



APV SepStream System UF System

The APV SepStream System is a flexible membrane application solution enabling customers to benefit from cost effective systems with high quality, high performance and flexible application opportunities. The SepStream UF systems comprise of four pre-engineered Ultrafiltration (UF) systems. The pre-engineered standard skidded systems are based on proven components, membranes and control instruments and uncompromised quality material like Stainless Steel in AISI 316 whilst meeting the highest hygienic standard.

Application

SepStream UF is designed for protein concentration primarily in sweet cheese whey but also in lactic acid whey and milk. In UF process the whey or milk feeding the plant is divided in to two streams: protein enriched retentate (main product) and permeate (by-product).

The SepStream-UF system based on proven ultrafiltration (UF) technology enables effective concentration of whey proteins to reach the protein level of whey products most commonly used on the market (WPC35, WPC60). Production of WPC is also a first step in production of LeanCreme® which is one of the most profitable ways for a dairy to use whey internally. The UF system also enables milk concentration (MPC50/MPC60) for protein standardisation of cheese milk, yoghurt and other fermented products.

Capacity

Four standard sizes with nominal capacity of: 5/2, 10/6, 15/10 and 20/15 m³/h (with WPC35/WPC60 as products respectively) based on sweet whey, 6% Total Solid (TS) as feed and 10 to 20 hours production time at 8 - 10°C.

Process description

The SepStream UF system concept employs continuous UF concentration of proteins in whey or milk. The pre-treated feed is led from a storage tank by an external feed pump to the UF balance tank and pumped via the base line into the UF loop system. Here the feed is separated into two phases – a retentate phase (protein concentrate) and a permeate phase (watery phase). The retentate is led to an external retentate storage tank for possible further down stream processing. The permeate is led to the UF balance tank and from here pumped to an external permeate storage tank.

After final processing the UF plant is cleaned according to the pre-defined CIP program and the recommended CIP procedure. Detergents are dosed manually. An automatic CIP dosing system is available as an option.

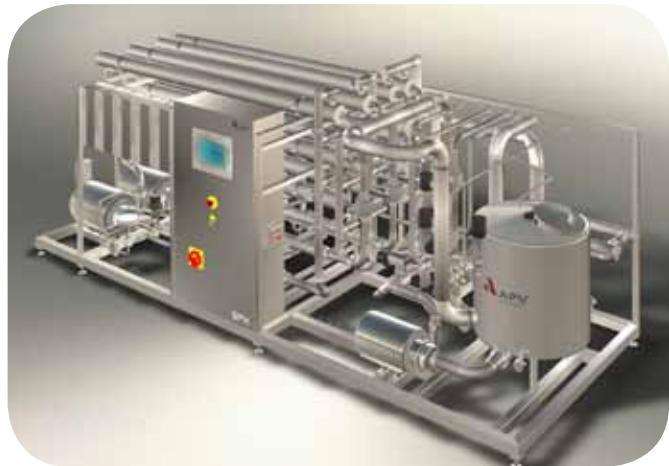


Standard design

- Continuous processing at 8-12°C
- Operating time: 10 hours between CIP (can be extended up to 20 hrs depend on application and process parameters)
- Skid mounted system for Plug and Produce solution
- All parts in contact with product made of stainless steel AISI 316L / DIN1.4404
- Hygienic dairy processing standard based on 6" Spiral Wound UF membranes
- EHEDG APV Brand Process Equipment (Valves, Pumps & Fittings)
- EHEDG Sanitary Endress & Hauser Instrumentation (Temperature, Pressure, Level & Flow) for process control
- Indicators for process monitoring
- Integrated closed, double balance tank for feed product and permeate
- Stainless steel safety filter introduced to protect membranes against small mechanical impurities
- Integrated Tubular Heat Exchangers for product cooling and CIP heating
- Stainless steel utilities control valves
- Manual service shut-off valves included
- Automatic system for pump seals flush
- All pumps controlled via skid mounted frequency converters by Danfoss 300 series (IP66)
- Skid mounted stainless steel control and MCC panel
- Semi-automatic self-contained control system with Siemens MP277 10" operating panel and defined signal interface – tried and tested
- PLC controlled CIP program for both manual (standard) and automatic (optional) CIP chemicals dosing
- Cabled and tested, ready for Plug and Produce

Design options

- Sanitary, APV Double Seat Leak-Proof Valves
- Bag filters unit for removal of fine cheese dust from whey
- Automatic CIP chemicals dosing system
- Communication link for remote control of the plant from an external control system
- Communication link to an external control system for data collection from the plant
- Additional operator SCADA system consisting of a Wonderware Intouch PC for operator room placement. This enables remote operation, easy plant overview, surveillance and plant data collection including trend curve screens for easy production optimization and trouble shooting
- Allen-Bradley CompactLogix PLC and Rockwell PanelView 600 Touch HMI Panel



APV SepStream UF Skid

Technical Data – SepStream UF system (refer to sweet whey 6% TS as feed product and production at 8°C)

	Units	SepStream UF5	SepStream UF10	SepStream UF15	SepStream UF20
Nominal feed capacity (approx.)	l/h	5.000/2.000 ²⁾	10.000/6.000 ²⁾	15.000/10.000 ²⁾	20.000/15.000 ²⁾
Production temperature	°C	8-10	8-10	8-10	8-10
CIP temperature	°C	50	50	50	50
Installed power	kW	21	35	50	66
Permeate outlet pressure, max.	bar	3	3	3	3
Feed pressure at unit inlet, min.	bar	2.5	2.5	2.5	2.5
External feed pump capacity, min.	l/h	8.000	15.000	23.000	30.000
Flushed seal water capacity (3 bar)	l/h	400	600	600	800
Steam consumption - CIP (3 bar)	kg/h	290	380	400	520
CIP flush water capacity (3 bar)	l/h	30.000	50.000	80.000	100.000
Ice water capacity – production (3 bar, 2°C)	l/h	4.000	7.000	12.000	15.000

2) For WPC35 / WPC60 as retentate respectively

SPX Flow Technology
 Pasteursvej, DK-8600 Silkeborg, Denmark
 Phone: +45 70 278 278 Fax: +45 70 278 330
 www.apv.com / www.spxft.com

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