DAIRY PROCESSING



Yogurt & Cultured Milk

Controlled preparation, fermentation and cooling for cultured dairy products.

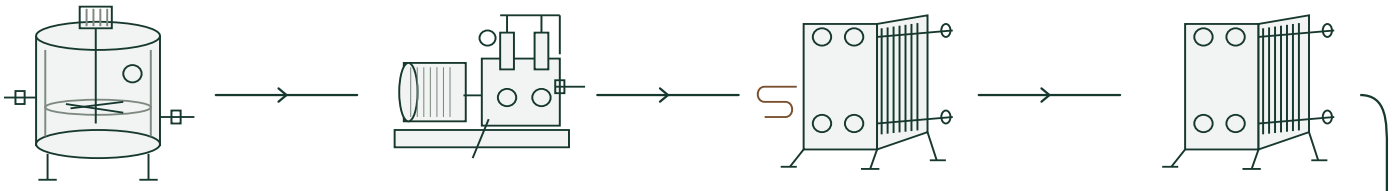
Cultured milk: a product texture study.

Photo / Sara Cervera

MATERIAL ROUTE / EQUIPMENT / BRANCHES

Culture and texture define the route.

Prepared milk base / culture addition / fermented product



Milk-base preparation

Standardisation; recipe and solids

Homogenisation

Selected emulsion treatment

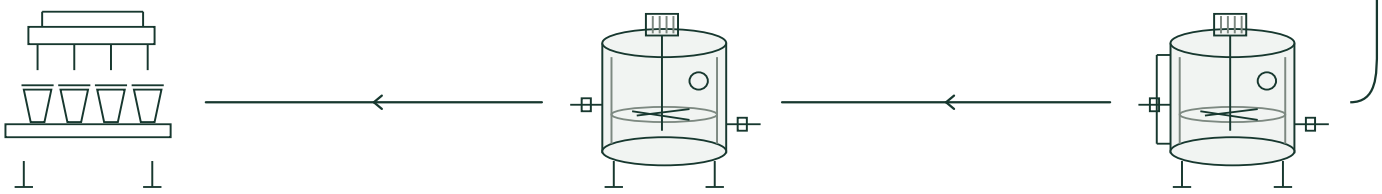
Heat treatment

Recipe-specific milk-base preparation

Cooling and inoculation

Starter added at culture condition

Main product route / follow the connected material path.



Filling and chilling

Stirred-yogurt route; chilled storage

Gentle cooling / blending

Texture control; optional fruit addition

Controlled fermentation

Time, temperature and acidity endpoint

Set yogurt changes the order after inoculation; fruit is prepared separately.



Set-yogurt filling

Pack incubation

Pack chilling

SonFlow / milk-base heat and cooling; S-FP / suitable milk-base transfer; food-configured ABEL CM / qualified fruit-preparation duty.

PROCESS STUDY / 01

Prepare the base before the culture



Milk, in the product context.

Photo / Eiliv Aceron

Standardise the milk base and blend ingredients according to the product formulation. Protein and solids influence the structure that will later form during fermentation. Homogenisation and heat treatment, where used, prepare the base before culture addition. These preparation steps have different purposes from microbial fermentation. A sanitary heat-transfer duty can be assessed for the liquid base, followed by cooling to the starter's specified inoculation conditions. Treat a powder-containing blend, plain milk base and fruit preparation as distinct transfer duties. Their viscosity, particle content and cleaning requirements differ even when they eventually enter the same finished product.

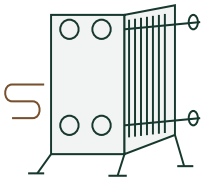
Cultured dairy products are defined by more than composition.

PROCESS STUDY / 02

Stirred and set yogurt take different routes

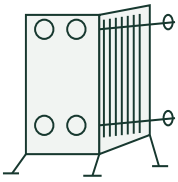
After inoculation, the culture develops acidity and a gel structure under controlled conditions. Stirred yogurt ferments in a tank and is then cooled, gently handled and filled. Set yogurt is filled before incubation so that the gel develops in its final container. Concentrated yogurt adds a separate concentration operation according to the chosen method. These routes must remain distinct in the process plan. Monitor acidification and cool at the defined endpoint to limit further development. Mechanical handling after gel formation affects texture, making pump speed, pressure loss and the number of transfers part of the sensory and process specification.

OPERATION STUDY / SELECTED PROCESS DETAILS



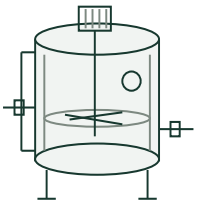
Heat treatment

Apply the specified treatment before culture addition.



Cooling and inoculation

Bring the milk to the culture's operating condition, then add starter.



Fermentation

Hold under controlled conditions and monitor acidification.

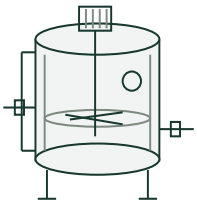
Explanatory equipment studies / configuration, controls and treatment conditions follow the selected product route.

PROCESS STUDY / 03

Blend fruit without losing its character

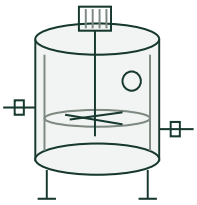
Fruit-containing yogurt creates a second product path before the streams meet. Prepare, treat and store the fruit component using its own validated route. ABEL identifies CM for fruit preparations containing large pieces, making it a relevant candidate for this transfer after confirming food-contact materials, valve passage and cleaning. For fermented yogurt, a diaphragm-pump configuration can also be investigated as a texture-sensitive duty, with actual product trials. Blend at the stage appropriate to the product and fill hygienically. The milk-base pump should not automatically be reused for the finished gel or fruit-rich formulation.

OPERATION STUDY / SELECTED PROCESS DETAILS



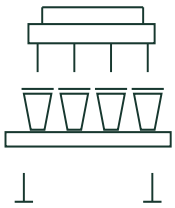
Fermentation

Hold under controlled conditions and monitor acidification.



Gentle cooling and blending

Cool the fermented product and add ingredients when required.



Filling and chilling

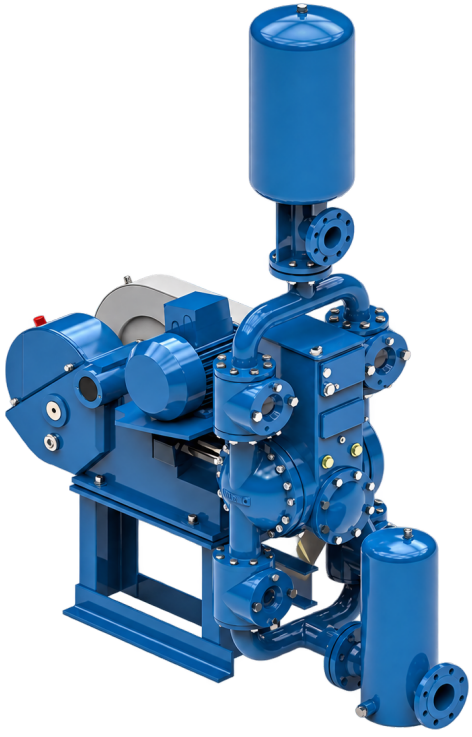
Fill hygienically and maintain the specified chilled storage.

Explanatory equipment studies / configuration, controls and treatment conditions follow the selected product route.

ABEL / CM / FOOD-CONTACT CONFIGURATION

Fruit pieces. Cultured texture.

Assess CM for the fruit-preparation stream before it joins the yogurt. A separate diaphragm configuration can be investigated for the texture-sensitive fermented product, using the actual formulation.



ABEL / CM COMPACT DIAPHRAGM FAMILY

Confirm stainless wetted construction, valve passage, seals, cleanability and permissible pressure. The illustration shows the family; the supplied food configuration is specified for the duty.

EXPLORE ABEL /

SONFLOW / SANITARY PLATE HEAT EXCHANGER

Prepare. Culture. Cool.

SonFlow lists yogurt and kefir among dairy heat-transfer applications. A sanitary arrangement can be assessed for milk-base heating and cooling; fermented-product duty requires a separate viscosity and texture review.

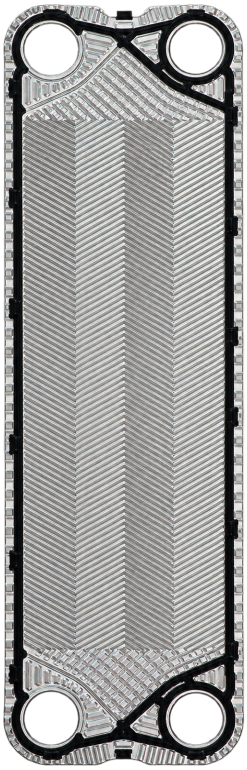


PLATE / FLOW PASSAGE



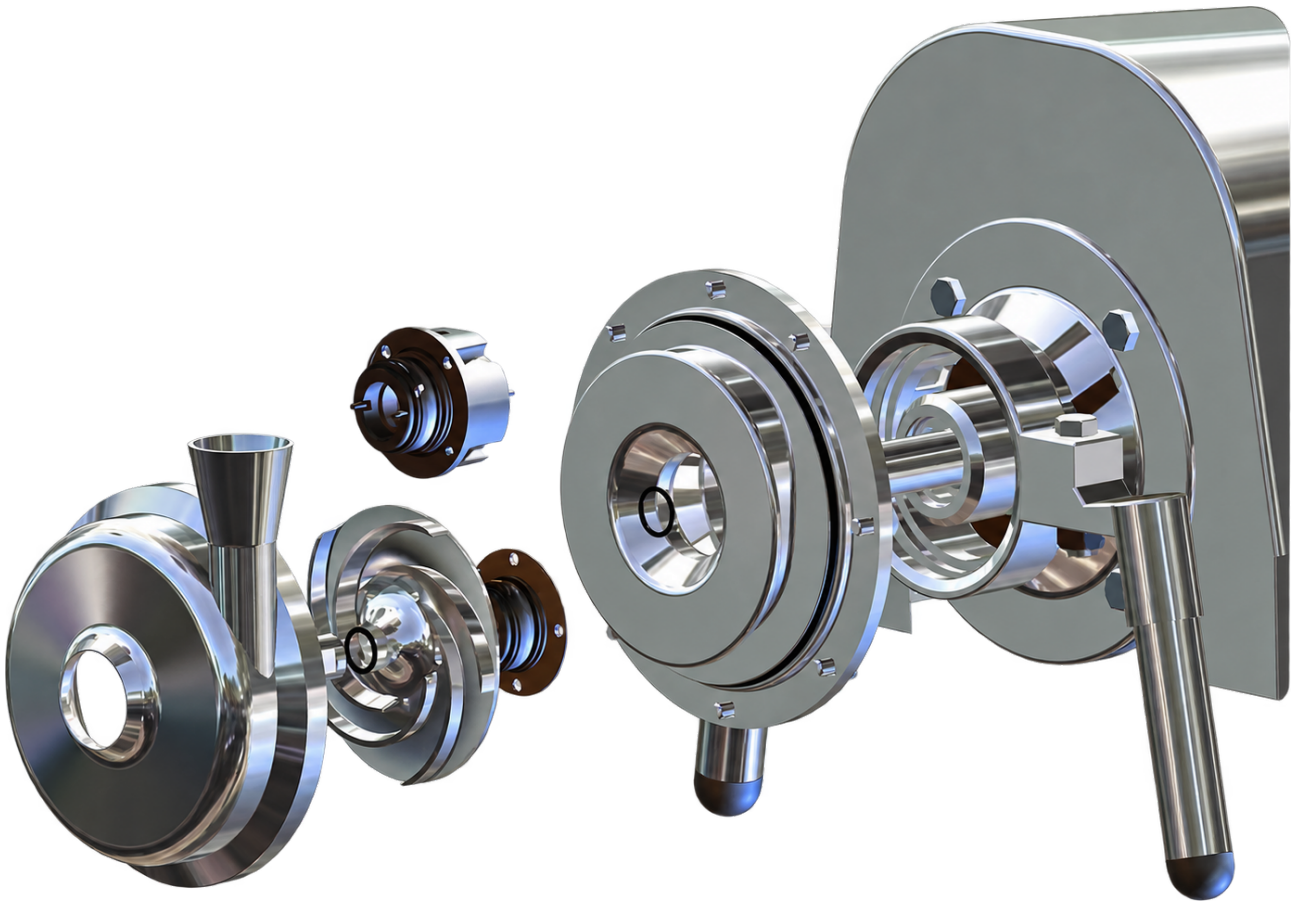
FRAME / COMPLETE UNIT

Product-contact materials, channel arrangement and cleanability must match the formulation. No general shear-preservation or texture guarantee is claimed.

EXPLORE SONFLOW /

DANPUMPS / S-FP SANITARY CENTRIFUGAL PUMP

Choose the transfer carefully



DANPUMPS / S-FP EXPLODED ASSEMBLY STUDY

The S-FP catalogue lists yogurt and milk. Its use should be reviewed for the specific transfer duty rather than inferred from that list alone.

Milk-base transfer and fermented-gel transfer differ. Check viscosity, shear sensitivity, particles, suction conditions and cleaning before selection; a different pump principle may be appropriate.

EXPLORE DANPUMPS /

CONTROL THE PROCESS OUTCOME

Measure texture as well as acidity.

Confirm culture performance, fermentation endpoint, viscosity, syneresis and the sensory specification. Temperature history continues to matter after fermentation because acid development and texture can change during handling and storage. Cleaning verification should include fruit and allergen changes. Evaluate the final product after the proposed pump, exchanger and filling sequence; an individual component trial may miss cumulative shear effects.

WATCH THE INTERFACES

01 Starter and acidification profile

02 Stirred/set/concentrated route

03 Texture after transfer, filling and storage

THE AUXILIARY ROUTE

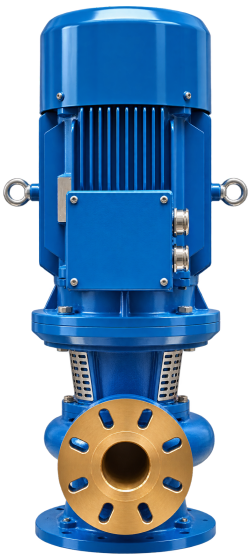
Schedule heating and cooling.

Milk-base heating, fermentation cooling and final chilling occur at different times. Match their utility loads to tank occupancy and production scheduling. Heat recovery is most useful where a receiving duty coincides or storage is available. Separate concentrated fruit or milk losses from wash water. A DanPumps inline unit can support an assessed utility-water circuit; it is a different selection from product transfer.



Industrial vessels and pipework; utility context

Photo / Crystal Kwok



DANPUMPS / S-MP BRONZE-BODY INLINE FAMILY STUDY

EXPLORE THE RELATED EQUIPMENT /

TURN THE ROUTE INTO A USEFUL ENQUIRY

Specify the material. Define the duty.

Process review should include both the recipe and its operating envelope. Product changes, start-up and cleaning can impose different demands from steady production. For the fermented stream, assess the effect of pump speed, channel velocity and pressure loss on texture, then confirm the result through the product's own validation criteria.

01 Base protein and solids

02 Starter and acidification profile

03 Stirred/set/concentrated route

04 Fruit piece size and shear limit

05 Texture after transfer, filling and storage

RESEARCH BASIS / SELECTED PRIMARY REFERENCES

Alfa Laval yogurt and cultured milk processing / Tetra Pak Dairy Processing Handbook: fermented milk products / SonFlow sanitary exchangers / SonFlow sanitary and food industry / DanPumps S-FP catalogue / DanPumps S-IP/S-MP

PHOTOGRAPHIC REFERENCES

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BEGIN THE CONVERSATION

From a precise brief to a considered choice.

Tell us about your stream, the operating conditions and the result you want to achieve.

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