

**LIFE03 ENV/NL/488**



## **Layman's report**

**October 2005**



**A dairy industry which is self-supporting in water**

**DOC Kaas Hoogeveen ba**

## Introduction

DOC Kaas Hoogeveen is a company with the experience of making cheese since 1896. At this moment around 1000 dairy farmers are member and supplier of the company. DOC Kaas Hoogeveen realises a turn over of approximately €270 million a year with 130 employees.

We are a co-operative association that meets its objectives by developing activities in the form of an enterprise. This enterprise is housed in Hoogeveen, where we make not only square and flat-cylindrical cheeses, but also secondary products, such as whey-products.



Our primary objective is to be a meaningful partner for our customers. This is the purpose of our existence. To this end, we make products with a constant quality that meet the needs and requirements of our customers. In doing this, we are distinguished by our flexible approach.

Awareness of the market is a crucial factor in achieving our task. It is what ensures the continuity of our enterprise and our capacity to continue paying a competitive price for milk. This serves the interests of both the milk suppliers and of our personnel.

## The project

Because DOC Kaas Hoogeveen wants to be cost leader concerning the production of cheese, we had to expand our factory. This wasn't possible at the old location at the Alteveerstraat (2,5 ha) Hoogeveen, therefore the company decided in 2001 to realise a Dairy Site of 18 ha outside Hoogeveen at Business Park Buitenvaart II. Next to a cheese and whey-powder factory, several cheese processing companies can settle their company on this site.

The first phase of the dairy factory is able to process 730.000 ton milk into 80.000 tons a year of cheese. The whey is processed into whey-products.

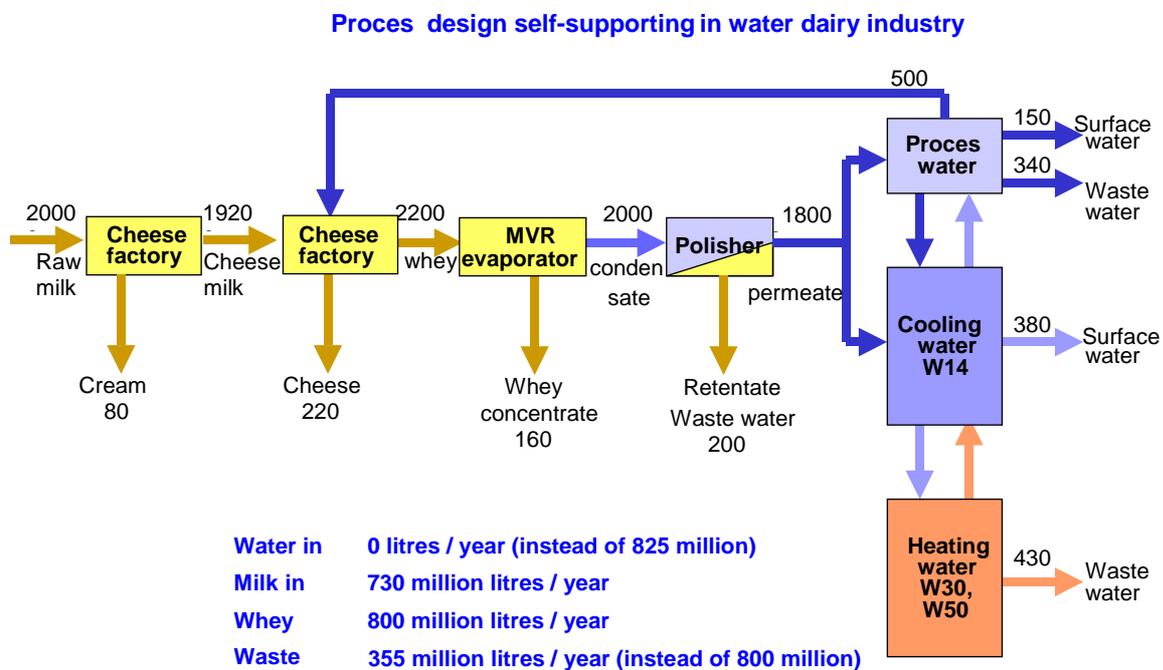
### The ambition

In contrast to conventional cheese factories, DOC Kaas Hoogeveen wants to be fully self-supporting in water! This means that it's no longer necessary to purchase drinking water and pumping-up groundwater, but using the water that is already present at milk.

Concerning a supply of 730.000 m<sup>3</sup> milk a year, making 80.000 tons of cheese and producing whey-products, a conventional cheese factory would take in from extern around 825.000 m<sup>3</sup> of water. DOC wants to reduce this amount to zero! Because of this the amount of wastewater will strongly, around 50%, be reduced. There won't be any ground water taken anymore, which could cause drying out the soil/surface.

### The solution

When making cheese, there arises whey water. With innovative techniques, such as evaporators, polisher, water buffers and a complex water management system, DOC will extract water from whey water and re-use this over and over again.



A very essential and difficult part in the design of this self-supporting in water project is to create a perfect balance in the divers water flows and temperatures needed all over the cheese and whey powder factory.

The last aspect in order to be self-supporting in water is creating our own drinking water. Because the water from the polisher isn't suitable as drinking water, a marble filter is necessary.

### **The realisation**

With the help of several advisors and suppliers of equipment, DOC Kaas Hoogeveen designed within the cheese- and powder factory a real water factory. The building and implementation of the evaporators, polisher, water buffers and the complex water management system, started in 2002 and at the end of 2004 the cheese and whey factory were running and processing cheese, whey products and of course water!

During the processing of cheese and whey products, several tests and measurements have been executed on quality and quantity of process water. Some daily tests have been executed automatically, other tests in case of quality of wastewater, have been executed by an external company.

### **The results**

We can conclude that DOC Kaas Hoogeveen already realised a reduction of 550 Million litres water, = 67% of the total potential (825 Million litres) of the first phase.

#### *More water needed than expected*

During the engineering DOC had to calculate/estimate the amount of water needed at several locations in the cheese and powder factory. At this moment we can conclude in general that DOC had expected less water to be needed because of the expansion. We were too optimistic about that.

Another important reason is caused by the production of WPC. DOC and VIRO expected the water use more or less the same as with the production of standard whey powder. It appears that the Ultra Filtration installation, necessary for processing WPC, needs much more water. Also an extra pasteurising step is necessary, which needs to be cleansed. Because the processing of two products, also extra storage (tanks) are necessary. All this equipment has to be cleansed, which needs water.

Next to this DOC produces for the Jewish community, therefore kosher products are demanded. To process kosher WPC's kosher whey is necessary. For this reason DOC processes cheese with chemical coagulant and drain water.

Figures: In our proposal we estimated 1.095.000 m<sup>3</sup>/year water taken in as drain water considering the situation after the second phase when 3700 m<sup>3</sup> milk/day will be processed.

Because more water is needed in the process, as explained above, this figure is higher: 1.525.000 m<sup>3</sup>/year. At this moment the supply of milk is around 2000 m<sup>3</sup>/day, corresponding a water use of 825.000 m<sup>3</sup>/year.

