

## Precise Temperature Control And **Zero Corrosion**

Stainless Steel Products for the Dairy Industry. In the dairy industry, it is all about hygiene and temperature control. Danfoss offers a wide range of stainless steel components for the dairy industry, including the new SVL SS Flexline™ series of modular line components.

**All**

the valves you need  
for your refrigeration  
plant - including  
stainless steel  
products for internal  
placement.



# The stainless steel products by Danfoss

Danfoss stainless steel products for industrial refrigeration are designed for highly demanding production environments, where corrosion is a risk due to harsh environments, such as process industries and marine

applications. A broad temperature range and high pressure approvals make them suitable for refrigerants like CO<sub>2</sub>.

All products are designed for industrial refrigeration and are approved for the

most commonly used refrigerants within industrial refrigeration such as ammonia, CO<sub>2</sub>, HCFC and HFC. Flammable hydrocarbons can be used with some of the products.

## The new SVL SS Flexline™ line component range – one platform and all in stainless steel

### Modularity and flexibility

The SVL SS Flexline™ line component range in stainless steel is based on the idea of just one housing (angle- or straightway) for multiple functions: Stop, stop/check, check, regulating and filter, all designed to fit into the same housing.

### The benefits of choosing SVL SS Flexline™ components are many:

- All functions fit the same standard housing
- High pressure approval
- Color coding making identification of the valve type easier - also once it is fitted in the system
- Shared spare parts allowing for reduced stocking cost and fast and easy service

- Fit and forget thanks to the robust design that gives a smooth and trouble free operation
- Extremely tight and leakage proof design

The new REG-S SS stainless steel regulating valve features a new cone and

insert design and an extended lift giving improved precision and regulating performance. The new SCA-X SS and CHV-X SS stainless steel stop/check and check valves feature a new, optimized piston design and a new fully-assembled insert making installation and servicing easier and quicker.



### OFV-SS Stainless steel overflow valves



The stainless steel overflow valves from Danfoss (OFV-SS) offer three functions in one valve: Overflow valve, check valve and stop valve. They have a maximum operating pressure of 52 bar and a wide temperature range. The adjustable opening pressure can be adjusted in the range of 2 to 8 bar. The valve can be closed manually, e.g. during plant service. It is fitted with backseating which allows the spindle seal to be replaced with the valve still under pressure.

### SNV-SS Stainless steel needle valves



The stainless steel needle valves (SNV-SS) are compact and light service valves. They are especially suited for heavy-duty industrial applications due to their sturdy design and high level of operating safety. Their design provide a high flow characteristic. The SNV-SS valves have a maximum operating pressure of 52 bar in the pressure range of -60 °C to +150 °C.

### EVRS and EVRST Stainless steel solenoid valves



EVRS and EVRST stainless steel solenoid valves are based on three different principles: Direct, servo or forced servo operation. The forced servo operated valves, designed for keeping open at a pressure drop of 0 bar, can be used in liquid, suction, hot gas and oil return lines. EVRS and EVRST come equipped with a spindle for manual opening and have a working pressure of 50 bar and can handle media temperatures from -40 °C up to +105 °C (max temperature is dependent on coil).



## **Stainless steel: Longer life span and lower maintenance costs**

Wherever hygiene really matters and corrosion is a real risk due to the harshness of the environment, stainless steel is your ideal choice for refrigeration systems.

Typical application areas for stainless steel refrigeration systems are the brewing industry, food production, marine cooling, dairy production, meat processing and many other types of

process industry applications. Danfoss has developed and produced stainless steel valves for these industries for several years and has a wide specialized application knowledge.

With the introduction of the SVL SS Flexline™ line components in stainless steel, Danfoss now offers a wide range of stainless steel valves for internal placement. With the high pressure

approvals for the products the stainless steel valve range now covers all modern refrigeration systems including CO<sub>2</sub>.

All products come with a wide range of approvals, of course.

Your benefit: Longer life span of the system and its components and significantly reduced maintenance costs.

## **The latest in refrigeration technology**

With innovation as our main focus at Danfoss, you can rely on us to deliver the latest in refrigeration technology. Backed by more than 80 years of experience in the global refrigeration business, we develop and

supply the right products for advanced, environmentally friendly cooling installations. With our wide range of components for industrial refrigeration Danfoss can deliver all valves for a project reducing complexity and

optimizing project deliveries. Our know-how is always available to you locally – just contact your local Danfoss representative for more information.

# Fresh milk all the way through: Stainless steel components for the dairy industry

Modern dairy industry is highly technological and the demands for temperature control are rigid. In dairy production end products such as milk, yoghurt and ice cream require precise temperature management to achieve a consistent quality in the end product in a safe and efficient manner.

Danfoss stainless steel components let you maintain a high hygiene and they deliver reliable, efficient and environmentally friendly refrigeration for dairy industry applications, regardless of production scale and geographical location. This diagram shows some of the critical production phases in which

Danfoss solutions help producers of milk, yoghurt and ice cream obtain consistently high quality through meticulous temperature control.

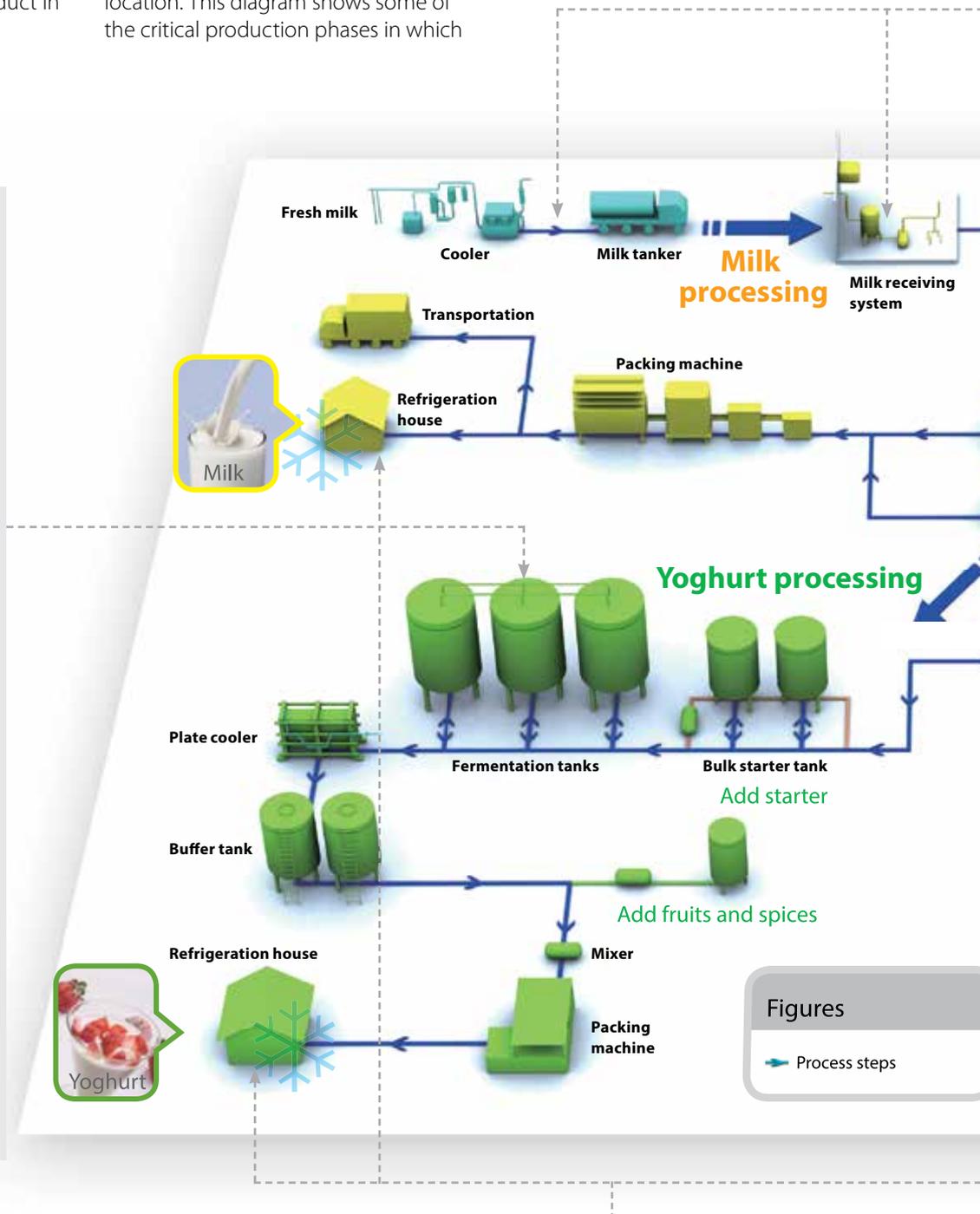
## Fermentation, cooling and maturation

Fermentation is a key step in the production and processing of yoghurt. The taste of the yoghurt is decided by the lactic acid culture, which is affected by the fermentation temperature; the cooling process can reduce microorganism and enzyme activity. To avoid over-produced acid, the maturation process may further improve the flavor.

**Set yoghurt:** The set yoghurt must be stored at 0 °C to +4 °C immediately after fermentation for 24 hours before sale, during which the acidity will increase

**Churned yoghurt:** After fermentation, stirred yoghurt must be cooled to +10 °C to +20 °C before storage, and maturation and storage must take place at 0 °C to +7 °C.

**Cooling way:** Ice water is used for cooling, which can be achieved with ammonia or CO<sub>2</sub> plate heat exchanger



## Refrigeration storage

- After packaging, pasteurized milk needs to be stored in the refrigeration house at +4 °C to ensure the quality of the milk.
- Finished yoghurt products need to be kept at 0 °C to +4 °C in order to maintain appropriate acidity and avoid deterioration

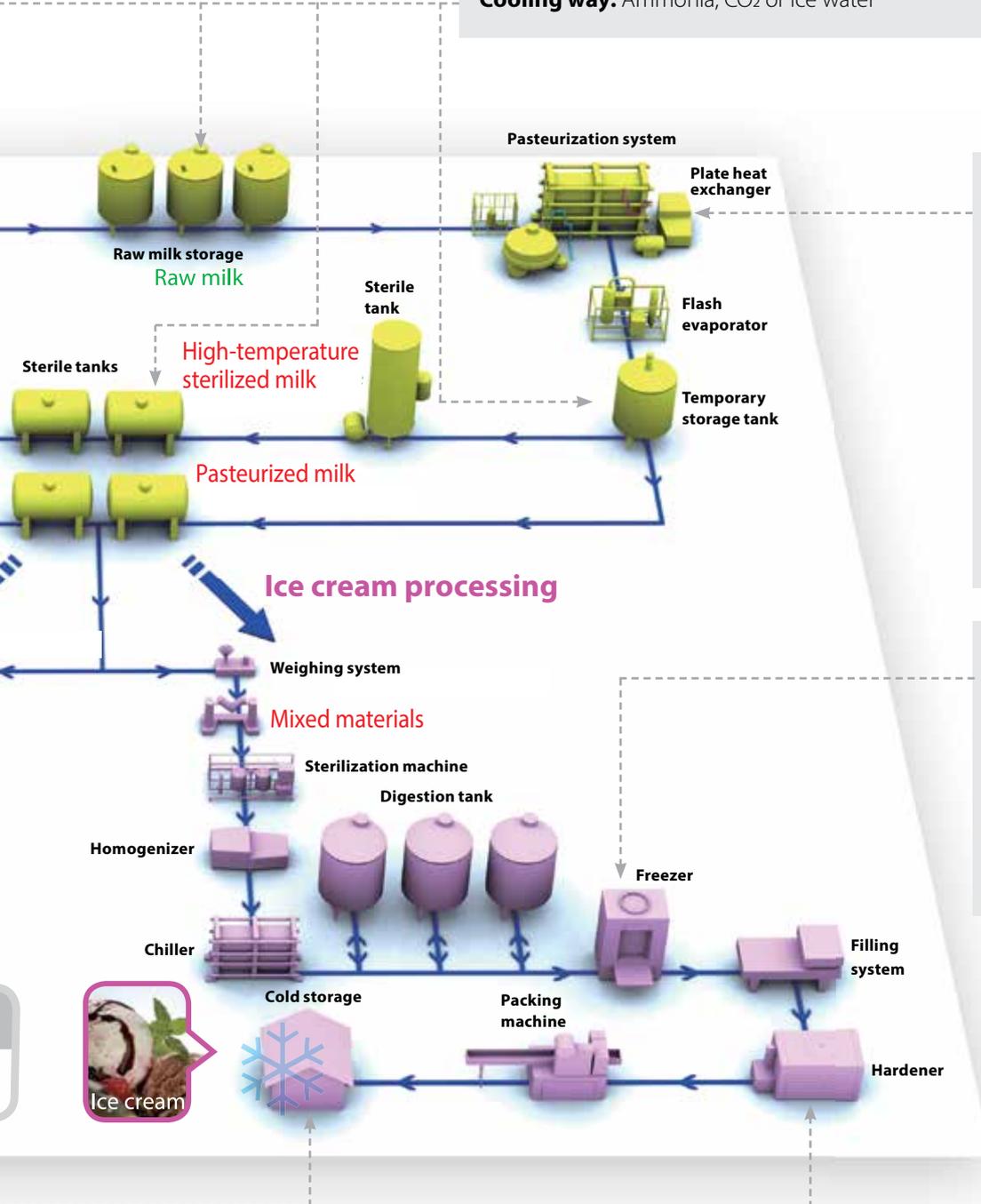
- Finished ice cream products need to be stored at -24 °C to -28 °C in order to maintain hardness and inhibit bacterial growth

**Cooling way:** Storage in refrigeration house using ammonia or CO<sub>2</sub>

## Dairy product cooling

- Raw milk cooling: Raw milk needs to be kept cold after collection
- Milk collection: Raw milk filtering and purification
- Raw milk storage: Raw milk must be stored at a temperature of +4° C to +6° C
- Temperature storage: After pasteurization, the milk is stored and cooled temporarily for post UHT or packaging process
- Sterile storage: Both pasteurized milk and high-temperature sterilized milk must be stored in a sterile and low-temperature environment

**Cooling way:** Ammonia, CO<sub>2</sub> or ice water



## Pasteurization

Pasteurization is a vital step in the handling of dairy products. After pasteurization, the now hot milk must be cooled quickly to a temperature below +4 °C in order to keep enzymes active.

**Cooling way:** Ice water is used for cooling, which can be achieved with ammonia or CO<sub>2</sub> heat exchanger

## Congelation

The ice cream mix is frozen by agitation and air to form some ice crystals and to expand volume.

**Cooling way:** Congealing machine is used for cooling at -6 °C to -9 °C

## Hardening

After filling and packaging, the frozen ice cream must be kept at freezing temperatures to fix shape and hardness.

**Cooling way:** Ammonia or CO<sub>2</sub> instant freezer

to be stored at  
in the desired product  
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## Danfoss Flexline™

### Simple. Efficient. Flexible.

Designed to offer clever simplicity, timesaving efficiency and advanced flexibility the Flexline™ series includes three popular product categories:



**ICV Flexline™**  
– Control valve



**ICF Flexline™**  
– Complete valve stations



**SVL Flexline™**  
– Line components



All products are based on a modular design with no functionality in the house. This set-up reduces complexity right from the design phase to the installation, commissioning and service. All key to lower total life cycle costs – and major savings.

Go to [www.danfoss.com/flexline](http://www.danfoss.com/flexline) for more information on the Flexline™ platform.

## Global knowhow

### Local support

Backed by more than 80 years of experience producing valves and controllers for refrigeration applications Danfoss is a solid partner to turn to when you are looking for quality components.

Our global knowhow combined with local support offers you the best possible products and service.