

Production of all dairy products with one device





ALL-IN-ONE

PASTEURIZERS AND CHEESE KETTLES WITH A HEATING-COOLING UNIT

PH100^{MONOBLOCK}
PH200-650
SKH-H200-650





INDEX

PH100MONOBLOCK

PASTEURIZER

The PH100 Monoblock pasteurizer is a **compact** professional solution for processing smaller quantities of milk (100 l) into various dairy products. The PH offers a wide array of different stirrers. With its surface area under 1 m², the device is particularly suitable where space is limited.

p. 4-5, 8-14



PH200-650

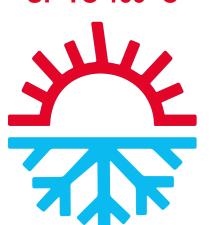
PASTEURIZERS WITH A HEATING-COOLING UNIT

The PH200-650 pasteurizers are professional pasteurizers capable of processing 200-650 I of milk. The heating-cooling unit provides heating and cooling as needed for processing and without preconditioning. It enables all thermal processes between 4 and 100 °C.

p. 4-5, 8-14



HEATING UP TO 100 °C



COOLING DOWN TO 4 °C

ALL-IN-ONE PASTEURIZERS AND CHEESE KETTLES WITH A HEATING-COOLING UNIT

Instant cooling and heating as required.

A single device combines a heating and a cooling unit which enable automated heating and cooling processes in the temperature range between 4°C and 100 °C.

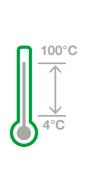
The operation (heating and cooling) requires only a power outlet*.

Built-in smart controllers and state-of-the-art stirrers provide quality, fast, and repeatable processes.

SKH-H200-650

CHEESE KETTLES WITH A HEATING-COOLING UNIT

The SKH-H200-650 are professional cheese kettles capable of processing 200-650 I of milk. They are equipped with automated harps, which makes them particularly suitable for making various types of cheese. Furthermore, they can be used to make numerous different dairy products as well, such as curd and yogurt. The heating-cooling unit provides heating and cooling as needed for processing and without preconditioning. The heating-cooling unit enables all thermal processes between 4 and 100 °C.





p. 6-11, 15-17

PROPERTIES, REFERENCES

The specifications of the heating-cooling processing devices, controllers, and references

PH pasteurizers **ALL-IN-ONE**





BENEFITS

1 PRODUCTION OF ALL DAIRY PRODUCTS (using a single device)

Different stirrers allow the production of: yogurt, pasteurized milk, cheese, curd, cream, spreads, mozzarella, jam, juices, sauces, etc. More on pages 8 and 14.

2 COMPLETE ENERGY EFFICIENCY

Energy-saving construction, sophisticated design and energy reusability provide excellent energy efficiency. More on page 9.

3 PLUG IN AND START PROCESSING

Simple solution for a quick start of milk processing.



The only requirement for heating and cooling is a power outlet.

4 AUTOMATED PROCESSING PROCEDURES

Convenient and easy management using smart controllers for controlled and repeatable processes. They ensure the working day is more efficient and organized, and the processes documented (with the MC 500 R or MC700i recorder) More on page 10.

MC700i



option

MC500 in **MC**500R

5 EASY CONTROL AND MAINTENANCE

More on page 11.

* The EV, EVV, and ETCVV versions also require a water outlet



ENERGY EFFICIENCY





*** The EV, EVV, and ETCVV versions also require a water outlet.

milk into various dairy

grid (3N)

products

the room and start

products. Excellent

solution for a quick

and easy start to

milk processing.

producing dairy

easily moved through

dimensions.

PH 100

the doors with standard

1 m² of space

Minimal use

RELIABLE QUA-

Start the program for processing

SKH-H cheese kettles ALL-IN-ONE



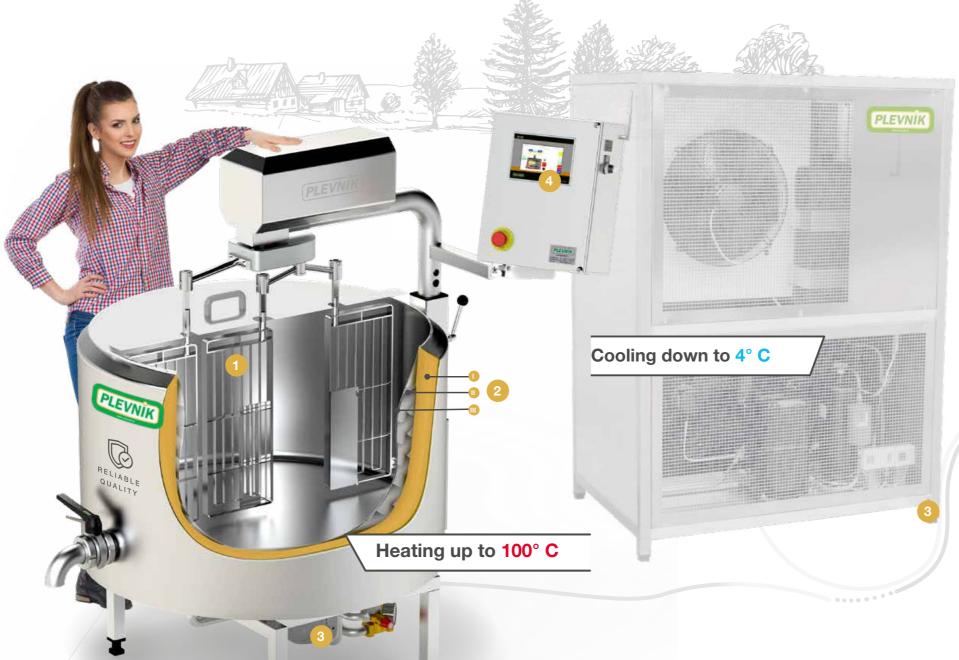
Multifunctional device

A single device combines the features of:

Cheese kettle Pasteurizer Fermentation vessel Cooling tank







SKH-H200-650

Cheese kettle with a heating-cooling unit











BENEFITS

1 PRODUCTION OF ALL DAIRY PRODUCTS (using a single device)

Automated harps allow easy cutting of the cheese mass to ensure efficient production of various kinds of cheese. Also available are the Z-stirrer and stirring shovels, which provide an option to produce various other products, such as curd, yogurt etc., using the same device. More on pages 8 and 15.

2 COMPLETE ENERGY EFFICIENCY

Energy-saving construction, sophisticated design and energy reusability provide excellent energy efficiency. More on page 9.

3 PLUG IN AND START PROCESSING

Simple solution for a quick start of milk processing.



The only requirement for heating and cooling is a power outlet.

4 AUTOMATED PROCESSING PROCEDURES

Convenient and easy control using smart controllers for controlled and repeatable processes. They make each working day more efficient and organized. The MC 500 R and MC 700i enable proper documenting of the implemented processes.

More on page 10.





 $\ensuremath{\text{MC}500}$ in $\ensuremath{\text{MC}500R}$

5 EASY CONTROL AND MAINTENANCE

More on page 11.



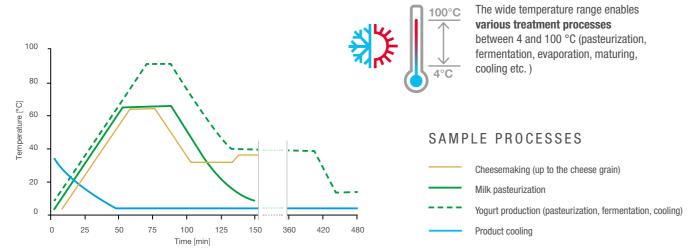


PRODUCTION OF ALL DAIRY PRODUCTS

LET YOUR IMAGINATION FLY: A wide temperature range and different types of stirrers and harps allow the **PH** and **SKH-H devices** the production of numerous kinds of dairy products, thus expanding your product range (milk, yogurt, cheese, curd, ricotta, fresh cheeses, special cheeses etc.). Above all, the PH can be used to produce numerous food products, such as sauces, puddings, juices, marmalades etc.

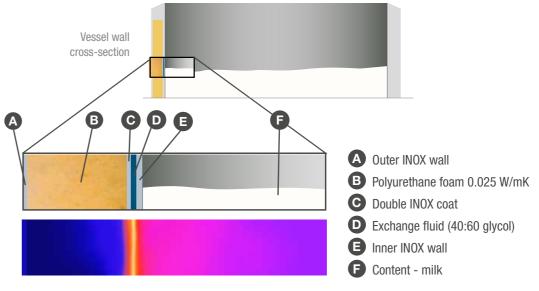


WIDE TEMPERATURE RANGE



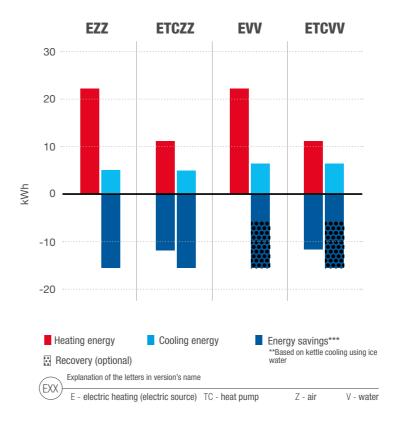
COMPLETE ENERGY EFFICIENCY

The heating and cooling energy is transferred directly across the large surface through the walls of the **coat** and the **bottom** of the vessel, which enables **quick heating of the product**. Due to its **insulated triple coat (energy-saving construction)**, which operates **in a closed pressure system driven by a water pump**, the device has **10 to 30% lower energy consumption**. The small volume of the coat (between 3 and 6% of the vessel's volume) which contains secondary water, the controlled water pump and the advanced controller provide **excellent thermal capacity** and **very precise process control**. Different heating and cooling options are readily available, such as heating using the water pump, air-cooling, water-cooling or a combination of both down to 4 °C.



Thermographic display of temperature exchange in the vessel wall

Example of energy consumption during pasteurization of 200 l of milk up to 92 °C and cooling down to 10 °C (during yogurt production) Different designs enable different energy savings and energy recovery



EZZ and ETCZZ versions using air:

Optional heating using the heat pump, with 70% reduction in energy consumption. Extremely efficient air cooling ("free cooling") down to 40 °C (COP* 35 and more). Cooling down to 4 °C with a highly efficient air-cooled cooling unit (COP* 2–3).

*COP = coefficient of performance

EVV and **ETCVV** versions using water:

Optional heating using the heat pump, with 70% reduction in energy consumption. The cooling unit with water cooling can be in the same room as the device because it doesn't warm the room. Medium cooling down to 40 °C using water via a heat exchanger, and cooling down to 4 °C using the highly efficient water-cooled cooling unit (COP* 2.5). Energy recovery is available as an option. Example: While the cooling unit operates, domestic water is heated in the water container (from 15 °C to 50 °C).



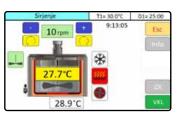


MODERN AND EASY PROCESS CONTROL

Convenient and easy management using smart controllers for controlled and repeatable processes, as well as constant properties of products. Save time and money **with start** and stop delay of processes. Set them in such a way that milk is thermally ready for cheesemaking by next morning. An option to record and document all active process parameters (temperature, stirring, etc.).



A modern controller for **process automation**. Set your unique processes and ensure **stable quality** of your end-products.



Easy, user-friendly control:
A large 5" colour touch screen with an excellent overview offers a superior user experience in 7 languages.

lzber	program	Esc
Pasterizacija	Sirjenje	Pasterizaciji Sirjenje
logurt	Skuta	Rikota
Hlajenje	Program 1	Program 2
		Rocno

Outstanding flexibility and clear overview. It is possible to choose from 12 programs, which can be adjusted to suit your technological procedures.

	Prog	ran	n 1		Ed	ESC	
Ten	np. PCI		Duration	lenin]	Sterrer si	min.,	ENTER
10 8	5.0		10	ON1	10	10	0 0
12 4	0.0	1	10	ON1	10	10	0 8
(B) 3	5.0	8	10	ON1	10	10	0
1 7	0.0	1	10	OFF	10	10	0 8
13	0.0	1	1500	ON ₂	10	10	0 8

Advanced expert programs
Customizable programs support up to 15 steps. They
enable advanced settings like temperature, time,
stirring speed and direction, as well as activating the
"gentle", controlled temperature retention mode.

The mobile app for the

MC 500 and MC 500 R

provides the settings for:

turn on/off, delay, transfer records, skip to the next

process step, temperature

change, as well as certain

other parameters, such

as speed and stirring

direction.

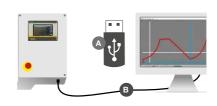


The MC 500 R with an integrated recorder enables digital recording of all parameters of active processes (temperature, stirring, etc.).



Complete documenting – registration of the temperature and processes.

The MC 500 R controller has a built-in recorder which automatically records all active processes, making it easier to control them, plus it offers an overview of the completed processes. Records can be easily transferred via a USB-port (A flash drive or B cable) to the computer, where you can view and save them with the dedicated software.



MC700i))

Smart controller for the highest level of process automation. Automated processes for the best and repeatable quality of your products.





MAIN BENEFITS

- Process recording PH sensor
- Quantity sensor Stirrer control
 Inlet and outlet control
- of the vessel content Precise heating regulation Maintaining the temperature
- Remote access WiFi assistance The MC700i can be incorporated into main control centres



Remote access (WiFi) and additional software settings

Remote access via mobile phone, tablet, or laptop enables management and control of milk processing processes even when not on-site.

Using the app, the MC700i enables all functionalities of the controller.



EASY CONTROL AND MAINTENANCE

Simple and fast control using the Plevnik devices. Due to the ingenious design of the devices, including the controllers and stirrers, their handling is easy, making the operation fast and efficient. All processes (cutting, stirring, thermal treatment etc.) can simply be started by pressing a button. Cleaning is faster and easier due to the special **2R polished inner surface**

which prevents sticking to the vessel walls.





Testimonies of our customers



"We use the PH 100 for smaller quantities and milk pasteurization. The milk is cooled down to 4 °C without any problems. This compact device has proved its value when we were starting out. We had the PH only and very limited space. We could still make anything we wanted. From soft cheese and yogurt to semi-hard cheese."

Malina Michalscheck, James Farm, Germany



"We are very satisfied with the PH pasteurizers. They are very highquality, reliable, and they never break. They are really easy to use."

Daniel and Elinor Bergvall, Kråkarps Gårdsmejeri, Kråkarp, Sweden

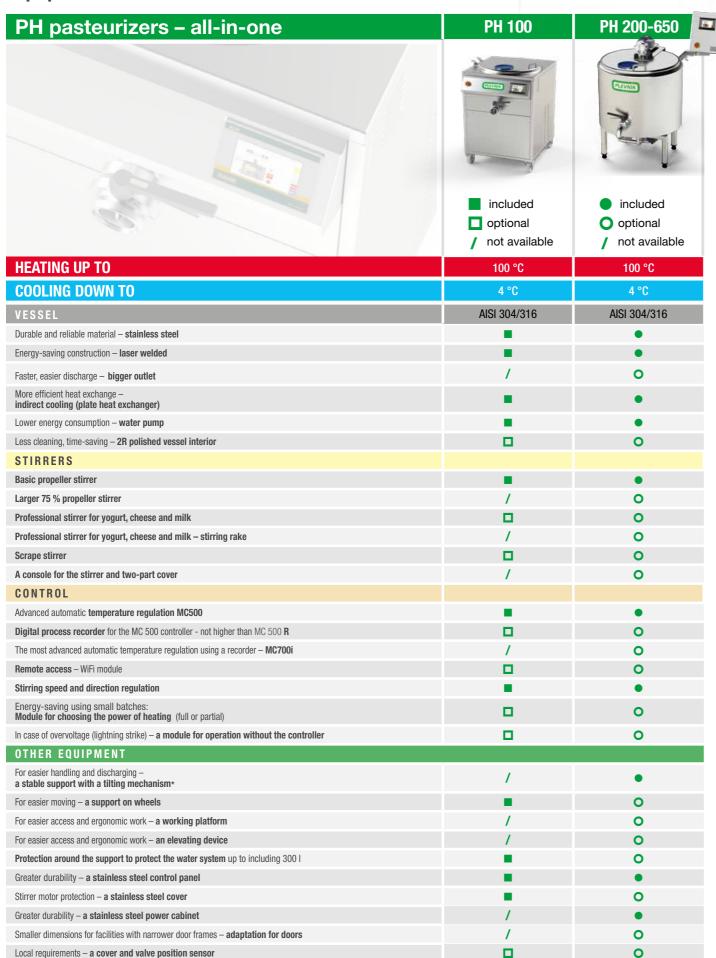


Ted and Louise Gunnarsson, Sjundekvillsgard, Sweden





Equipment overview





Working platform

Easier access, higher discharge and easy decantation of content for further processing. Safe, efficient and ergonomic process control.



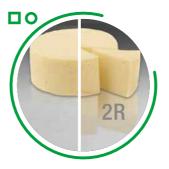
Elevating device

Enables ergonomic setting of the working height, making operation (discharging, cleaning) easier. An ideal solution for facilities with a low ceiling.



Protection around the support

Protects the kettle pipes against dirt and makes cleaning the entire kettle easier. Long life cycle due to the protection of water system



2R polished interior

Due to its very smooth surface, the contents do not stick to the walls during processing. This enables quick and easy cleaning.



A console for the stirrer and two-part cover

For accessing the vessel during processing. The vessel is closed with a two-part cover.



Protection for the stirrer motor

For easy cleaning and protection of the key parts of the motor and better hygiene

PASTEURIZERS AND CHEESE KETTLES PLEVNIK

Reliable milk processing equipment ensures long life cycle, and prevents defects and production standstills.

The built-in components of established European manufacturers ensure a long-lasting, stable, and reliable quality of our devices.







exchanger, Sweden

SCHRACK Electric components installations, Austria **S**Castel lifespan,

Reliable valves for long equipment

GRUNDFOS A state-of-the-art pump for better efficiency (≥ 300 l), Germany

*Mechanical, from 500 I, the tilting mechanism is pneumatic,

DIVERSE AND EFFICIENT STIRRING

PH100 MONOBLOCK

standard option

PH200-650 standard option

PROPELLER STIRRER







Larger 75 % propeller stirrer

The larger stirrer ensures a more efficient stirring (circular rising of the content).

PROFESSIONAL STIRRER FOR YOGURT, CHEESE AND MILK

Its shape enables efficient, yet gentle stirring for a homogeneous product. The stirrer is made of stirring shovels at one or two levels.







Stirring rake

A detachable grid module which

transforms the vogurt ferment into a liquid one (liquid yogurt).

SKH-H

SCRAPE STIRRERS

The sliding scrape stirrers prevent the product from sticking to the pasteurizer walls during treatment (gentle scraping of the pasteurizer walls) and facilitates the emptying of the container. Recommended for making pudding, rice pudding, jam, chocolate and other highly viscous products.





CHEESE HARPS

Manual or automated harps with sharp and thin blades ensure a precise cut which improves the quality and quantity of the final product (less cheese dust and more cheese).









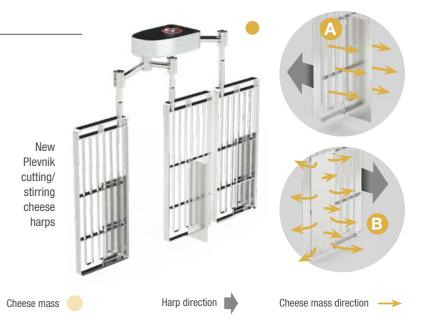
GOOD AND EFFICIENT PROCESSING OF CHEESE MASS

AUTOMATED CHEESE HARPS

The Plevnik harps are specially designed, sharpened and polished to facilitate smooth cutting. Substituting harps for other stirrers is simple – in a single move.

(A) Cutting: Automated harps with sharp and thin blades ensure a precise cut, which improves the quality and quantity of the final product (less cheese dust and more cheese). Stirring (a) (the oposite direction of harp spinning): stirring shovels are automatically activated when the stirring direction changes, and build the required stirring speed for more efficient stirring and drying of the cheese grains.





Quality cutting more cheese mass

The desired goal of cheesemaking is more cheese mass and less cheese dust. Precise and gentle cutting results in more cheese mass and thus better milk yield.

PLEVNIK cheese harps

Sharp and polished harps are designed for precise and efficient cutting, and for the highest cheese mass yield possible.



Cheese harps

Wire harps – cutting with a wire as shown: The round blade form causes tearing and more cheese dust - more small cheese mass particles which are lost with whey



OTHER STIRRING OPTIONS

Z-STIRRER (A PROPELLER STIRRER)

Due to its larger diameter, the Z-stirrer ensures more efficient stirring and circular rising of the content. Available in combination with a two-part cover.



STIRRING SHOVELS

For even and efficient stirring during cheese mass drying. The stirring shovels ensure the homogeneity of cheese grain and whey.



standard Option





Equipment overview

SKH-H cheese kettles – all-in-one

SKH-H 200-650



HEATING UP TO		1	00 °C
COOLING DOWN TO			4 °C
VESSEL			
Durable and reliable material – stainless steel		AISI	304/316
Energy-saving construction – laser welded			•
Faster, easier discharge – bigger outlet			0
More efficient heat exchange – indirect cooling (plate heat exchanger)			•
Lower energy consumption – water pump			•
Less cleaning, time-saving – 2R polished vessel interior			0
STIRRERS			
Automated cutting of the cheese mass – a three-part automated harp, a two-part cover			•
For stirring above 65 °C – a central "Z" stirrer			0
For drying cheese grains – stirring shovels			0
CONTROL			
Advanced automatic temperature regulation – MC 500			•
Digital process recorder for the MC 500 controller - not higher than MC 500 R			0
A state-of-the-art controller for the highest level of automation – MC 700i			0
Stirrer/harp speed and stirring direction regulation			•
Energy-saving using small batches – Module for choosing the power of heating (full or partial)			0
In case of overvoltage (lightning strike) – a module for operation without the controller			0
OTHER EQUIPMENT			
For easier handling and discharging – a stable support with a tilting mechanism*			•
For easier moving – a support on wheels			0
For easier access and ergonomic work – a working platform			0
For easier access and ergonomic work – an elevating device			0
Protection around the support to protect the water system up to including 300 I			0
Protection for the stirrer motor – an inox cover			•
Greater durability – a stainless steel control panel			•
Greater durability – a stainless steel power cabinet			•
A solution for facilities with narrow doors – adaptation for doors			0
Local requirements – a rounded two-part cover			0
Draining the curd – a curd strip **			0
Local requirements – a cover and valve position sensor			0
Additional safety – sensor protection against the harps			0
Additional safety – a protective net in front of the harps			0
000			
Mechanical (from 500 I), the tilting mechanism is pneumatic** up to including 650 I	included	O ontional	/ not avai



Working platform

Easier access, higher outlet and easy decantation of the cheese mass to the draining table. Safe, efficient and ergonomic process control.



2R polished interior

Due to its very smooth surface, the contents do not stick to the walls during processing. This enables quick and easy



Elevating device

Enables setting the ergonomic working height which makes the work easier. An ideal solution for rooms with lower ceiling.



Protective net in front of the harps

Physically prevents unauthorized reaching into the vessel during operation - for better safety at work.



Protection around the support

Protects the kettle pipes against dirt and makes cleaning the entire kettle easier. Long life cycle due to the protection of water system.



Recovery

A module that stores the heat generated by the cooling processes and enables it to be reused for other applications on the farm and within the household.

ERGONOMICS AT WORK

HEALTH COMES FIRST

Using the Plevnik working platform or elevating device you are able to adapt the working height to your best working zone.

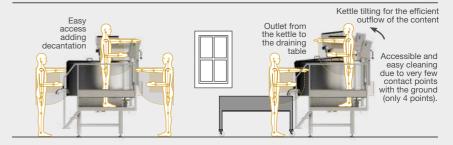
Long-term working in an unsuitable working environment can result in poor posture, which in turn results in numerous health issues, such as back pain, neck pain, headaches and others. Each person's body dimensions are unique.

ECONOMICAL ERGONOMICS

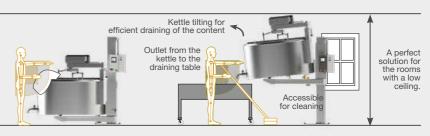
The listed solutions enable you to work faster and easier. Create good working conditions to ensure your employees remain healthy and satisfied.

PLEVNIK SOLUTIONS:

1 A working platform A static solution with a fixed height



2 An elevating device for height adjustment



Mechanical (from 500 l), the tilting mechanism is pneumatic** up to including 650 l included O optional / not available



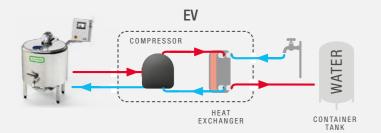


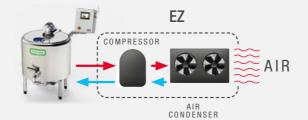
Heating and cooling designs VERSIONS **PH** 100 With electric heaters (up to 100 °C) Air-cooled condenser **HEATING** With a heat pump (up to 45 °C) Water-cooled condenser Air-cooled (100 °C to 40 °C) With a heat exchanger (100 °C to 25 °C) Water-cooled COOLING Air-cooled condenser With a cooling unit (down to 4 °C) Water-cooled condenser **Energy recuperation**

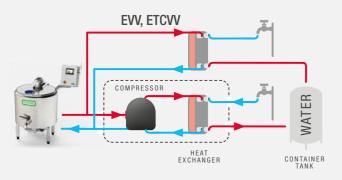
The meaning of the letters in version name E - electric heating (electric source	e		
E - electric heating (electric source	e) TC - heat pump	Z - air	V - water

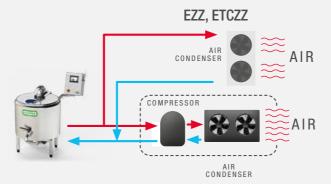
Versions with a heat pump (ETCZZ, ETCVV) – additional money savings

The cooling unit also functions as a heat pump. As such, it can be used for heating up milk up to 45 °C. Using the heat pump for heating uses 70% less electricity than using electric heaters alone. Electric heaters are used for heating milk above 45 °C. Switching between heating with the heat pump and heating with electric heaters is automatic.









Water and energy reusability

Water-cooled cooling units are smaller and do not radiate heat. A ventilated room is not required for their installation. If you are using kettles up to 500 I, you can install them in the dairy. While cooling the milk, the cooling unit is heating up the water which can be used to clean the dairy, provide water for the livestock etc. The water can be reused as domestic water, whereas the recovered energy can be used for heating.



Example: The Plevnik 200 EVV device can heat up 200 I of water from 15 °C to 50 °C while cooling down 200 I of milk from 65 °C to 10 °C.

PH

Туре	Heater power	Cooling unit	PH	100-650 -	dimension	s (mm)	Connections for the heating-	Tap water	water Weight (kg)	Outlet (diameter)	
	(kW) ⁴	power ¹	W/L	W1	Н	H1	С	cooling unit		(3/	, , , , ,
PH 100	10	6.1	W=780/L=980	1	1190	1900	750	/	3/4"	125	DN65
PH 200	18	1	ø820	980	1010	1380	475	1"/1"	/	170	DN50
PH 300	24	1	ø1000	1150	1010	1450	475	1"/1"	/	230	DN50
PH 500	36	1	ø1120	1270	1030	1450	330	5/4"/5/4"	/	310	DN65
PH 650	45	1	ø1280	1430	1010	1500	330	5/4" / 5/4"	/	360	DN65

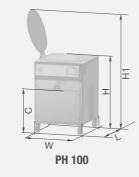
SKH-H

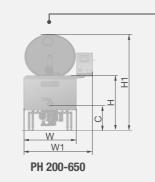
Туре	Heater power	Cooling unit	SKH	-H 200-650	– dimensio	ons (mm)	Connections for the heating-cooling	Weight (kg)	Outlet (diameter)	
	(kW) ⁴	power ¹	W/L	W1	Н	H1	С	unit		
SKH-H 200	18	1	ø820	1025	1025	1595	475	1"	170	DN50
SKH-H 300	24	1	ø1000	1105	1025	1600	475	1"	230	DN65
SKH-H 500	36	1	ø1120	1375	1035	1600	330	5/4"	310	DN65
SKH-H 650	45	1	ø1280	1520	1035	1610	330	5/4"	360	DN65

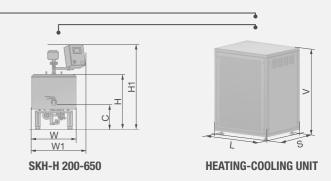
Heating/cooling unit

Litres	Cooling unit	Heat exchan- ger cooling	Н	IEATING-C	OOLING ur	nit – dimer	nsions (mn	EZZ connections	EVV connections	EVV	
	cooling power ¹	power (kW) EZZ²/	Type EZZ, ETCZZ			Type EVV, ETCVV			heating- cooling	cooling unit –	connections cooling
	(kW)	EVV ³	V	L	S	V	L	S	unit kettle	kettle	water
200	14.2	21/29.9	1870	1500	890	1250	900	750	1"	1"	3/4"
300	17.3	21/41.3	1870	1500	890	1250	900	750	1"	1"	3/4"
500	30.1	25.5/62.5	2400	1800	980	1400	1000	800	5/4"	5/4"	1"
650	36.6	38.5/78.5	2200	2300	1080	1600	1100	900	5/4"	5/4"	1"

- $^{\text{1}}\,\text{At}$ evaporation temperature of 0 °C and condensation temperature of 45 °C
- $^{\rm 2}$ At the temperature difference between the cold medium and the air of dT=15 $^{\rm \circ}{\rm C}$
- ³ At cold water temperature of 12 °C and flow rate between 25 and 55 l/min (relative to the cooling power)
- ⁴ Power outlet EL 400V 3N 50Hz (heater power + 0,5 kW). Optional adaptation of the power outlet upon request.

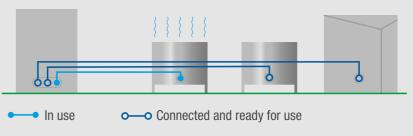






MULTIBLOCK – multiple devices connected to the heating-cooling unit for cooling processes (Available upon request)

The heating-cooling unit can be ordered with up to three adapter connectors which enable system-wide power connection of three thermal consumers (pasteurizer, cheese kettle, cold store). Only one device can be active at the same time





Complete dairy solutions



All Plevnik devices are user- and environmentally friendly, as well as energy-efficient. They are designed and manufactured for long-term use.











More information

PH SKH-H EN 27 03 2023

Consulting

Vi

Planning

Production

Assembly and start-up

In the process of constant improvements, we reserve the right to make technical and design modifications without prior notice.



The milk processing equipment specialists.
Together, we have created more than 4,000 successful cheesemaking stories.

PLEVNIK, d.o.o. Podsmreka 56 SI 1356 Dobrova milk.cheese@plevnik.si + 386 (0)1 200 60 80



Creating joyful countryside stories.