

# Arla Foods gains one week's extra production with ohmic heating

Great savings and optimisation of processes at Arla Foods have been achieved by using ohmic heating in the production of cream cheese. The solution has given the dairy one extra week of production each year.

**By Suna Koop, Marketing Coordinator, Alflow**

In its cream-cheese process, Arla Foods is dependent on a temperature of 68 °C at the tap. This is ensured by using Ohmic heating, where electricity is led through the cream cheese in isolated tubes (at the top of the picture). Photo: Lars Møller



Arla Foods uses so-called ohmic heating, which ensures that the cream cheese has exactly the right temperature when it is poured into the packaging. With ohmic heating, a medium's conductivity – resistance – is utilised to create an energy-efficient, fast and accurate heating by leading electricity through the cream cheese, which is in an isolated tube.

In its cream-cheese process, Arla Foods is dependent on a temperature of 68 °C. Previously, Arla Foods used a steam-heated, scraped-surface heat exchanger for that process, but had to overheat the cheese up to about 78 °C to be sure to keep it 68 °C at the tap. The safety margin of 10 °C is of course a waste of energy compared to hitting the 68 °C more precisely, and this can be done with ohmic heating.

Ohmic heating has much higher energy efficiency than the steam-heated process and it compensates for the high electricity price.

- The price for steam is lower per kW than for electricity, but with an efficiency of 98 percent in ohmic heating, the difference is leveled out, says Martin Kjærgaard, project manager at Arla Foods.

Normally, electricity will be too expensive for heating in a production process, which is why companies normally do not use electricity for that type of process, but with ohmic heating, the odds change in favor of electricity-based heating.

- Now, we save energy because it is no longer necessary to have temperatures up to 90 °C in the steam process. Although the ohmic heating plants use electricity, we save net energy because of the reduced need for excess steam heating, Martin Kjærgaard explains.

## Two-year repayment

The use of ohmic heating has given a markedly improved process with fewer stops and reduced cooling and reheating of cream cheese. Estimated annual production has increased by 600-800 tons which correspond to one week's extra production of cream cheese a year, so the repayment is less than two years.

Actually, the energy saving was not part of the original business case.

- The purpose of using ohmic heating was to optimise product quality and quality assurance by optimising the process and avoiding production stops because the cheese sometimes became too cold when draining the scraped-surface heat exchanger. Then we would end up with cheese with a temperature of maybe 50 °C, which then had to be drained and cooled down before being reheated. If you can heat up the cheese to the required 68 °C each time it has to be drained, it obviously means both a

great energy saving on reduced cooling and reheating in addition to saved time in the process. Today, we have a much better flow in the process, less waste and less cooling and reheating. The result is an increased production, says Martin Kjærgaard.

- The business case is advantageous – even without the energy savings – due to the optimised process without so many stops, he continues. Due to the great success with ohmic heating, Arla now uses ohmic heating – not only to maintain the temperature, but also to replace their scraped-surface heat exchanger, which means using ohmic heating throughout the heating phase.

## Better microbiology

The uniform temperature in the process is also beneficial for the microbacterial process in the cream cheese and thus for the content of vitamins and proteins which are better preserved with the more stable and lower temperature.

## High efficiency and a more environmentally friendly production

- The advantage of ohmic heating is that it is a very fast, energy-efficient and precise way of heating a medium compared to a steam process. It has an efficiency of at least 98 percent because the only energy loss is in the power supply. Being able to optimise your process to the equivalent of an extra week's production annually ought to put a smile on your lips, says Morten Kaasen, product manager at Alflow, who has delivered the technical solution to Arla Foods.

- If your company wants a greener production, ohmic heating can also be a good alternative, as it can significantly reduce kW consumption due to the higher efficiency of ohmic heating, adds Morten Kaasen.

# Optimise your processes and save money with ohmic heating



### BENEFITS:

- Short processing times
- No contact with hot surfaces
- Homogeneous heating which ensures high quality level of the finished product
- Possible to process products that cannot be treated with conventional thermal treatments
- No mechanical parts - no mechanical wear

### APPLICATIONS:

- Treatment of products with large particles
- Treatment of meat dishes
- Treatment of delicate fluids and pastes
- Pasteurisation and UHT processing of milk products
- Treatment of liquid products such as juice
- Aseptic production
- Temperatures up to 150 °C
- Capacity adaptable to task

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