FOOD PROCESSING

Liquid Egg Processing

Preserve function. Control every transfer and temperature.



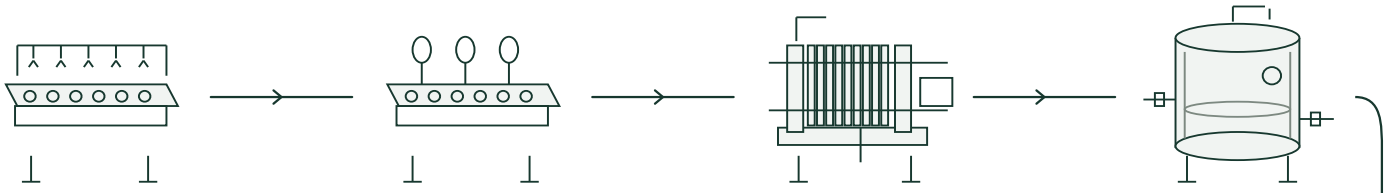
Eggs: the starting material.

Photo / Brina Blum

MATERIAL ROUTE / EQUIPMENT / BRANCHES

Separate the egg product before treatment.

Shell eggs / selected liquid fraction / treated product



Reception / shell preparation

Hygienic inspection and preparation

Breaking and separation

Whole egg, albumen or yolk

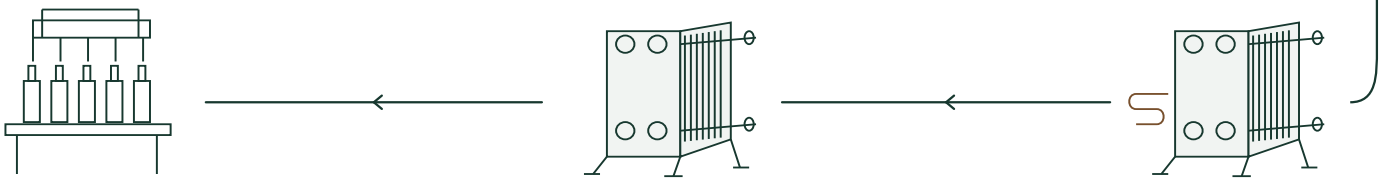
Filtering and blending

Remove unwanted matter; formulation

Chilled buffer

Controlled pre-treatment holding

Main product route / follow the connected material path.



Packaging and storage

Protect treated liquid; cold chain

Cooling

Required downstream condition

Heating and holding

Egg-specific validated treatment

The treated egg product can enter different finishing routes.



Chilled liquid

Frozen product

Powder manufacture

SonFlow / hygienic thermal route; DanPumps S-FP / assessed liquid transfer; ABEL CM / separated residual or sludge route.

PROCESS STUDY / 01



Separate shell handling from liquid processing

Reception and selection precede the controlled breaking operation. Depending on the product, breaking also separates yolk and albumen or produces whole liquid egg. Remove shell fragments through the specified screening or filtration step, then collect under controlled hygienic conditions. Blending adjusts the formulation where required. Whole egg, white, yolk and mixtures with salt or sugar have different thermal and rheological behaviour. Treat each as a defined product rather than one generic egg liquid. An S-FP can be assessed for a suitable hygienic transfer, but foaming, viscosity and suction conditions need verification. The pump does not perform breaking or separation.

Egg yolk: the separated liquid fraction.

Photo / Kate Laine

PROCESS STUDY / 02

Heat treatment must respect coagulation



Industrial vessels and pipework; utility context

Photo / Crystal Kwok

Egg proteins are heat sensitive, so microbial treatment and preservation of functionality must be considered together. The validated process depends on the product composition and applicable requirements. A conventional HTST arrangement may include regenerative heating, final heating, a holding section and controlled diversion. Egg-specific startup, shutdown and divert behaviour matters because overheating can coagulate product within the exchanger. Select the channel arrangement, surface loading and control envelope using real-product data. A SonFlow plate unit can be assessed for a defined duty, but it does not constitute the full pasteurisation system. An ESL or another specialised route requires its own equipment and validation.

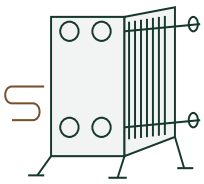
A representative liquid-egg route; separation and blending depend on the product..

PROCESS STUDY / 03

Cool before choosing the finishing route

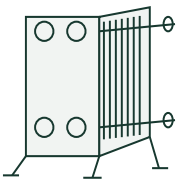
After the required treatment, cool and handle the liquid in a protected hygienic zone. The selected product can proceed to chilled liquid filling, freezing or a separate drying route. Packaging and storage conditions follow that branch. Prevent raw-side crossover and verify the conditions at the filler or receiving tank. If the plant manufactures powder, drying and powder handling are dedicated operations beyond the transfer and plate-exchanger equipment shown here. Product release includes the functional properties needed by the downstream food manufacturer. Changes in blend composition require review of the approved thermal and hydraulic operating envelope.

OPERATION STUDY / SELECTED PROCESS DETAILS



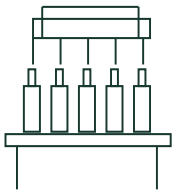
Heating & holding

Apply the validated time and temperature for the specific egg product.



Cooling

Reach the required downstream storage and filling conditions.



Packaging & storage

Fill hygienically and maintain the selected cold chain.

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

SONFLOW / CIP-COMPATIBLE SANITARY EXCHANGER

Keep cleaning part of the design

Liquid egg can coagulate in thermal equipment when control conditions are disturbed. Cleaning access, the CIP sequence and the restart procedure therefore deserve attention during design. SonFlow sanitary units support CIP and plate access; these component features must be integrated into the plant's verified hygiene procedure.

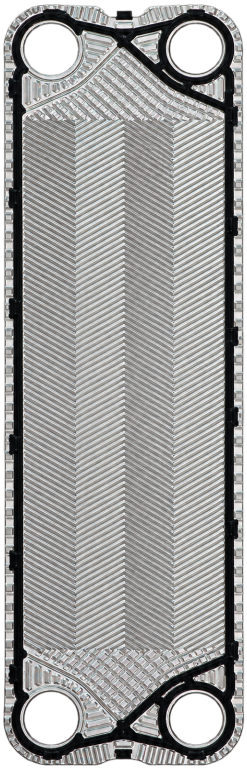


PLATE / FLOW PASSAGE



FRAME / COMPLETE UNIT

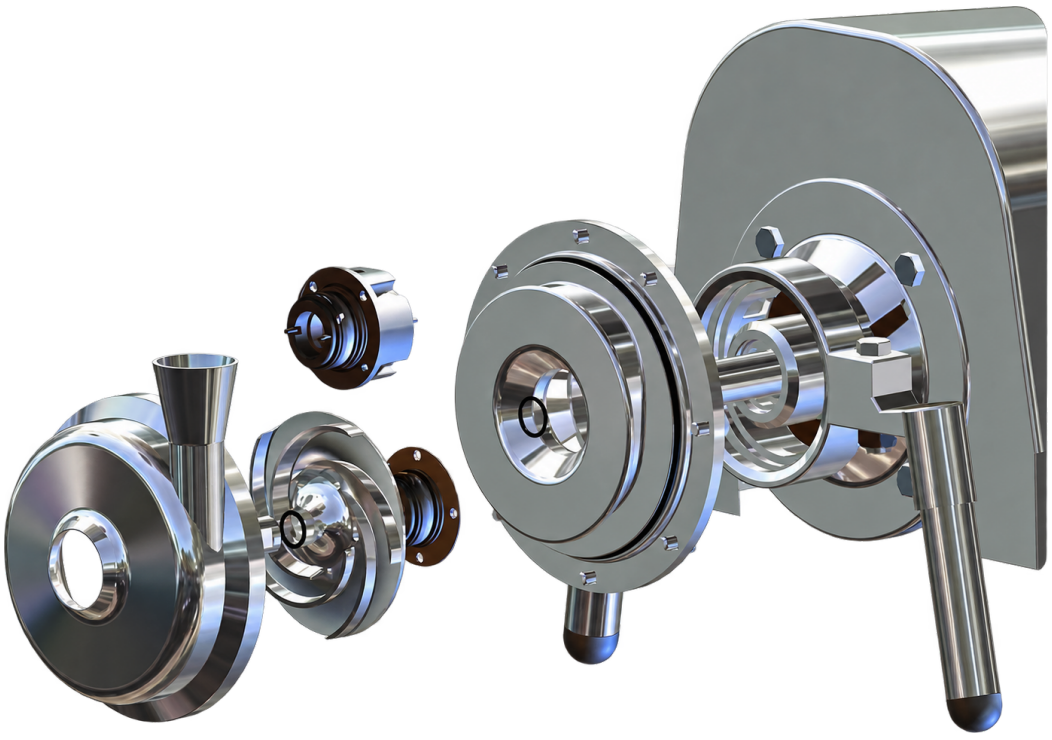
CIP compatibility alone does not prove that the installed line is hygienically validated. Cleaning chemicals, time, flow and temperatures remain process-specific.

EXPLORE SONFLOW /

DANPUMPS / S-FP SANITARY CENTRIFUGAL PUMP

Transfer the selected fraction

Whole egg and egg yolk appear in the S-FP catalogue. Use that application evidence as a starting point, then determine the pump duty from the actual formulation and temperature. Suction conditions, required head, aeration and compatible seals should be addressed together.



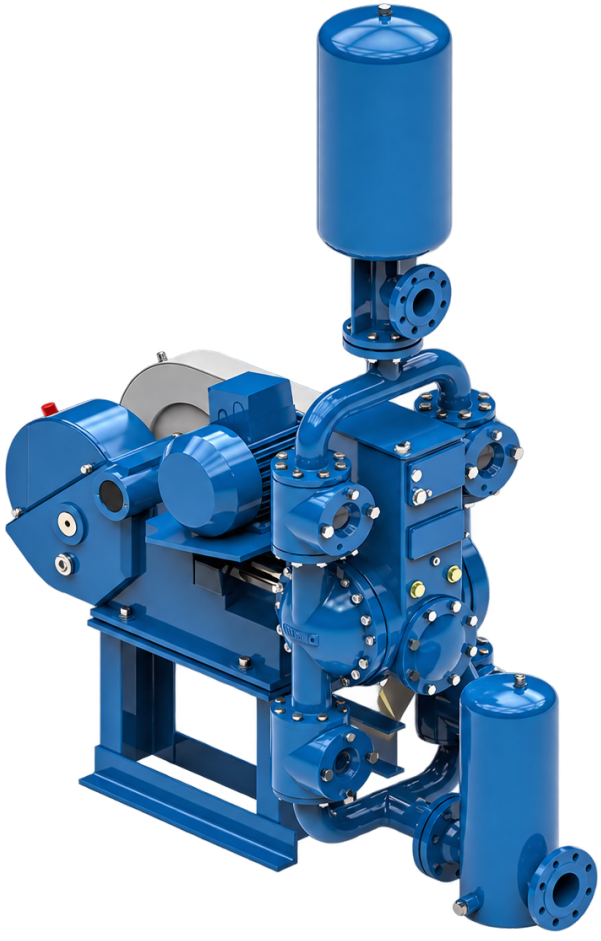
DANPUMPS / S-FP EXPLODED ASSEMBLY STUDY

No identical duty is assumed for all egg fractions or formulations. Added salt, sugar or a changed solids level requires a new selection review.

EXPLORE DANPUMPS /

ABEL / CM / RESIDUAL-TRANSFER STUDY

Give residues their own route.



Assess a CM compact diaphragm pump for a defined pumpable residual or sludge stream. Select the material execution and valve arrangement for its composition, solids and pressure duty. Collection, equalisation and subsequent treatment remain separate parts of the plant.

ABEL / CM COMPACT DIAPHRAGM FAMILY

Confirm solids, particle passage, suction conditions, materials and the operating pressure range. This CM family illustration represents an auxiliary residual-stream assessment; the finished food or beverage follows its separately specified hygienic path.

EXPLORE ABEL /

CONTROL THE PROCESS OUTCOME

Retain useful functionality.

Document product identity, solids and any added ingredients alongside the treatment record. Time, temperature, flow and diversion controls must satisfy the validated process. Check foaming, coagulation, viscosity and relevant functional performance after the complete line. Inspect heat-exchanger integrity and cleaning results under the site's verification programme. Processing requirements for dairy should not be copied directly to liquid egg.

WATCH THE INTERFACES

01 Validated treatment and diversion

02 Coagulation and functional limits

03 Liquid/frozen/powder finishing route

THE AUXILIARY ROUTE

Keep concentrated losses out of drains.

Egg residues can create a concentrated organic wastewater load. Segregate recoverable material under an appropriate procedure and remove shell solids before washdown. ABEL CM can be considered for an assessed residual-transfer duty, while a CM or HM feed duty is relevant only to a chosen wastewater filter press. These are auxiliary applications. Regeneration and cleaning schedules should be evaluated together with the egg-specific shutdown requirements.



Drinking-water treatment plant; a reference for the dedicated water-treatment duty.

Photo / Eric Vance / US EPA

EXPLORE THE RELATED EQUIPMENT /

TURN THE ROUTE INTO A USEFUL ENQUIRY

Specify the material. Define the duty.

Start with the exact product: whole egg, yolk, white or a formulated blend. Record solids, additives, viscosity at temperature, throughput range and cold-storage requirements. Establish the safety treatment and restart logic before selecting equipment. Retain the ingredient's required functional properties as part of the acceptance criteria.

01 Egg fraction and added ingredients

02 Validated treatment and diversion

03 Coagulation and functional limits

04 Foaming and transfer suction conditions

05 Liquid/frozen/powder finishing route

RESEARCH BASIS / SELECTED PRIMARY REFERENCES

https://www.alfalaval.com/industries/food-dairy-and-beverage/food-processing/prepared-food-processing/ /
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https://sonflow.eu/industries/sanitary / https://sonflow.eu/plate-heat-exchangers/sanitary-heat-exchangers

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BEGIN THE CONVERSATION

Your material.
Your next process.

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

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