FOOD PROCESSING

Tomato Paste & Purée

Colour, body and concentration.
Designed around the product.



PROCESS / MATERIAL / DUTY

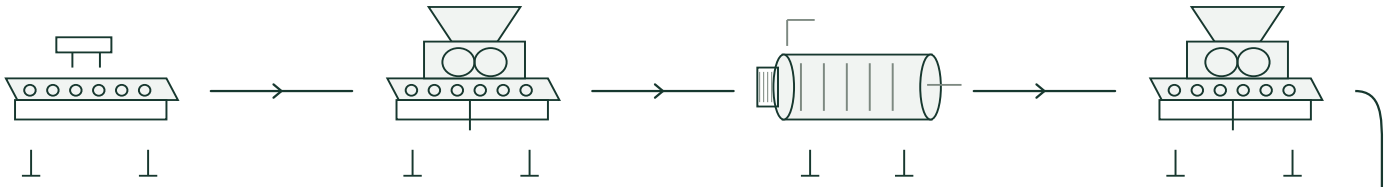
Tomato puree: a texture study.

Photo / Dennis Klein

MATERIAL ROUTE / EQUIPMENT / BRANCHES

Texture is set before concentration.

Sorted tomatoes / refined pulp / paste or puree



Reception and sorting

Selected crop; product brief

Washing and crushing

Prepare the fruit stream

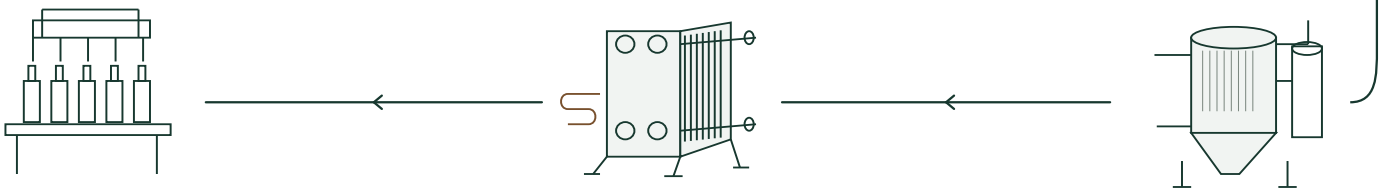
Break treatment

Selected hot- or cold-break route

Refining and pulping

Texture; remove skin and seed

Main product route / follow the connected material path.



Filling

Aseptic or other validated system

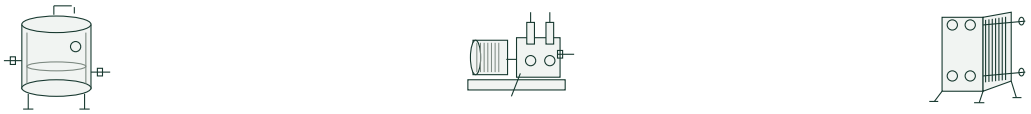
Final treatment / cooling

Validated product and packaging route

Concentration, if selected

Required paste solids; vapour circuit

Refining residues and evaporation vapour remain distinct material duties.



Skin / seed collection

Residual-slurry transfer

Vapour condensation

Food-configured ABEL CM / assessed paste transfer; SonFlow Free Flow / selected pulp heat duty; condenser / specified vapour service.

PROCESS STUDY / 01

Prepare for the intended texture



Tomato reception and handling at Hirzel Canning Company.

Photo / DeiFratelliTomatoes / CC BY-SA 4.0 / cropped & resized

Reception, sorting and washing remove unsuitable fruit and foreign matter before size reduction. Crushing exposes the tomato tissue and starts a process in which enzymatic activity affects consistency. Hot-break and cold-break arrangements use different thermal strategies to achieve the desired product characteristics. Choose the route from the intended puree, paste or downstream formulation. A Free Flow exchanger can be investigated for suitable particulate heating duties, subject to channel passage, fouling and actual-product trials. The complete break system may require another exchanger technology and dedicated controls; the plate unit shown is a candidate component.

Tomato processing creates products with different textures and solids contents: juice, passata and concentrated paste place different demands on a line.

PROCESS STUDY / 02

Refine the pulp before concentrating it



Tomato processing at Hirzel Canning Company.

Photo / DeiFratelliTomatoes / CC BY-SA 4.0 / cropped & resized

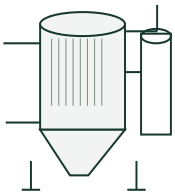
Pulping and refining separate the desired tomato fraction from skins, seeds and coarse material. Screen settings influence both yield and the particle distribution reaching the concentrator. Evaporation then removes water to the specified soluble-solids level. Vacuum and residence time help define the thermal history, while changing concentration increases viscosity and modifies circulation behaviour. A condenser may serve the selected evaporator's vapour duty, with cooling-water temperature and non-condensable handling assessed separately. It is not the whole evaporation or vacuum plant. Establish which stream is being heated or pumped: raw crushed tomato, refined puree and concentrated paste impose different duties.

PROCESS STUDY / 03

Transfer paste with its rheology in mind

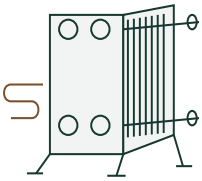
Concentrated tomato product can be shear sensitive and strongly temperature dependent. A centrifugal pump suitable for a thin upstream stream should not be assumed appropriate for the final paste. ABEL describes gentle diaphragm handling for tomato paste, making a food-configured diaphragm-pump assessment relevant. Confirm valve passage, viscosity, suction, pulsation management and cleanability using the actual product. Final preservation and filling follow the chosen packaging system and shelf-life target. Aseptic bulk storage, hot filling and other finishing routes have different control requirements. The pump and condenser support selected operations; neither supplies the complete product-safety or filling system.

OPERATION STUDY / SELECTED PROCESS DETAILS



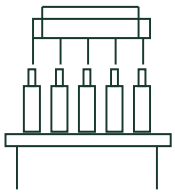
Optional concentration

Remove water to reach the required paste concentration.



Thermal treatment & cooling

Apply the validated product treatment and cooling route.



Filling

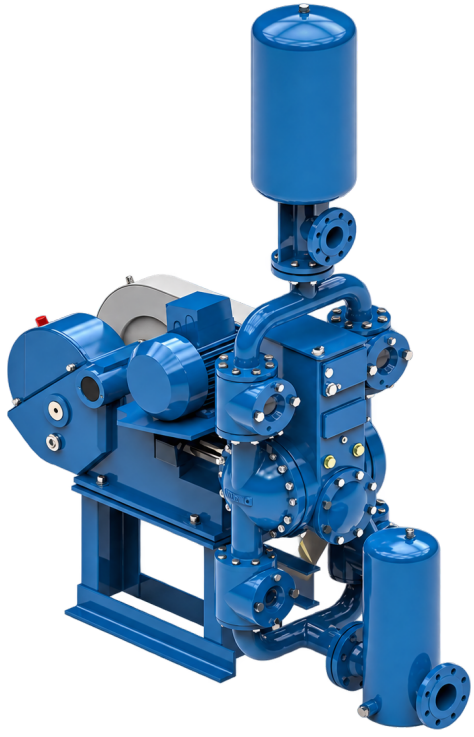
Package under the hygienic conditions required by the product.

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

ABEL / CM / FOOD-CONTACT CONFIGURATION

Handle the paste as paste.

Food-configured diaphragm handling is relevant to a defined tomato-paste transfer. Investigate the CM arrangement against measured rheology, suction conditions and the required downstream pressure.



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 / FREE FLOW PLATE HEAT EXCHANGER

A channel choice for the pulp

Fibres, particles and viscosity affect both passage through the channel and heat transfer. Free Flow geometry is designed for these difficult media. Evaluate the actual tomato stream, including particle size, fouling behaviour and the cleanability required for food production.

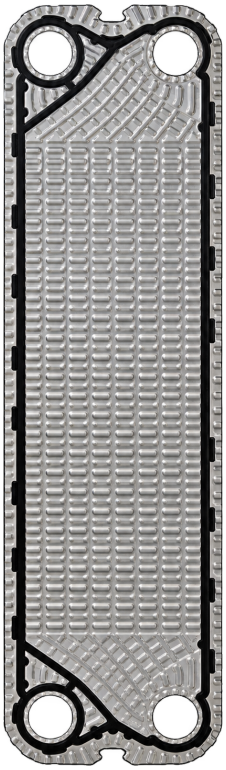
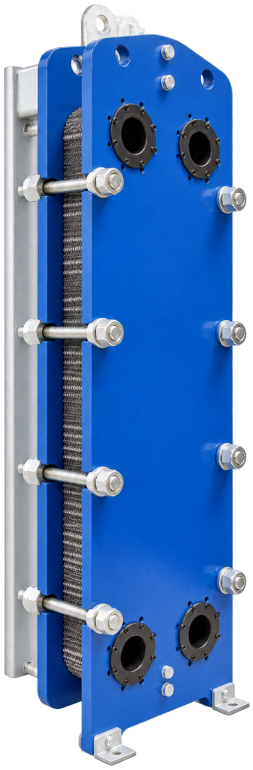


PLATE / FLOW PASSAGE



FRAME / COMPLETE UNIT

No direct equivalence to a tubular or scraped-surface paste sterilizer is claimed. Concentrated paste may require another heat-transfer technology.

EXPLORE SONFLOW /

SONFLOW / CONDENSER / EVAPORATOR PLATE HEAT EXCHANGER

Handle the vapour as its own duty

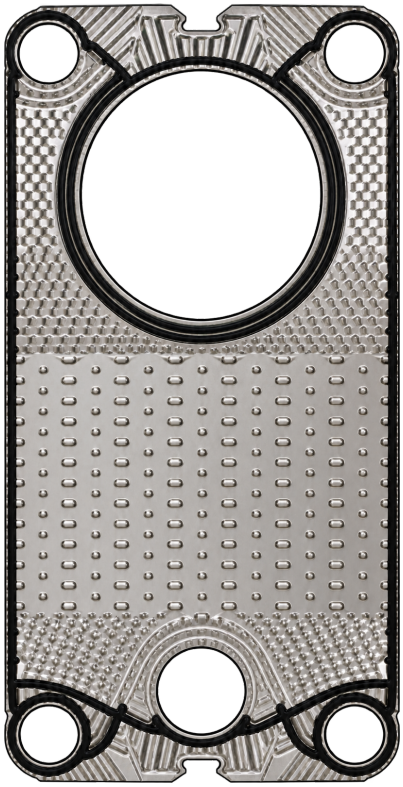


PLATE / FLOW PASSAGE



FRAME / COMPLETE UNIT

Concentration creates a vapour duty alongside the product stream. SonFlow's condenser family is intended for low-pressure vapour and evaporation applications. Cooling-water conditions, non-condensable gas, pressure loss and condensate removal form part of the specification.

The component is not a turnkey tomato-paste evaporator. Product concentration, residence time and overall system arrangement remain separate design tasks.

EXPLORE SONFLOW /

CONTROL THE PROCESS OUTCOME

Follow consistency through the line.

Specify soluble solids, consistency or viscosity, colour, acidity and microbiological criteria for the intended grade. Test texture after the full heating, concentration and transfer sequence because cumulative handling matters. Inspect the effect of screen choice on yield and particles. Acidic product, cleaning chemicals and operating temperature guide material and seal selection. Confirm the final application through representative product trials.



Tomatoes before processing.

Photo / Thomas Martinsen

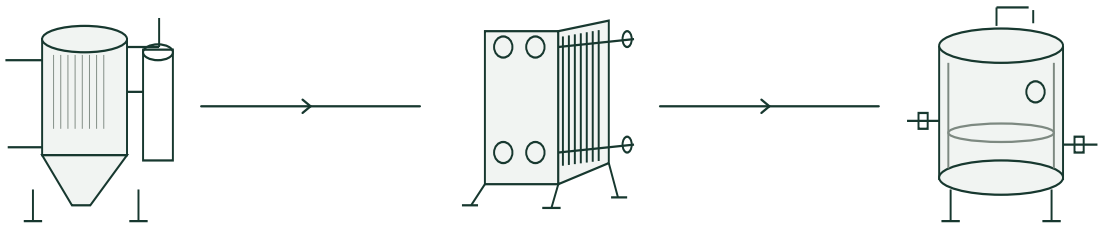
VERIFY AT THE RELEASE POINT

Tomatoes are washed, sorted and crushed before the selected heating and refining route. Pulping establishes the required texture and removes unwanted material. Concentration removes water when paste is required. Validated thermal treatment and suitable filling complete the route. The precise arrangement depends on the product specification and the plant's selected processing technology.

THE AUXILIARY ROUTE

Connect vapour with a receiver.

Review vapour reuse, condensate quality and cooling-water demand together. Heat recovery needs a usable temperature difference and an identified receiving duty. Skins and seeds should be collected separately if a recovery route exists. ABEL CM may serve a defined residual-slurry transfer, independently of the food-configured product pump. Seasonal tomato campaigns influence both maintenance planning and investment utilisation.



Process vapour

Defined evaporation source

Condensation

Separate heat-transfer duty

Condensate collection

Verify quality before reuse

Break treatment sets texture before refining; evaporation sets concentration. Product packaging and skin/seed recovery leave the process through separate branches.

EXPLORE THE RELATED EQUIPMENT /

TURN THE ROUTE INTO A USEFUL ENQUIRY

Specify the material. Define the duty.

Specify the required product first: juice, passata, sauce base or concentrated paste. Add Brix, measured viscosity, solids and fibre characteristics, temperatures and production window. The heat-treatment authority should establish the safety process. Equipment suppliers then select the compatible thermal and transfer components around that validated requirement.

01 Hot/cold-break product target

02 Screened pulp and particle distribution

03 Solids, viscosity and transfer temperature

04 Evaporator vapour and condenser conditions

05 Final preservation and packaging route

RESEARCH BASIS / SELECTED PRIMARY REFERENCES

https://www.alfalaval.com/industries/food-dairy-and-beverage/food-processing/prepared-food-processing/ / https://www.alfalaval.com/globalassets/documents/products/separation/centrifugal-separators/decanters/foodec_application_tomato.pdf / https://sonflow.eu/plate-heat-exchangers/free-flow-heat-exchangers / https://sonflow.eu/plate-heat-exchangers/condenser-heat-exchangers / https://sonflow.com.au/media/pelbtcki/s-fp-pumps_uk_0224_small.pdf / https://sonflow.eu/pumps/s-ips-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.

services@lecoqimex.com

+33 7 82 85 35 55

lecoqimex.com

8 place Mejane
06560 Valbonne, France

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