Thise dairy – reducing water risks through water savings and reuse

Thise was founded in 1998. it produces 85 different diary products (milk, cultured milk, cheese and butter). The MILK supply to the dairy is approx. 100 million kg organic milk per year

Water story of Thise

In 2011, Thise experienced several cases of insufficient supply of municipal potable water. Very cold winters limited their possibility of discharging wastewater through their own pre-treatment plant for disposal on agricultural land. A connection to the municipal wastewater treatment system would require a 20 km pipeline, and there was no local access to water sources others than the municipal potable water supply

dairy (copyright photo Thise Dairy)

tHISE's Water ambition

Thise's ambition is to never again be in a situation with inadequate water supply and no wastewater discharge capacity. They wish to be able to continue growing while consuming the same or a reduced amount of water. The solution is simple: minimizing the need for advanced wastewater treatment and ensuring the most efficient use of available water resources.

How water savings were identified and implemented

Mapping of water, energy and resource flows
Identification of potential water efficiency scenarios
Conceptual design of technology solutions
HACCP assessments of technology solutions
Testing, evaluation and documentation of technology solutions
Implementation and integration in management systems

New Technologies implemented in the dairy

The dairy implemented a number of technologies with the purpose to increase the water efficiency and reduce the discharge of wastewater:
Smart integration and use of water metering data
Thise upgraded its water metering system from 30 manually read analogue water meters to 65 digital on-line water meters. Water consumption data are now

Dairy products – key figures

Milk, cultured milk, cheese and butter
100 million kg organic milk processed
1.6 liter of water used per kg milk processed. 1.3 liter of freshwater per kg milk processed after implementation of projects.
Data from the European Commission on water consumption in mixed dairy production: 1.1–3.7 liter of freshwater per kg milk processed

Water Issues

Situations with insufficient water supply to increase production
Wastewater treatment capacity inadequate, in particular during cold winters

solutions

Detailed mapping of water sources for reuse and water quality requirements for reuse
On-line measurements of water consumption at 65 locations in the whole production system
Development and implementation of scenarios and action plans for water saving and water reuse

Savings and return oF investments

Cost savings on water, energy and labour costs without compromising the food safety
Reduced outlet of wastewater volumes
Payback period of new technologies from months to a few years

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Resource and Cost savings and potential for further increases in water efficiency

Savings on water, energy and labour costs without compromising the food safety

Reduced outlet of wastewater volumes

Pay ack period for new technologies ranging from months to a few years

Fi *he dairy (copyright photo Thise Dairy)*

Water meters installed in Thise Dairy enable the dairy to follow the water consumption in different locations in the dairy and register the consumption over time. (Copyriight Photo Thise Dairy)

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New plate chillers replacing scraping chillers

Scrabing chillers with gear and motors use seal water and have sig plate chillers reduced the water consumption by 2/3, saved 73.000 k significantly.

RO system for RO treatment of whey and its connection to the production system at Thise. (Copyright Photo Thise)Dairy)

significant energy and maintenance costs. The introduction of Wh annually and reduced the maintenance costs

Reuse of water in Cleaning In Place (CIP) systems

Due to the wide variety of products produced by Thise, there is a frequent cleaning of the production system. CIP systems use around 1/3 of the total water consumption in Thise. By reusing the final rinse water for the intermediate rinse and the intermediate rinse water for the first rinse the use of freshwater can be reduced significantly – according to estimates up to 10% of the total water consumption.

RO-water replacing freshwater consumption

Using permeate from Reverse Osmosis (RO) treated whey can reduce the consumption of freshwater at Thise. A permeate circulation system with holding tanks and with a UV-light to secure the microbial safety of the permeate has been installed. This system can potentially replace 20% of freshwater consumption.

The water saving and reuse activities were implemented in a 3-year project supported by a grant from the Danish EPA. Investments were partly supported by the grant. The project was undertaken by a public-private partnership lead by DHI.