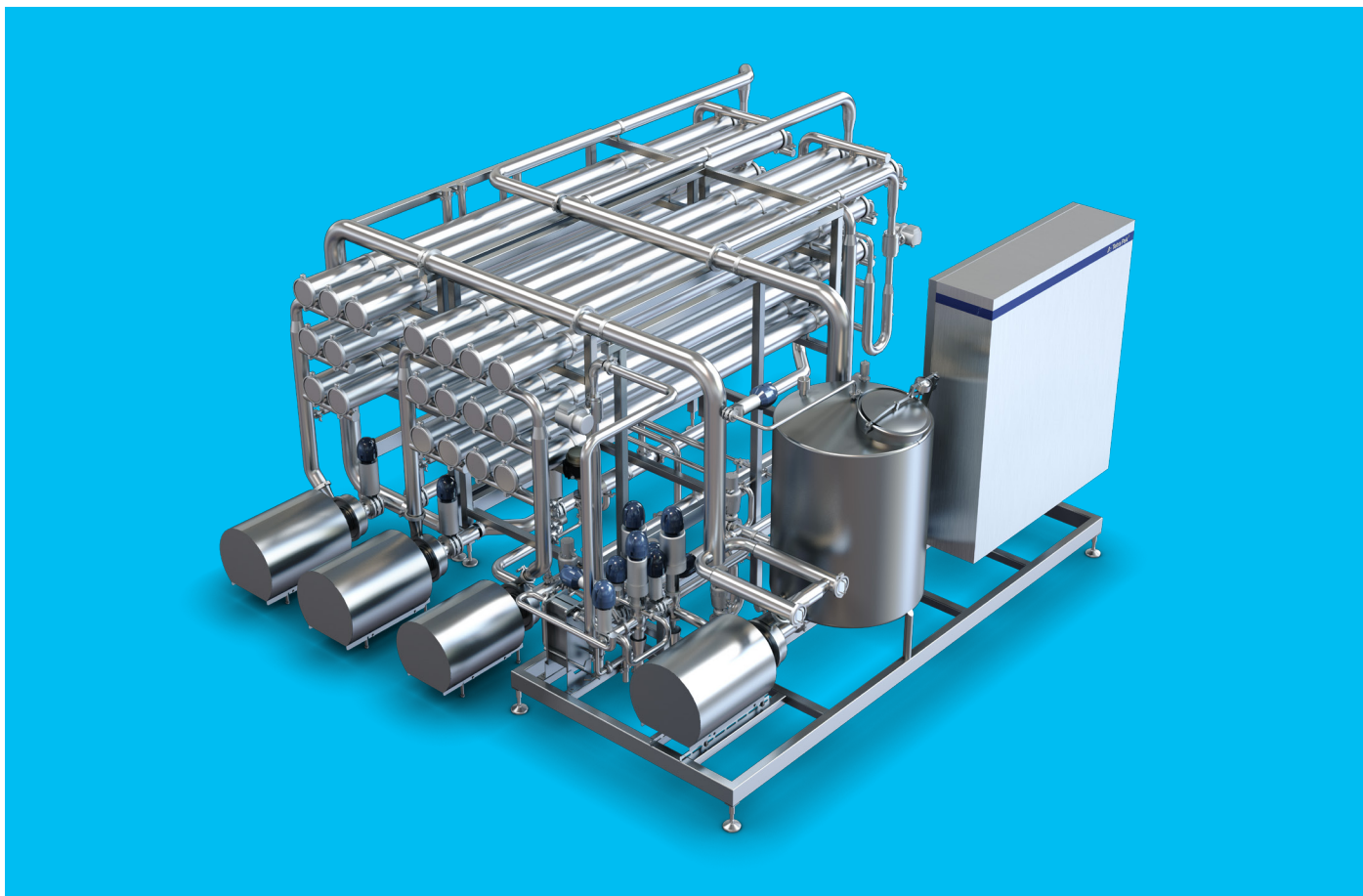




Tetra Pak® UF system P

for milk and whey, US version



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 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 is designed with Tetra Pak standard sanitary components meeting the design requirements of the USDA and 3-A design standards. Tetra Pak UF system P is built with Alfa Laval pumps and valves, IFM pressure/level/temperature transmitters, and E&H magnetic flow meters.

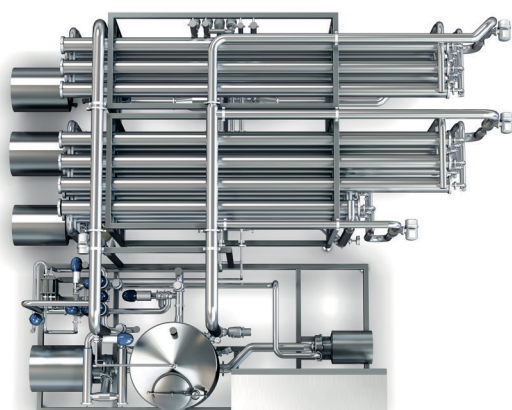
Control system

Tetra Pak UF system P is controlled via an Allen Bradley PLC. Tetra Pak UF system P is flow controlled while monitoring pressure and temperature. The control panel is NEMA 4X with integrated HMI touchscreen. The unit is prepared for remote operation and plant connectivity.

Tetra Pak UF system P has sequencing for production and CIP.

Options

- Chemical dosing unit
- Concentrate plate cooler
- Secondary water supply
- Pre-filter
- Permeate pump
- MCC
- Mix-proof valves



Tetra Pak

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Technical data

Nominal capacities*	Skim milk at 9.2% TS	
	1.5X	2X
UF configuration (2 loops)	122,000	75,900
UF configuration (3 loops)	187,000	112,200

Nominal capacities*	Sweet whey at 6% TS	
	WPC 35	WPC 50
UF configuration (2 loops)	82,500	60,500
UF configuration (3 loops)	126,500	99,000

* lbs/hr

Consumption	Min	Max	Units
Electrical consumption	-	2,400	kWh
Air consumption	-	10	SCFM
Water consumption	-	12,800	gal/day
Chilled media consumption	-	1,800	kWh
Steam	-	750	kWh
Hold-up volume	-	800	gallons

Processing parameters and service media

Product temperature	55°F	
Chilled media (ice water)	34°F → 41°F	90 gpm
Steam	2,500 lbs/hr	
Water – as per water requirements	450 gpm	

Material (product contact)

AISI 304 stainless steel

Dimensions*

Skid dimensions	Height	Width	Length
Feed section skid	112	72	185
Loop section skid (2 loops)	110	71	175
Loop section skid (3 loops)	110	93	175

* inches

Environmental data*

Data per 1,000kg/hour

Electricity	2.5 kWh
Cooling energy	1.8 kWh
Heat energy ⁽¹⁾	0.7 kWh
Carbon footprint ⁽²⁾	1.85 kg CO ₂
Fresh water (incl. CIP)	15 gallons

* Based on 20 hrs production, 4 hrs CIP - 99,000 lbs/hr sweet whey capacity.

(1) Direct electricity use plus estimated electricity for air compressors servicing the equipment.

(2) Related to production.