

Phoenix from the ashes

ALPMA/LTH takes part in equipping the expansion of the Gerkesklooster cheese plant

FrieslandCampina has installed a brand new RO plant for whey concentration at the Gerkesklooster cheese factory in the Netherlands. This plant that may very well be Europe's largest RO plant of its kind was supplied by ALPMA/LTH. IDM had the chance to have a closer look to the installation.

"The fire that devastated the Gerkesklooster plant in 2014 initiated a complete re-thinking of FrieslandCampina's specialty cheese making. It was decided not only to re-build Gerkesklooster but to bring it to almost double of the initial capacity", explains Roef van Duin, Director Supply Chain in the Dairy Essentials division of FrieslandCampina.

Expanding a plant by doubling its annual capacity requires that all peripheral installations, including whey processing have to grow in size. Thus, FrieslandCampina had to look out for a supplier to equip the cheese plant with sufficient capacities to manage a substantial flow of whey.

Listening to the customer

"We initially approached four equipment suppliers and found that there are companies out there who have insufficient knowledge in whey concentration but nevertheless claim to be able to supply. And there are companies who only work according to their very own standards and are not at all prepared to engage in a real conversation with a customer. However, we found a partner with ALPMA who brought a lot of knowledge into negotiations right from the start and who was also open for accepting a customer's point of view", says Henk Jonkman who is Chief Engineer of the RO project in Gerkesklooster.

FrieslandCampina awarded ALPMA/LTH with the supply of the huge RO plant type ALPMA RO HighTS in 2016. Installation was ready in August 2017 and March 2018 marked the start of the production. The rather large time-gap between order and start-up was due to the fact that the Gerkesklooster plant had to be completely reshaped and equipment had to be moved to new places inside the factory. All works incl. the installation of a large new semi-hard cheese making plant had to be done without stopping cheese production.



The Gerkesklooster RO plant type ALPMA RO HighTS has a membrane surface of over 10,000 sqm (photo: IDM)



Plant Manager Sybram van Beem, Supply Chain Director Roef van Duin, Chief Engineer Henk Jonkman and Wietze Jongsma (from left) are seemingly satisfied with the cooperation of ALPMA and FrieslandCampina during installation of Europe's largest RO plant for whey concentration at the Gerkesklooster cheese dairy (photo: IDM)

The space that was reserved for the new RO concentration line posed a challenge of itself as a plant capable of accepting 120 m³ of whey per hour had to be positioned in a room measuring only 30 by 8 meters. Looking at the details, the challenge becomes even more evident: there are 11 concentration stages with a total membrane surface of over 10,000 sqm arranged in a 18 x 9 x 3 meter installation. And there had to be made space for a separate quite large air conditioned room next to the RO plant that houses all the necessary electrical cabinets.

Turn-key installation

The ALPMA/LTH RO plant is fed at an average of 105 m³ of whey/hr that is separated into 98.85 m³ of permeate, that is to say pure water, and 16.15 m³ of concentrate with a dry matter of approx. 25%. The plant was designed to run 20 hrs a day with a 4 hrs CIP process added. The membranes are made by Dow

Chemicals with the exception of the last concentration stage, no. 11, where the membranes come from Hydronautics, thanks to the R&D department of FrieslandCampina who insisted out of various reasons for a separate membrane manufacturer. Even though ALPMA/LTH has much more in-deep knowledge in the use of Dow membranes, they were able to respect FrieslandCampina's wishes. As a special service, ALPMA/LTH keep membranes on stock to be able to help out customers in case of emergency. This is especially important as membrane manufacturers work with a 6-months delivery period these days.

The RO plant is equipped with 150 valves made by Bardianni, a supplier that has established itself as a standard in the Dutch food and beverage industry. The pumps come from Alfa Laval. The new RO plant is the only turn-key installation in the expansion of the Gerkesklooster cheese factory, all other projects and installations were managed by Friesland-

Campina. A major part of ALPMA/LTH's responsibility was automation. Both sides agreed on Dutch specialist Beenen to act as a solution sub-provider to ALPMA in this respect. All partners chose for Siemens Simatic S7 PLC as basis for automation. Working together with Diversy, ALPMA also supplied the necessary CIP equipment. All the engineering was done in close cooperation of Friesland-Campina and ALPMA.

As fresh as possible

The new RO concentration serves all the whey coming from the new cheese plant at Gerkesklooster. This cheese plant is built with open presses to collect as much fresh whey as fast as possible. The whey is fed into 5 tanks with a total capacity of 240 m³ while the concentrate waits in four tanks with a capacity of 250 m³ each for being pumped into about 15 road tankers a day who transport it to FrieslandCampina's whey processing facilities Borculo and DMV. When planning the new Gerkesklooster plant design, special care was taken to make sure that the whey enters further processing as fast as possible. The same applies to goat cheese whey as the Gerkesklooster cheese factory is also largest processor of goat's milk in the Netherlands.

The permeate flow which undergoes a two-stage polishing has the quality of fresh water and is used for feeding CIP and the steam boiler. This reduces the fresh water consumption of the Gerkesklooster cheese plant significantly.

Satisfaction for all

Sybram van Beem, Plant Manager at Gerkesklooster, resumes the RO pro-



Together with Diversy, ALPMA also supplied the CIP lines for the new RO plant (photo: IDM)



A single look onto the wiring shows how much care was taken during installation of the RO plant (photo: IDM)



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The whey concentrate made by the new RO plant is shipped to FrieslandCampina's processing facilities DMV and Borculo (photo: FrieslandCampina)

ject: "We found a partner in ALPMA/LTH who took our concerns seriously and who respected our requirements. Unlike other companies that give you the feeling that you talk to lawyers only, the conversation with ALPMA/LTH is at eye level from an engineer's perspective. Everything was executed according to our specs and together we managed to exercise it all in the given time frame".

Wietze Jongsma, Jongsma Engineering Solutions, who represents ALPMA/LTH in the Benelux region, points out that based on quality and customer-orientation ALPMA/LTH were able to supply about 10 large membrane separation projects within the past years, starting from a newcomer position in this market only six years ago. Both FrieslandCampina and ALPMA are seemingly satisfied with their cooperation in the Gerkesklooster project and it is likely that other similar projects are to follow.



A RO process requires substantial pressure that is built by a row of heavy pump equipment by Alfa Laval (photo: IDM)



Peripheral equipment such as sensors was supplied by renowned manufacturers such as Endress + Hauser (photo: IDM)



Automation was sub-contracted to Dutch specialist Beenen (photo: IDM)