Your company needs water of a specific quality and your demand for water is increasing. Is it worth that you invest in the construction, operation and maintenance of your own plant if this is not part of your core business?

north water

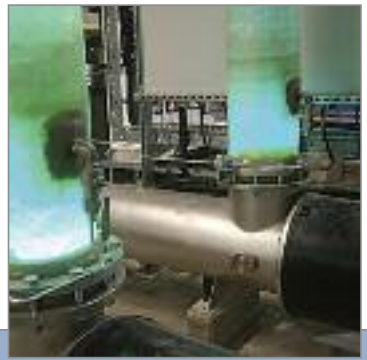
Sustainable purification of surface water for AVEBE

The cooperation AVEBE U.A. is a company that operates worldwide and produces products based on potato starch and potato protein. Various starch-based products are made at the Ter Apelkanaal plant in the province of Groningen in the Netherlands. The applications for these products include the production of food additives. Water plays an important role in the manufacture of these products. An increasing demand for water for the production of starch and the desire to improve quality, combined with the need to invest in well-water purification raised the following issue – should we build our own process water purification plant, or could we outsource it?

North Water provided the solution – the construction of a new sustainable process water purification plant at Ter Apelkanaal, as well as its operation and maintenance (the DBFO concept – Design Build Finance and Operate). This enabled AVEBE to focus on its core activities and to meet its water needs sustainably and at the lowest possible cost.

The outcome: high quality process water with many applications

The technology used by the new process-water purification plant was specifically developed for purifying surface water coming from the Stadskanaal. The process water produced has practically the same quality as normal drinking water. This high quality water is used for starch production, both for non-critical applications and for the production of starch for the foodstuffs industry. In addition it is used to supply the combined heat and power plant and steam turbines present on site.



The technical aspects of the design are based on fully automized operation capable of producing water 365 days per year, 24 hours per day for AVEBE's various operations. AVEBE is a seasonal company, which means that water consumption during the potato harvesting season is significantly higher than normal. The design takes into account these varying capacities.

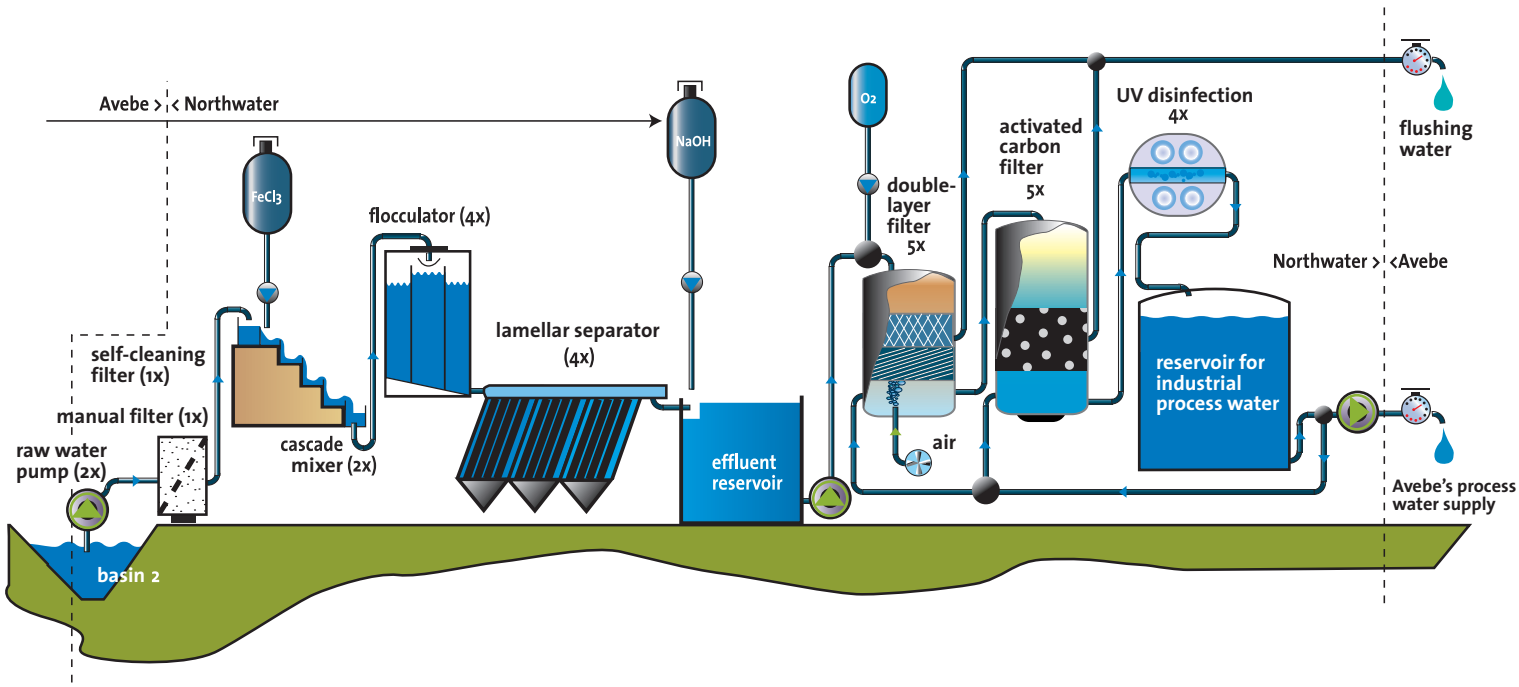
Process description

The process water is manufactured by treating surface water from the Stadskanaal. Following pre-screening a flocculant is added. The flocculation takes place in flocculators after which the flocs are removed in lamellar separators. This part of the process decreases the concentration of suspended particles, as well as that of organic compounds such as humic acids. The effluent from the lamellar separators is pumped through the following process steps: double-layer filters, activated carbon filters and UV reactors. Extra oxygen is injected into the water flow to the filters at the start of these processes, due to the high consumption of oxygen in the double-layer and activated carbon filters.

The closed double-layer filters remove residual flocs coming from the lamellar separators and provide nitrification and manganese removal. The activated carbon filters are also closed and remove micro-contaminations such as pesticides and herbicides as well as improving odour and taste. The UV reactors disinfect the water. Following these process steps the water is stored in two buffer tanks from which it is supplied to the various locations of the site. The waste sludge is partly removed to a waste treatment plant (AWZI) and partly processed in North Water's own dewatering installation using a decanter.

Process water quality

Parameter	Unit	Specification
Acidity	pH	6.9 – 9
Oxygen content	mg/l	> 5
Iron content	mg/l	< 0.05
Manganese content	mg/l	< 0.03
Turbidity	NTU	< 2
Colony count 22	CFU/l	< 100
Production capacity	M^3/hour	750



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