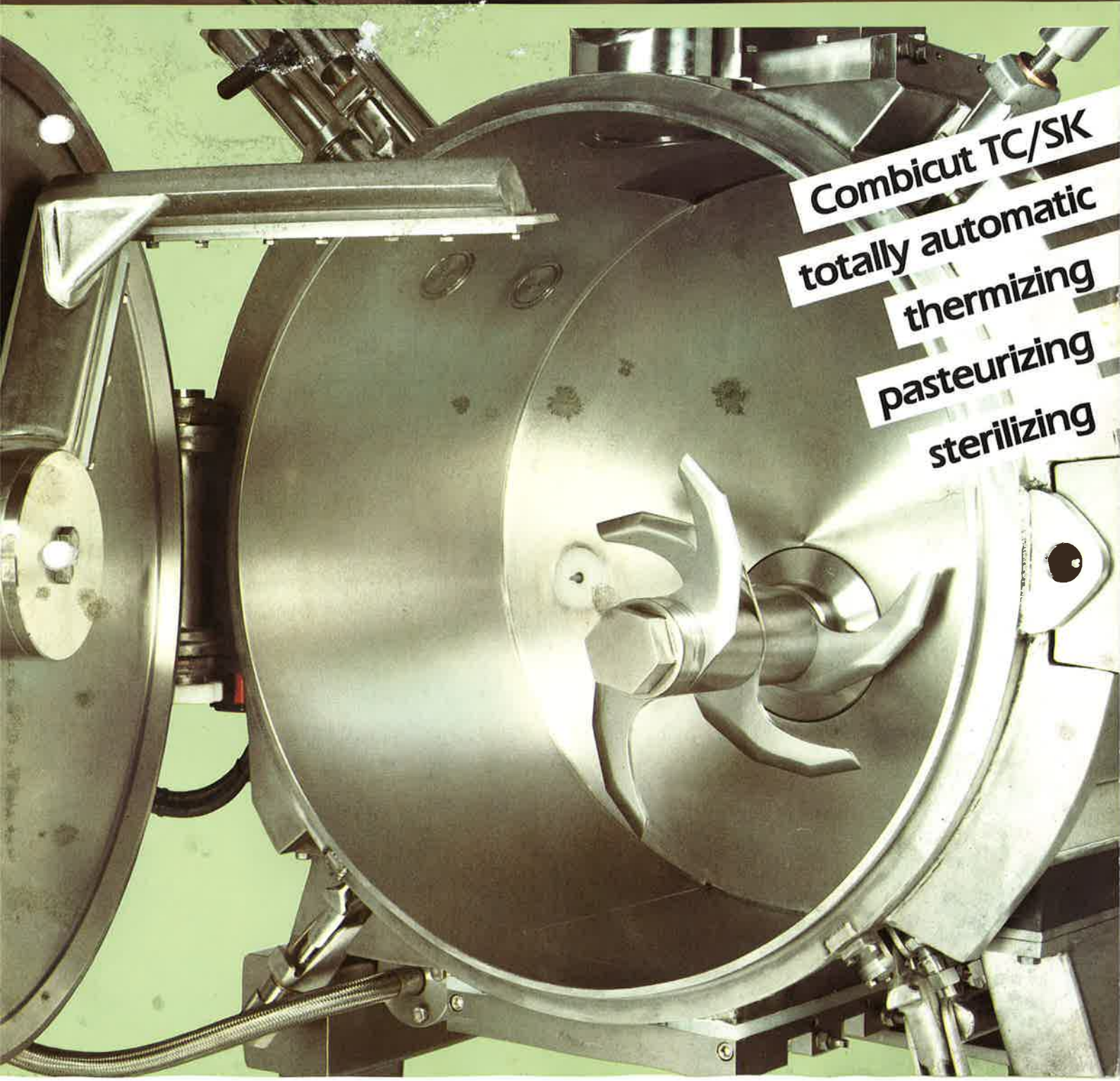
Stephan

Food Processing Technology



Combicut TC/SK

totally automatic

thermizing

pasteurizing

sterilizing

New STEPHAN Combicut TC/SK

Technology of the future for better production of milk-protein products

For a wide variety of processes within the DAIRY and FOOD PROCESSING INDUSTRIES, the STEPHAN SK machines have multiple applications.

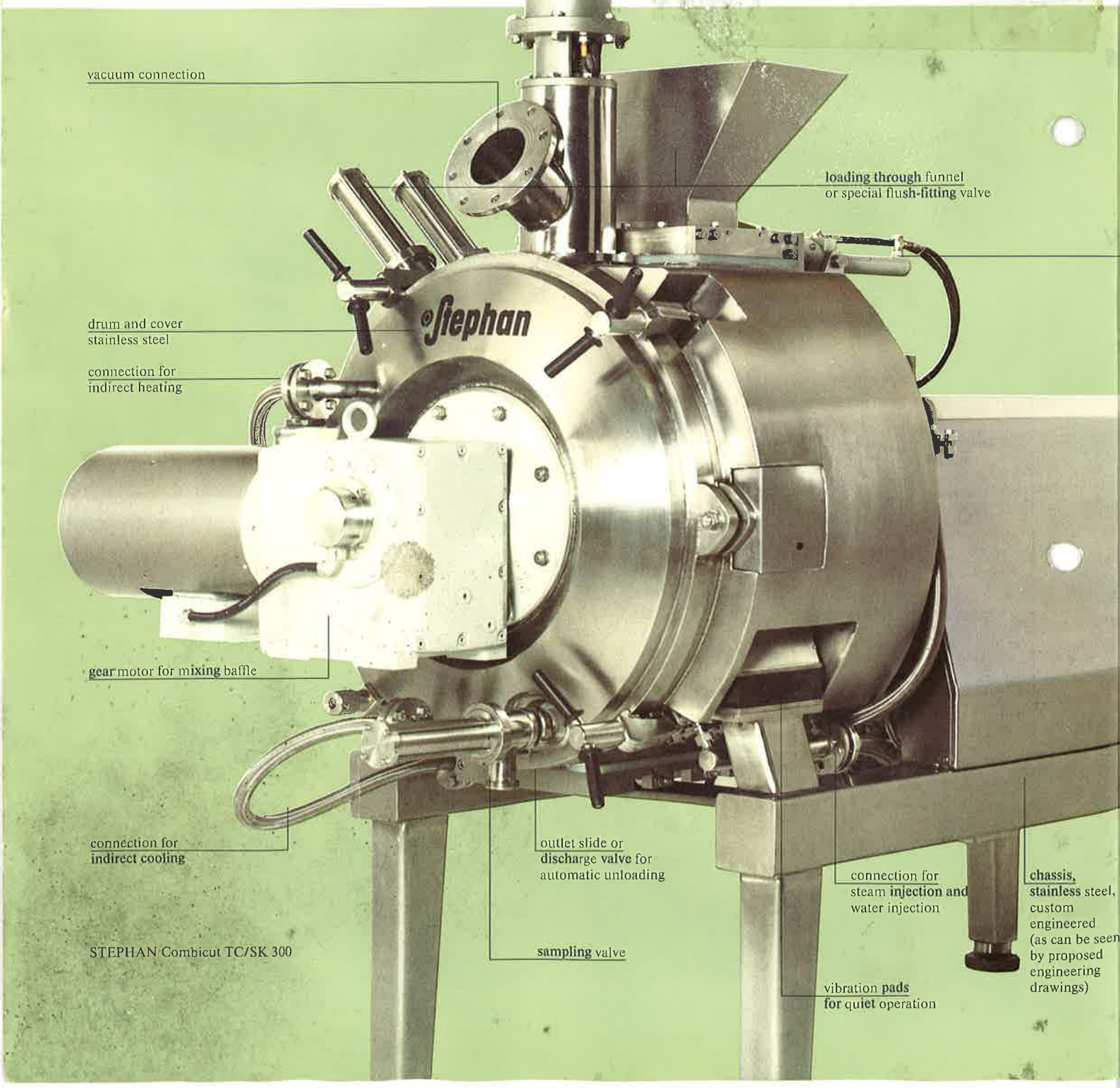
- Unique construction applies innovative engineering.
- The STEPHAN SK machines are economical from manual to fully automatic.
- Maximum process system safety.
- Minimum maintenance.
- Easy cleaning.

The STEPHAN Combicut offers the ideal system for achieving product uniformity and improved shelf-life by utilizing one machine, an integrated process and an extremely short process time. This technology applies to a wide product range which includes baby food, quark products, fresh cheese, dessert creams, processed cheese of all types, mayonnaise, dressings, and many more products based on protein.

The STEPHAN Combicut system includes: Mixing, size-reduction, deaeration, thermizing, blending, pasteurization, sterilization, emulsification, direct and indirect heating and cooling.

The STEPHAN Combicut can be fully integrated into an automatic microprocessor controlled production line.

The basic system has vacuum and includes the capability of injecting gases such as N_2 and CO_2 directly into the product.



The STEPHAN Technology

The motor shaft of a strong main motor, normally with two speeds, i.e. 1750/3500 min^{-1}, extends into the specially machined drum. Very sharp knives with serrated edges or dulled mixing attachments are standard equipment and can be easily interchanged on this motor shaft. A strong vortex action is generated and the material is forced to the walls or mixing attachments causing in size-reduction, mixing or emulsification.

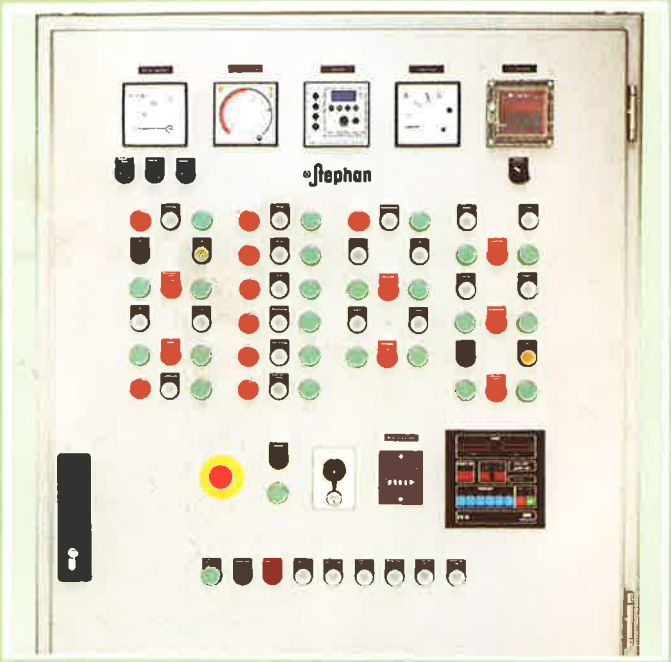
The selected speed and the viscosity of the raw materials determine the turbulence of vortex action. An additional component of the vortex action is suppplied by the mixing baffle which scrapes the inside of the drum and directs viscous materials into the center of the action. Simultaneously, with this mechanical processing, thermal processing can be initiated. All processes can be done with or without vacuum. Steam injection nozzles are mounted at the point of the highest turbulence of the mixer in order to inject steam directly into the processed material. The steam is homogeneously dispersed throughout the product due to strong vortex action. The quantity of condensate is calculated by the amount of time the steam is injected into the drum and can be accounted for in the formula. When the desired temperature is reached, the steam is cut and the spring-return valves prevent the product from entering inside the nozzles. All machines are engineered for fully automatic operation.

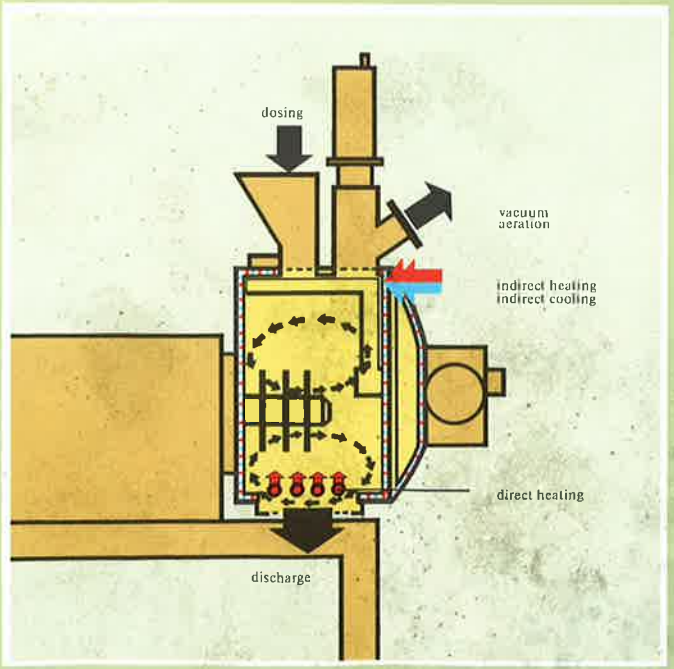
One possible working sequence for e.g. fruit quark would be:

Skim-milk or whole-milk curd is metered and pumped into the machine from a storage silo. Dry powdered ingredients are pre-scaled and charged into the drum through the vacuum system. The fruit or other additives are added to the drum through a separate dosing valve and pump from a holding hopper. All ingredients may be charged into the drum at the same time so that the loading is completed within one minute. The ingredients are pre-mixed for approximately 30 seconds on low speed (1750 min^{-1}), then after vacuum is started, the steam injection begins. After only 3 to 4 minutes, the temperature of 72°C (162°F) is reached and the steam injection and vacuum are cut off at the correct

hydraulic cylinder
for operating the inlet slide

housing, stainless steel,
for main motor,
hydraulic and
central greasing device





temperature values through the temperature controlling device. An extra minute of holding time at 72°C (162°F) with the low speed agitation (1750 min^{-1}) increases the bacterial stability. Now the fruit quark is finished and is ready to be hot-filled.

For the production of double cream cheeses or fresh cheese products, mixing during the temperature holding time with high speed (3500 min^{-1}), improves both emulsification and the creamy texture which results in a smoother, more spreadable and extremely homogeneous product.

Thermic Treatment of Milk-Protein Products:

● Thermizing up to 75°C (168°F)
- Skim-milk or cream-enriched quark
- Fruit and herbal quark preparation
- Double-cream or low-calorie milk-protein products
- Fresh cheese preparation

● Pasteurizing up to 100°C (212°F)
- Cream and double-cream fresh cheese preparation
- Spreadable processed cheeses
- Block cheese

● Sterilizing up to 127°C (260°F)
- Processed cheeses

Machines for processing above 127°C (260°F), are available.

Production of Caseinates

Wet casein is pasteurized to 95°C (230°F), together with special salts. This results in a liquid product which will be pumped through a drum dryer or spray dryer. With this method of preparation for the raw product, the finished granular caseinate will have an improved bacteriological spectrum.

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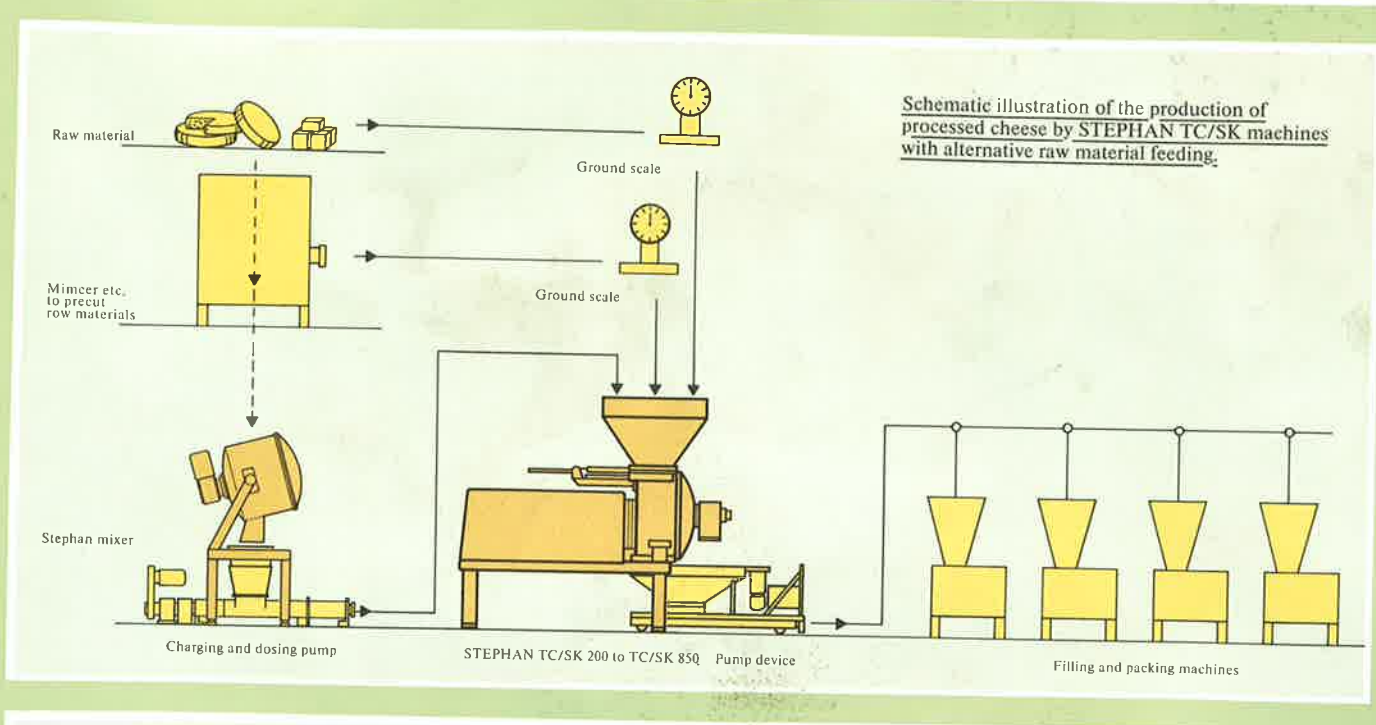
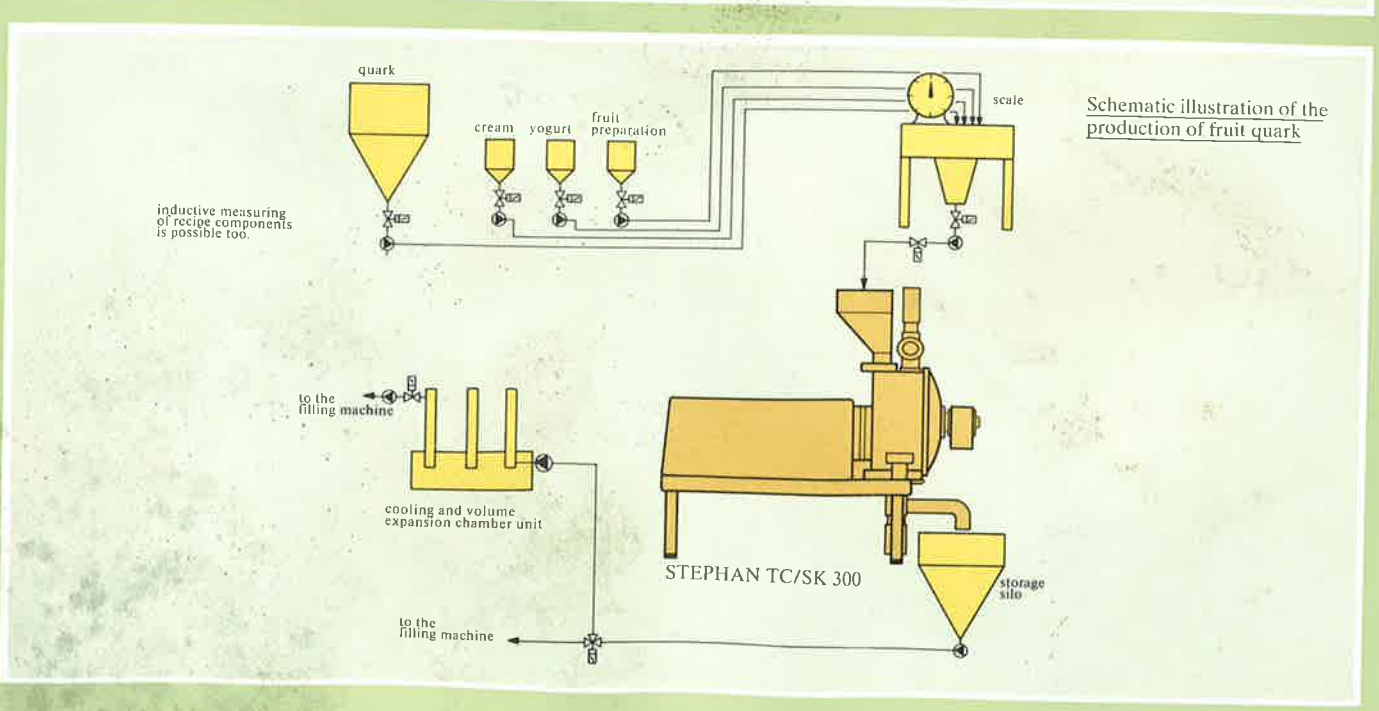
Can be integrated into any production line. Short process times, better results

Investment for current energy costs. In the STEPHAN Combicut, caseinate solutions of 50% dry matter are possible.



Schematic illustration of the production of processed cheese by STEPHAN TC/SK machines with alternative raw material feeding.



Schematic illustration of the production of fruit quark

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Universal applications, shelf-stable product, even under high humidity conditions

Greatly extended shelf-life through thermizing.

Fields of applications of the STEPHAN Combicut TC/SK:

Processed cheese, pasteurized or high-temperature treatment, spreadable or block cheese.
Thermized quark varieties, with fruit preparations, fruit syrups, fruit powder, flavors, fragrances, herbs and spices.
Fresh cheese, pasteurized.
Dessert creams, pasteurized, on the basis of quark, milk-powder, milk or water.
Ice cream compounds, ready to freeze compound, on the basis of water, milk powder and all other additives.
Ice cream powder, mixing of all dry ingredients on an ice cream formula.
Sour cream, creams (sandwich s[illegible]).
Butter compounds, in all variations.
Cream cheeses, pasteurized (dips).
Imitation cheese, pasteurized.
Low-calorie creams, thermized.
Caseinate
Baby food, pasteurized and sterilized.

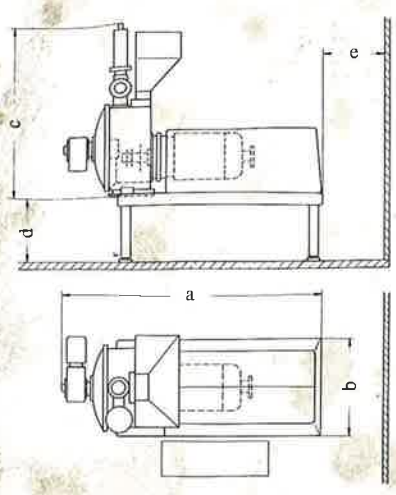
STEPHAN Combicut · Model TC/SK

Technical Data		TC/SK 200	TC/SK 300	TC/SK 400	TC/SK 600	TC/SK 850
Drum capacity	l	200	300	400	600	850
Batch max. (light products)	l	130	200	260	400	560
Average batch time	min	6–10	6–10	6–10	6–10	6–10
El. connection:						
*1500/3000 min^{-1}	kW	54	70	102	103	135
* 750/1500 min^{-1}	kW	40	55	74	75	115
Fuses 380 V, 1500/3000 min^{-1}	A	160	200	250	250	315
Fuses 380 V, 750/1500 min^{-1}	A	100	160	200	200	250
Fuses 220 V, 1500/3000 min^{-1}	A	250	315	500	500	630
Fuses 220 V, 750/1500 min^{-1}	A	200	250	315	315	500
Average steam consumption/batch	kg	12	19	25	38	53
Net weight	kg	2300	3200	3800	4500	5000
Weight switch board	kg	200	350	400	400	400

*Other main motor speeds upon request.

STEPHAN reserves the right to make minor technical changes without notice.

Type	a	b	c	d	e	Space for switch board
TC/SK 200	2800	1100	1750		700	1200 x 400
TC/SK 300	3100	1180	1950	Height	700	1500 x 800
TC/SK 400	3270	1180	1950	as	700	1500 x 800
TC/SK 600	3400	1300	2350	required	700	1500 x 800
TC/SK 850	3565	1300	2450		700	1500 x 800



Drawing does not show all details.

Ideal for the Delicatessen Industry

The numerous applications show that STEPHAN has interesting technology for any size and type of plant.
The applications of the STEPHAN Combicut are almost unlimited in food processing industries, for example the Delicatessen Industry.
Mayonnaise, salad creams or dressings, ketchups
made from cream, yogurt, vegetable oil, egg yolks, egg powder, milk-protein, spices and other additives.
Mayonnaise or ketchup-based salads, pasteurized.

As for the dairy industry, STEPHAN has been building machines and equipment for the meat trade, the meat processing industry, the fish industry, for bakeries, confectioneries, for the bakery industry as well as for the sweets industry, catering and commissary kitchens, and the general food industry for more than 30 years.

Research, development and advanced engineering have helped STEPHAN to gain international recognition.

STEPHAN Universal Machine UM 25 to UM 130 E
For kneading, stirring, mixing, grating, cutting, homogenizing, emulsifying.
For batch sizes up to 90 kg.
Throughputs up to 900 kg/h.

STEPHAN Universal Machine UMM/SK 25 to UMM/SK 130 E-II
For cutting, mixing, preparing, evacuating, melting, thermizing, pasteurizing, sterilizing, emulsifying, heating, cooling.
For batch sizes up to 90 kg.
Throughputs up to 1.000 kg/h.

STEPHAN Vakuum Mixer VM 100 to VM 1500
For slowly running mixing processes under vacuum.
For batch sizes up to 1.000 kg.

STEPHAN SERVICE individual and reliable

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