amafilter®

FILTRATION OF CHEESE BRINE IN SALT APPLICATIONS

Making the world safer, healthier and more productive®

amafilter® Filtration Group®

Amafilter®

Amafilter® specializes in providing effective filtration solutions for the Food & Beverages market.

And, over the years, have built extensive expertise in providing companies across the world with cheese brine filtration solutions. We pride ourselves in designing and developing solutions that deliver continuous brine filtrate quality and provide extended product life without negatively impacting the quality of the cheese.

Our experienced laboratory team can support you in optimising your filtration processes, delivering an hygienic process which delivers high product quality with low maintenance costs.

We work closely with our customers throughout the process, from the design and testing stage to the commissioning and servicing of the project

MISSION

We are committed to a better tomorrow and our mission is to make the world safer, healthier and more productive.

Our mission comes alive through the markets we serve, the solutions we provide and how we interact with our teams and customers.

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Filtration Group

Most varieties of cheese undergo a salting process during production. The most popular is brine salting, which is when raw cheese is dipped into the brine to absorb the salt and remove impurities, like curd particles, fat, bacteria and microorganisms.

By preventing physical and microbial contamination, which can be caused by contact with process fluids or equipment, the quality of the end product is improved exponentially.

Application

During cheese production, raw cheese is immersed in brine baths so it can absorb the salt and keep the cheese's structure and signature taste. During that process, proteins, minerals and lactic from the cheese passes into the brine which causes bacteria, mould and calcium phosphates to build up in the salt bath which can negatively impact the quality and life of the cheese.

Maintaining a clean and hygienic salt bath creates microbiological stability within the system. Especially in continuous production there is a higher risk of contamination due to bacteria growing faster. To prevent this, a filtration system operating with a high relative flow rate (flux) of 1.000 l/m² per hour and a precoat layer of 1 kg/m² provides, followed by automatic backflushing and drying, is necessary to ensure clean brine is returned to the salt bath.

This is essential as cheese absorbs the salt faster in a clear solution, which leads to increased production time and improved product quality.

Filtration

Why filtration is important in the production of cheese?

When brining cheese, it is essential to keep the salting bath in good condition, so the cheese produced remains at a consistently high quality. Without filtration, the leftover brine becomes a sea of unwanted microorganisms, including bacteria, mould, yeast and salt-resistant pathogens, which can contaminate and impact the quality of the cheese.

Maintaining hygiene is essential in the salt bathing process as contamination results in poor quality cheese, which cannot be stored for long. Filtration reduces yeast and mould spores by up to 95-99% and germ numbers by 70-90%, resulting in longer cycle times of between 10-20 hours.

Recycling the brine reduces waste management costs due to not having to dispose of large quantities of brine. Longer cycle times reduce costs due to reduced maintenance interventions and unscheduled downtime.

Filtration removes these contaminants and returns clean, contaminant free solution back into the system.

Common filtration problems in cheese brine filtration:

- Contamination occurs over time, including mould, bacteria and calcium phosphates
- Long filtration times due to membrane filters using microfiltration crossflow or semi-crossflow
- High disposal costs
- Expensive maintenance and repair
- Dense cake discharge

Benefits of an optimized filtration system include:

- Lower maintenance costs
- Reduced salt bath contamination
- Improved operation and process efficiency

The Cricketfilter® in cheese applications

Amafilter®
Cricketfilter®

The Cricketfilter® is ideal for conditioning of salting baths in cheese applications and can be used with hard and semi-hard cheese.

It is installed on the circulation pipe of the salting bath removing large quantities of yeasts, bacteria and other solids. The cleaned salting bath offers both higher microbiological stability for improved product quality and better kinetics for salt absorption.

During the filtration process, the Cricketfilter® is first precoated with a suitable filter aid. This precoat acts as depth filter medium to remove contamination while maintaining a high filtration capacity during a long cycle time.

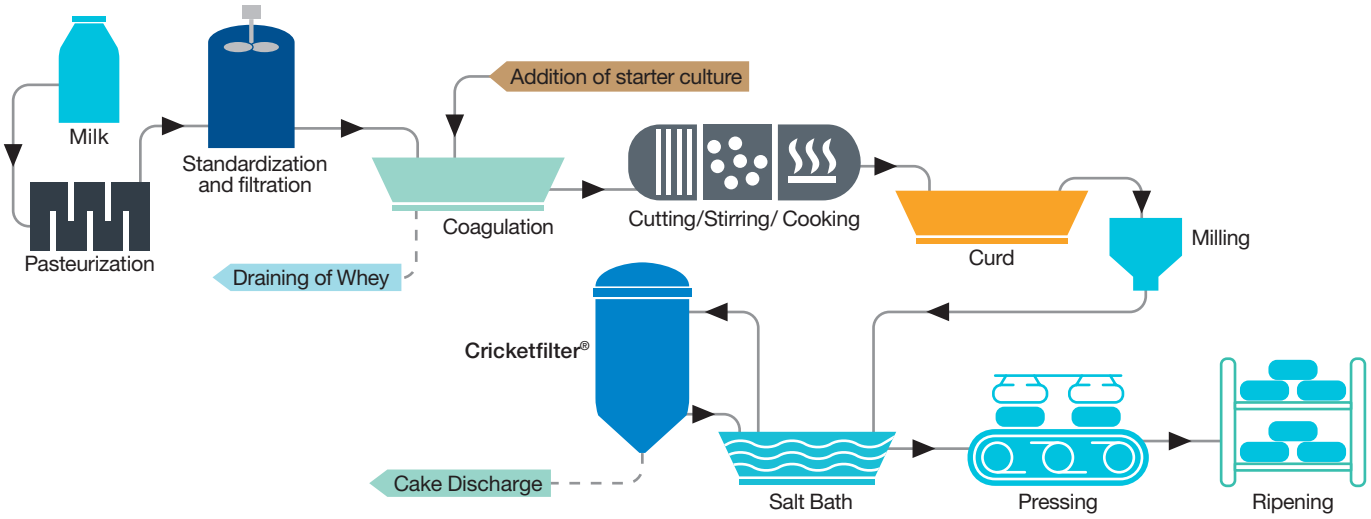
The automation makes it easy to add filter aid to the precoat tank. Through the CIP (Clean in Place), the cleaning system located in the cover of the Cricketfilter®, the complete filter housing can be kept clean and hygienic.

After filtration the filter is back pulsed and the cake slurry is discharged through a bottom valve.

Cheese salting bath conditions with the Cricketfilter®

Model	Filter area	Element length	Element spacing	Cake volume	Filter volume	Feed/ drain	Filtrate outlet	Vent	Water sluice	Slurry discharge
	m^2	mm	mm	dm^3	m^3	DIN11851-SC (*EN1092-1)				
406SBCF-3.8/1500-58	3.8	1500	57.5	50	0.25	50	2x50	25	25	50
610SBCF-9.3/1500-58	9.3	1500	57.5	120	0.6	80	3x50	50	25	80
800SBCF-16/1500-58	16	1500	57.5	210	1.1	80	3x50	50	25	100
1000SBCF-27/1500-58	27	1500	57.5	350	1.8	100	4x50	65	25	150*
1200SBCF-42/1500-58	42	1500	57.5	540	2.8	125	4x50	80	25	200*

Flow Diagram



CRICKETFILTER® AUTOMATED SYSTEM - Main filtration for salt bath

FEATURES	BENEFITS
The Cricketfilter® filters out up to 95-99% of yeast from the salt bath.	Highly efficient, provides longer lifecycles than traditional systems and improves product quality.
The Cricketfilter®'s high flow rates are particularly beneficial in salt bath filtration as salt adsorption can be increased minimizing the boundary layer of the cheese. Consistently high filtrate volume flows create a flow in the salt bath to significantly improve the salt absorption at a rate of around 1kg salt to 1,000kg of cheese.	The cheese absorbs salt faster, reducing the required residence time in the salt bath, making the production process more efficient.
Improves salt absorption so that the salt content desired in the cheese is achieved faster, for instance after 60 hours instead of 72 hours.	Reduces production costs whilst maintaining product quality.
Delivers an increase in throughput by an average of 20-25%.	This provides greater plant capacity, allowing for an increase in cheese production and greater commercial potential.
The Cricketfilter® only needs to be backwashed two to three times a day.	Significantly reduces operating turnaround times and production costs, making the operation more profitable.
Due to the design of the crickefilter® element, the Cricketfilter® has up to 40% more filtration area and can hold up to 40% more cake compared to a traditional round shaped element.	This enables the plant to increase cheese production volumes whilst keeping the same high levels of hygienic standards. The quality of the cheese also remains constant, ensuring on-going product specifications are maintained.
The Cricketfilter® can be fully automated.	Leading to lower maintenance and reduced downtime.
The automated cleaning programme optimises the cleaning of the filter elements and filter containers.	This increasing the service life of the filter cloths by several years, reducing operating costs.
The Cricketfilter® ensures that the salt bath remains clean throughout the process.	This increases productivity as the diffusion of salt in the cheese is faster with a clean salt bath. Clean salt baths also extend the cheese lifetime, providing high product quality and enabling the cheese to be sold with a longer shelf life. A clean system requires limited maintenance interventions, making the operation safer and more profitable.
A cleaner system is beneficial to the ecology.	Reducing emission costs and contributing to sustainability.

Benefits

BAG FILTER - Used for police filtration

FEATURES	BENEFITS
To protect the salt bath from the filter aid.	Effectively removes filter aid, removing the possibility of salt bath contamination and ensuring product quality.

Aftermarket

CRICKETFILTER® CLOTHS

Top and drain cloths extensive product life makes them a cost effective filtration solution.

	PURPOSE	BENEFITS
Top cloths	Designed to perform with various liquids at varying temperatures.	Due to the high quality and durability of the cloths, on average these only require replacing every 12 months. This reduces maintenance interventions, improves downtime and makes the operation safer.
Drain cloths	Designed to perform with various liquids at varying temperatures and maximise flux capacity.	Drain cloths maximise flux capacity and extend the lifetime of the top cloths. Due to the high quality and durability of the cloths, they generally only require replacing every two years.

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