FRIESLANDCAMPINA: A WATER TREATMENT SHOWCASE FOR THE DAIRY INDUSTRY

Food & Beverage
Sustainable water reuse and product recovery.
Aalter, Belgium

REGENERATE

600
m3/day cow water recovery

1 500
m3/day wastewater reuse

50
m3/day caustic recovery

CHALLENGES

Royal FrieslandCampina is a multinational dairy company that operates in the Netherlands, Germany and Belgium and markets its products in over 100 countries.

In 2012, FrieslandCampina decided to increase the production capacity at their biggest production site in Belgium by 50% with an option of another 50% before 2015, while respecting their commitment to reduce their water usage by 2020.
The extension brought a few challenges in terms of water efficiency. The water treatment system already on site had not been designed to support such increase. Strict governmental regulations limiting ground water extraction forced FrieslandCampina to rely on expensive tap water, which led to higher production costs. The Client had also reached their wastewater discharge capacity. FriedslandCampina was in need of a new efficient and reliable water treatment system that would not only allow the reduction of their ground and tap water intake but also to reduce their wastewater discharge to ensure sustainable growth.

SOLUTIONS

In 2013, FrieslandCampina chose Veolia Water Technologies to build a unique system that would address those issues with three major projects:

Cow Project:
The Cow Project focuses on the treatment of condensate water from milk evaporation process and also the treatment of condensate from direct steam injection sterilizers.
Veolia proposed the combination of the BiopROtector®, technology allowing reduction of the organic components and neutralization of the biofouling and by an UF and RO + UV system produced high water quality suitable as CIP or rinse water. The installation is designed to produce up to 50 m³/h of reuse water.
Water reuse: 600 m³/day, recovery rate: 80%

CONTRACT FACTS

Type: DB
Award 2012;

Duration: O&M 5 years + 2 since 2015; renewed in 2022

New wastewater treatment plant with water reuse
The existing technology at the Aalter site was needed updating and increased capacity. Veolia Water Technologies implemented a new wastewater treatment system to meet the Client's needs that combines several technologies: DAF + Aerobic MBR + sludge dewatering system + RO + UV.
60% of the treated wastewater, which represents 1500 m³/d, is reuse via reverse osmosis (RO) and UV treatment.

Caustic reuse
A third focus was the reduction of the chemical consumption on CIP's. Ceramic UF membranes have been implemented by Veolia. The solution allow to buffer the contaminated caustic , recover 90-95% of the caustic and reuse 25% per week, which represents 15 m³.
Installation capacity: 5m³/h
Product recovery was a win-win to reduce caustic consumption, reuse caustic and lower acid dosing on the WWTP.
Since 2015 Veolia has been operating and maintaining the WWTP and ensuring the quality of the treated water. Several initiatives defined by Veolia experts have been undertaken and are proposed:

- to improve water reuse: cleaning the biological tank, increasing the frequency of cleaning the filtrate tank, injecting biocide or automating the RO CIPs, adding a third RO line, 1mm screen after DAF, etc.,
- to save energy: PV-panels on the roof of the WWTP building to cover part of the plant's electricity consumption or recording of the energy consumption of large consumers (blowers, high pressure pumps, etc.), which makes it possible to anticipate equipment replacement.

BENEFITS

Since 2013, a significant amount of water has been recycled through the application of these new purification technologies. Not only the ground and tap water usage has been reduced but also has the level of water discharge to the municipal wastewater treatment plant, reducing organic and hydraulic taxes.
Last but not least, the increase of available water supply has contributed to FrieslandCampina's efforts to extend their production capacity by 75% from 2011 to 2016.

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