



Primodan - When flexibility is your priority

CHEESE TECHNOLOGY BY PRIMODAN



Cheese equipment selection guide

Primodan`s experience in cheese enables us to offer a wide range of equipment and solutions. The key to choose the right equipment is the cheese type, the below table may be of help. (Please note that only the main cheese categories are listed)

Main groups of cheese	Types/ varieties	CurdMaster	CurdFinishing tank	FineSaving tank	OPD PrePress	Mould fillers	SaniPress system	Cheese mould washer	Mould emptier system	Rack filler	Rack brining system
	European pressed cheese										
Extra hard cheese	Parmesan	x	x	x	x	x	x	x	x	x	x
Extra hard cheese	Grana	x	x	x	x	x	x	x	x	x	x
Hard cheese	Gryère	x	x	x	x	x	x	x	x	x	x
Hard cheese	Emmental	x	x	x	x	x	x	x	x	x	x
Hard cheese	Swiss	x	x	x	x	x	x	x	x	x	x
Semi hard cheese	Gouda	x	x	x	x	x	x	x	x	x	x
Semi hard cheese	Edam	x	x	x	x	x	x	x	x	x	x
Semi hard cheese	Tilsit	x	x	x	x	x	x	x	x	x	x
Hard/semi hard cheese	Manchego	x	x	x	x	x	x	x	x	x	x
	Speciality cheese										
Semi hard / soft cheese	Havarti	x	x	x	x	x	x	x	x	x	x
Semi hard / soft cheese	Port Salut/St. Paulin	x	x	x							
Semi hard / soft cheese	Limburger	x									
Semi hard / soft cheese	Blue mould	x									
Soft cheese	Gorgonzola	x									
Semi and soft cheese	Feta/Domiati	x									
Semi soft / fresh chees	White cheese	x									
	Pasta filata										
Hard / semi hard cheese	Provolone	x									
Semi hard cheese	Kashkaval	x									
Semi hard / fresh chees	Pizza cheese	x									
Soft / fresh cheese	Italian Mozzarella	x									

Cheese plant logistics and cheese technology

As a leading global supplier of complete cheese plants to the dairy industry, Primodan offers a comprehensive selection of flexible and cost-effective solutions for a wide range of cheese types and sizes with wide-ranging moisture content and fat in dry matter.

CheeseMaster plant

The CheeseMaster line is an automated, modularised processing line for manufacturing all variations of EPC cheeses (European Pressed Cheese) – hard and semi-hard, round and rectangular, round eyed and with irregular eyes – in sizes from 2 kg to 50 kg (4.4 to 110 lbs/h) or more.

The CheeseMaster line has a proven track record for its outstanding performance and yield.

Cheese technology and support

Primodan's cheese process technology is the result of many years of experience and close co-operation with cheese manufacturers throughout the world.

Our experience and wide range of technologies means that we can configure and modularise a world-class solution for a particular cheese production line, and provide all necessary support and service.

A dedicated team of specialists

- World-class innovation, engineering, sales and service competence
- Powerful and versatile technology platform
- Pioneers in innovative dairy applications and engineering solutions
- Experienced Dairy technologists for cheese production

Cheese vats – CurdMaster a vertical double O vat

Formerly sold under the APV/SPX brand

Vertical double O type



Advantages

- Fast foamless filling
- Rapid mixing of all added components including rennet
- Gentle and precise cutting
- High yield
- Fast whey draw
- Controlled and fast heating and cooling
- Vertical vat with 2 outlets for fast emptying
- Efficient and gentle stirring
- Fully automated with touch screen
- CIP cleanable vats

Specifications	
Field of application	Cheese plants
Description	Cheese vats including various options to fit any type of cheese production
Capacity	Up to 30,000 l (8,000 U.S. gal)
Temperature	Dependent on individual cheese types

SoftCurd cheese vat type OCC horizontal

Formerly sold under the APV/SPX brand

Cottage cheese production



Advantages

- Enclosed cheese tank with horizontal and vertical cutting tools
- Horizontal cutting frame parked outside product area when not in use
- Dedicated stirring shovels for gentle curd agitation
- Unique soft curd agitation programme
- Low product level
- Well-proven downstream equipment

Specifications	
Field of application	Mainly cottage cheese plants
Description	Horizontally enclosed cheese vat, filled only up to below the central, horizontal shaft. Two sets of cutting tools for vertical and horizontal cutting to create uniform curd cubes, followed by proven high-quality, downstream system for whey draining, washing and cooling, curd draining and creaming
Capacity	Tank size from 6,000 l to 18,000 l (1,585 - 4,755 U.S. gal) filling volume. Line capacity up to 5,000 kg (11,000 lbs) cottage cheese per hour
Temperature	PLC controlled cottage cheese cooking programme

- Fully CIP cleanable equipment
- High product quality and hygiene standard
- Tank also applicable for Blue Cheese, Feta and other cheeses

CurdFinishing tank

Formerly sold under the APV/SPX brand

Final stirring and second whey draw between the cheese vats and the Pre-Press system

Specifications	
Field of application	Cheese plants
Description	The CurdFinishing tank is used for gentle final agitation as well as for the second whey draw which can be performed without stopping the agitator. This will minimise the lumps in the cheese mass to be pre-pressed which again will give a better cheese base without irregular holes
Capacity	Any
Temperature	Process-dependent

Advantages

- Improved cheese quality - better cheese base with minimum lumps and no irregular holes
- Shorter cheese processing time
- Very gentle, efficient and homogeneous agitation to eliminate feed variations in the Pre-Press system
- Continuous whey suction system enabling whey draw from the tank without stopping the agitator
- Separate in- and outlets
- Tangential inlet
- Enables high concentration of cheese curd before emptying to the Pre-Press system



FinesSaving tank

Formerly sold under the APV/SPX brand

For recovery and reintroduction of cheese fines into the cheese



Advantages

- Increased yield through recovery and reintroduction of cheese fines
- Ability to flush out the filling line with clear whey
- Elimination of any increased fines losses from the second whey draw
- Improved cheese quality in connection with the second continuous whey draw

Specifications	
Field of application	Cheese plants
Description	During the second whey draw, the cheese fines in the whey are sedimented in a FinesSaving tank. The sediment fines will continuously be in motion to prevent fines lumps until they are forwarded to the Pre-Press, where they are distributed in the cheese mat and joint with the cheese grains
Capacity	Any
Temperature	Process-dependent

- Quick filling of the bottom of the Pre-Press with clear whey
- Less fines sediment in the bottom of the Pre-Press

Primodan OPD Pre-Press

Formerly sold under the APV/SPX brand

Flexible pre-pressing of all kinds of semi-hard and hard cheese types

Specifications	
Field of application	Cheese plants for production of semi-hard and hard cheeses from about 2.0 kg to 50 kg (4.4 to 110 lbs)
Description	Pre-pressing of all types of semi-hard and hard cheese in all sizes and shapes between 850 x 600 mm. and 106 x 200 mm (33.5 x 23.6 inch and 4.2 x 7.9. inch. Available with a number of cheese production optimisation features such as laser scanning and adjustable knives
Capacity	5,000 - 20,000 l/batch (1,320 - 5,280 U.S. g/batch) Maximum batch size 13,000 x 1,700 x 200 mm (512 x 67 x 8 inch)
Temperature	Dependent on cheese type



Advantages

- Flexible Pre-Press for all cheese types and a wide range of sizes and shapes
- Adapts easily to variations in fat and water content
- Physical separation between the individual batches for clear batch identification
- Fewer cheese vats required
- Easy change of cheese dimension and shape
- Same unit can make Gouda- and Tilsit-type cheeses
- Long running time between CIP cleaning
- Higher yield
- Uniform water content
- High weight accuracy due to uniform curd distribution, laser scanning and adjustable knives

CHEESE TECHNOLOGY

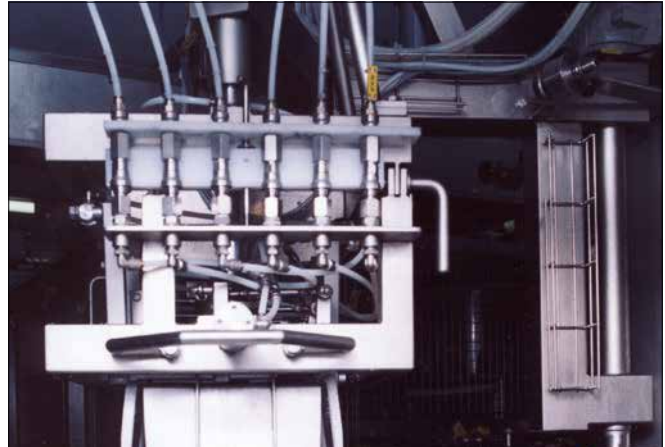
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Mould fillers

Formerly sold under the APV/SPX brand

Flexible filling solutions for cheeses of various dimensions and shapes, and with different structures and firmness

Specifications	
Field of application	Cheese plants
Description	Filling of pre-pressed cheeses. Simultaneous filling of more than one cheese depending on the capacity requirements of the processing line
Capacity	Up to about 5,000 cheeses per hour
Temperature	Process-dependent



Advantages

- Gentle handling of the cheeses
- Possibilities for laser controlled filling for accurate placement of the cheeses in the moulds (large cheeses)
- Can fill up to 24 cheeses in the same operation
- All fillers are product adapted according to cheese type
- Choice of filling heads and filling systems

- Choice of type and amount of filling heads
- Several filling tools can be integrated in the automatic filler or changed for production of various dimensions and shapes of cheeses
- Operation with single or multiple moulds
- Optional: Fully CIP cleanable filling unit

Primodan SaniPress system

Formerly sold under the APV/SPX brand

Highly flexible system for final pressing of semi-hard and hard cheeses



Specifications	
Field of application	Cheese plants
Description	Pressing takes place in closed tunnels by means of a diaphragm pressing on the entire surface of the mould lid
Capacity	Tailored to cheese processing line
Temperature	Dependent on individual cheese types

Advantages

- Even pressing of cheeses in individual moulds or multiple moulds without using spring-loaded lids
- A specific pressure of 400 g/cm² (5.7 lbs/sq.in.) is achieved at only 0.3 bar (4.3 lbs/sq.in. air pressure)

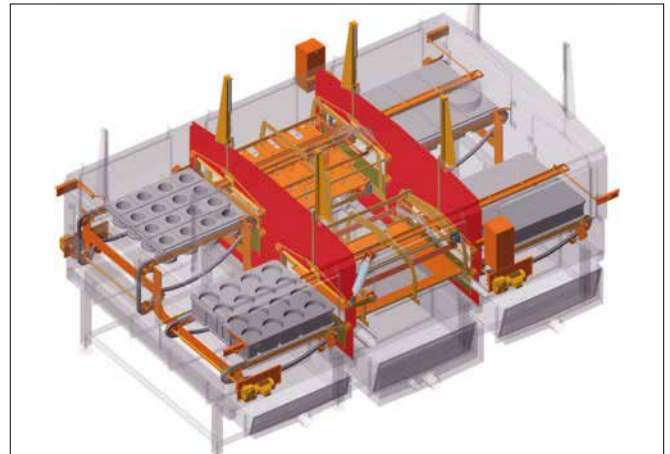
- Optional available with pressing cylinders
- Applicable to a wide variety of cheese types
- Applicable to a wide variety of shapes and sizes
- Integrated mould storage
- Collecting of whey and CIP liquid

Cheese mould washer

Formerly sold under the APV/SPX brand

Special, patented design for cleaning micro-perforated plastic cheese moulds

Specifications	
Field of application	Cheese plants
Description	The cheese mould washer consists of three sections - pre-rinse, pressure washing and final rinse. Cheese particles and whey residues are removed by simple flushing in the pre-rinse section. The moulds are fixed in an upside down position in the pressure washing section and detergent is circulated through the micro-perforation. Finally the moulds are rinsed with fresh water, which is recycled to the pre-rinse section
Capacity	Adapted to the individual cheese plant
Temperature	75°C (167°F) in the pressure washing section



Advantages

- Patented pressure washing system for efficient cleaning of all micro-perforated drain channels, thus preserving the whey draining capacity of the moulds

Mould emptier system

Formerly sold under the APV/SPX brand

Highly flexible system for final pressing of semi-hard and hard cheeses



Advantages

- Customised to individual cheese types, shapes and sizes
- Additional emptying tools can be integrated in the automatic filler or changed to accommodate various cheese shapes and sizes
- Choice of two methods enables the optimum solution for any cheese type

Specifications	
Field of application	Cheese plants
Description	Compressed air emptying: The moulds are turned 180° and fixed after which the cheese is released by blowing compressed air through the micro-perforated holes in the bottom and sides of the mould. Vacuum emptying: Specially designed, fixed vacuum heads on the mould are lowered on to the cheese. The cheese is lifted out of the mould
Capacity	Adapted to the individual cheese plant
Temperature	Dependent on cheese types

- Works with single and multiple moulds
- Available with full CIP cleaning

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Rack filler

Formerly sold under the APV/SPX brand

Gentle loading of cheeses on the rack

Specifications	
Field of application	Cheese plants
Description	Pressed cheeses are conveyed on a belt conveyor from the mould emptier to rack filler where they are loaded on the roller conveyor in the rack loading vat. After the roller conveyor is lowered below water level, the rack elevator pulls an empty rack from the rack storage system, and places it with the lowest shelf in the loading position on a level with the roller conveyor. One shelf is loaded at a time by means of a pneumatically controlled pushing device, after which the rack elevator steps the rack to the next position. When the rack is loaded and all cheeses under liquid, the rack is pulled out of the elevator to the position for crane collection to the brining vat
Capacity	Adapted to the individual cheese plant
Temperature	Dependent on the various cheese types



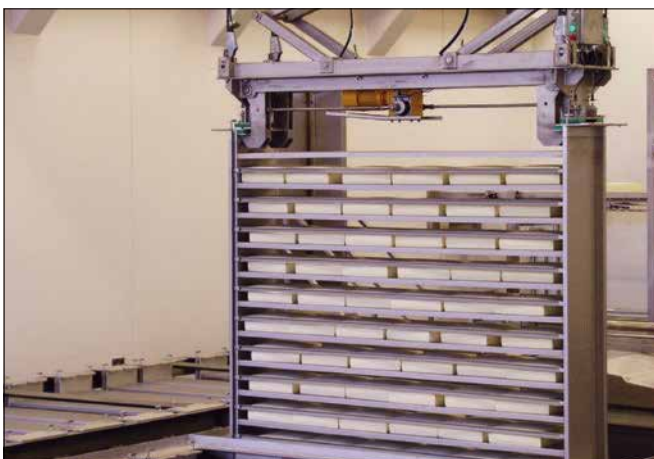
Advantages

- Specially designed rack filling system with filling below water level for gentle treatment of soft, pressed cheeses
- Flexible to accommodate various cheese sizes and shapes

RackBrine system

Formerly sold under the APV/SPX brand

For round and rectangular hard and semi-hard cheeses – water cooling and brining



Advantages

- Highly flexible to accommodate various cheese types, sizes and shapes
- Suitable for both cheese cooling and cheese brining
- Available with full CIP to enable full batch control

Specifications	
Field of application	Cheese plants
Description	A flexible modular system made of stainless steel (AISI316) consisting of brining racks, cooling/brining vats, and an overhead crane for rack conveyance. The brining racks consist of a frame with perforated profiled shelves equipped with safety gratings, as well as grip fittings for crane transportation and for hanging from the edge of the vat. The cooling/brining vats are made of stainless steel, and the edge of the vats feature rack fittings to make sure the racks do not touch the vat during lowering/lifting. The overhead crane is mounted on epoxy-covered steel pillars and covers the area containing the loading/unloading systems and the cooling/brining vats. It features a special gripper that fits closely with the grip fittings on the racks, and a semi- or fully automatic PLC system
Capacity	Adapted to the individual cheese plant
Temperature	Dependent on the individual cheese process

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Rack unloader and rack washer

Formerly sold under the APV/SPX brand

Automatic unloading of brined cheeses to cheese conveyance system prior to rack cleaning

Specifications	
Field of application	Cheese plants
Description	The automatic unloading system consists of an elevator with a slat conveyor and a pneumatically controlled cheese pushing device, a chain conveyor positioning the rack for unloading, and a gripping device to lift the safety grating during unloading. After unloading, the rack is conveyed by the chain conveyor to the washing cabin. Unloading and rack washing are controlled by an integrated PLC system
Capacity	Tailored for the actual brine plant
Temperature	Dependent on the various cheese types



Advantages

- Highly flexible unloading system for a wide variety of cheese types, shapes and sizes
- Precise positioning of cheese pushing device
- Assurance that all racks are cleaned after each circulation - fresh cheeses always loaded on clean racks
- The system is fully controlled by a PLC system

Full support to ensure your success

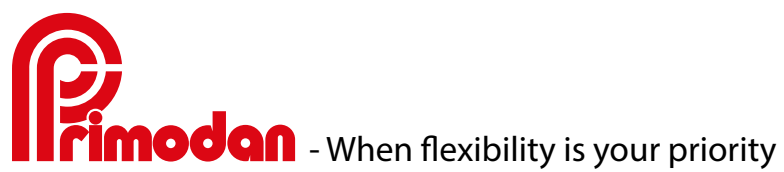
Formerly sold under the APV/SPX brand

The Primodan cheese department has a long tradition of working with cheese customers in order to find the best solution and equipment for your cheeses. This involves a lot of Primodan's core technologies, such as milk reception and standardization, culture preparation, whey treatment, CIP plants, automation, spares and service, as cheese plants involve many technologies as shown.

Primodan offers all from; pre-projects, consultants work, equipment, line concepts, cheese technologists, project management to after sales service. In close co-operation with the customer and with an effective teamwork we are able to offer the whole range from single units to green-field projects. Automation ties it all together with visibility of key factors for the cheese production performance.



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