

Keeping it cold for a sustainable future

Lyras has together with several dairies produced a number of different cheese, which shows greater yield and great flavour, when raw milk is cold pasteurized with a CPS System.

Pasteurization and bactofugation are major components of all modern cheese production, ensuring both quality and food safety. However the processes are costly in several contexts. First of all, the energy consumption of the two machines are quite considerable. Second of all, the characteristics of the milk changes as it is heated and subjected to mechanical stress. And finally, the bactofuge requires high maintenance due to wear and tear.

Lyras manages to overcome these challenges with their CPS - Cold Pasteurization System. An innovative way to process the milk, where a short treatment with UV light inactivates bacteria and spores in the milk. This leaves you with milk that has numerous exciting properties.

- By utilizing the capabilities of our cold pasteurization technology, we are able to turn off the pasteurizer and bactofuge. This means we only use 3.5 kwh per ton of raw

CPS is a compact system that is easy to integrate into pre-existing production lines.



milk. Furthermore it reduces CIP time significantly, says Mathias Kræmmergaard Kristensen, chief designer and CTO

Greater yield

The big surprise, however, was the amount of cheese produced. In fact, the cheese yield was up to 10 pct. higher when using cold pasteurization.

- We expected a higher yield but nothing like this. There is a significant decrease in the protein content of the first whey, which supports higher transition figures and higher cheese yield. The milk coagulation property was also clearly improved with strong coagulum and a larger amount of cheese than expected by the milk volume, adds Rasmus

Mortensen, CEO of Lyras. He also points out that all the chemical analyses are within the norm, while the bacteriological ones are below the norm - and that maturation after half a year goes according to plan.

- We have produced a larger number of Danbo and Havarti cheeses, and the observations are the same. After six months, the cheeses continue to mature really well, he says.

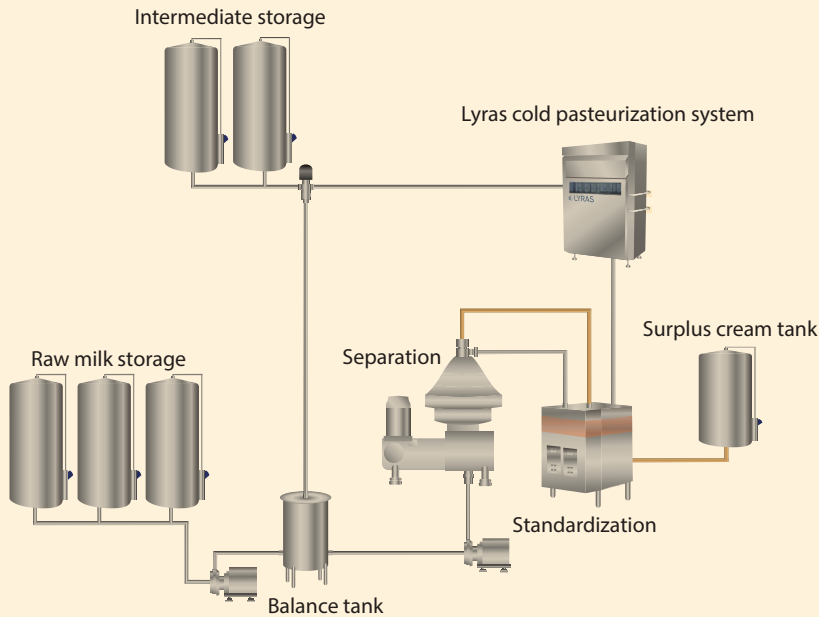
Pure taste

Finally, the flavour has proven to be outstanding with a unique taste and texture

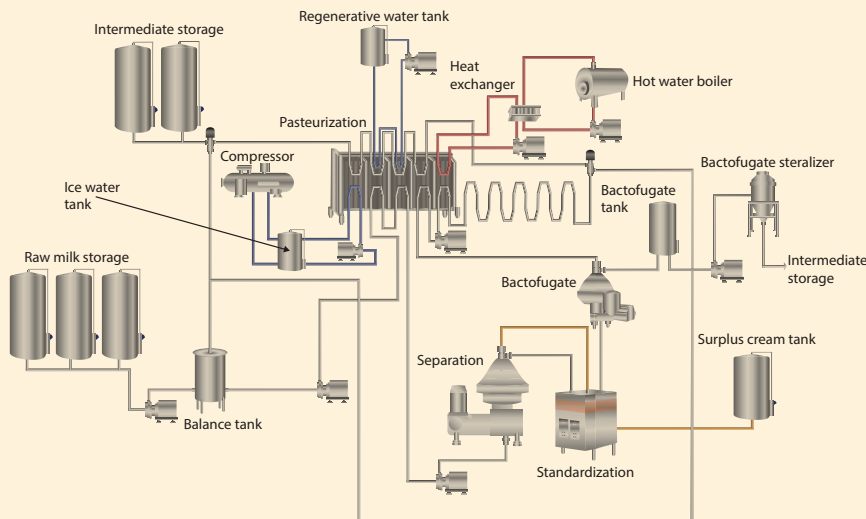
- When you avoid heating the milk it can actually be tasted in the cheese, which have a very pure taste and at the same time a nice



Cheese production with CPS



Traditional cheese production



The two process diagrams illustrate the simple production flow using CPS, where heat exchanger, bactofuge and microfiltration units and others can be replaced. This results in significant savings in energy consumption and in the cleaning process.

structure. This also stems from the fact that the cheeses have been treated much more gently, so that the good qualities of the raw milk is still present at the highest quality to the consumer, says Rasmus Mortensen.

Simplicity is key

By looking at the process as a whole with a system that brings together many of the processes the milk otherwise undergoes at a dairy, Lyras has with cold pasteurization created a solution that simplifies production significantly.

- In addition to the large reduction in energy, cold pasteurization can achieve a total reduction in the complexity of any dairy. A cold pasteurization system can replace both pasteurization, bactofugation, and microfiltration, and thus have high energy savings and an ROI of less than 2 years, Rasmus Mortensen adds. The great simplification of the production process can be seen in the process diagrams on the left.

The future is bright

Lyras is in close correspondence with the relevant authorities and is cooperating with The Danish Agriculture and Food Council and DTU to completely overcome the legal requirement of heating milk up to 72 degrees.

- Here we are talking about the last legislative details that will soon fall into place, and I am convinced, that we will see the first cold-pasteurized cheeses in Danish stores before the end of the year, concludes Rasmus Mortensen. ●

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