What should you do if the sustainable processing of (saline) wastewater at the lowest possible cost is not one of your company's core activities?

north water

Sustainable processing of wastewater:

Saline Wastewater Treatment Plant (SWWTP)

The direct discharge of unpurified (saline) wastewater into fresh surface water is no longer acceptable. Transporting this wastewater to a sewage water treatment plant (RWZI) is not always the optimum solution. Building and managing your own plant is too expensive and too complex. What other options are available? This question was concerning a number of companies located at the Oosterhorn industrial park - the harbour district close to Delfzijl in the Netherlands. North Water supplied the answer by constructing a saline wastewater treatment plant using the Design, Build, Finance & Operate (DBFO) concept.

This activated sludge plant has a capacity of 35,000 PU (Pollution Units) and if required this capacity can be increased. Because North Water takes care of the treatment of the wastewater the companies producing the waste discharges are relieved of all concerns.

From the discharge of contaminated water to the sustainable processing of wastewater

The harbour industrial park developer 'Groningen Seaports' has developed several industrial parks - Oosterhorn is one of them. Several companies at this industrial park discharged mainly saline wastewater into the surface water of the Zeehavenkanaal – ultimately, this was an environmentally undesirable situation. Therefore the treatment of most of these wastewater flows was necessary. Several companies decided to transport their industrial wastewater to the Weiwerd sewage water treatment plant (RWZI). Experience showed that, due to the high salt concentrations, it was best to treat this wastewater separately in a saline wastewater treatment plant (SWWTP). Therefore North Water decided to construct such a plant at the Oosterhorn site.

This provided the discharging companies with a number of substantial benefits:

- The companies did not have to invest in their own treatment plant and could outsource this non-core activity to a third party.
- The overall performance of treating the total mix is far better than treating each stream separately.
- The discharge to the environment is lowered which results in a higher sustainability of the industrial complex.
- The costs are lower because of lower investment (scale of economy) and lower overall operational costs.

Most of the companies at Oosterhorn industrial park are now connected to the treatment plant. The North Water plant is designed for growth, so that new companies can be connected in the future. The plant was commissioned in 2008 and now processes water from more than 30 companies.

Process description

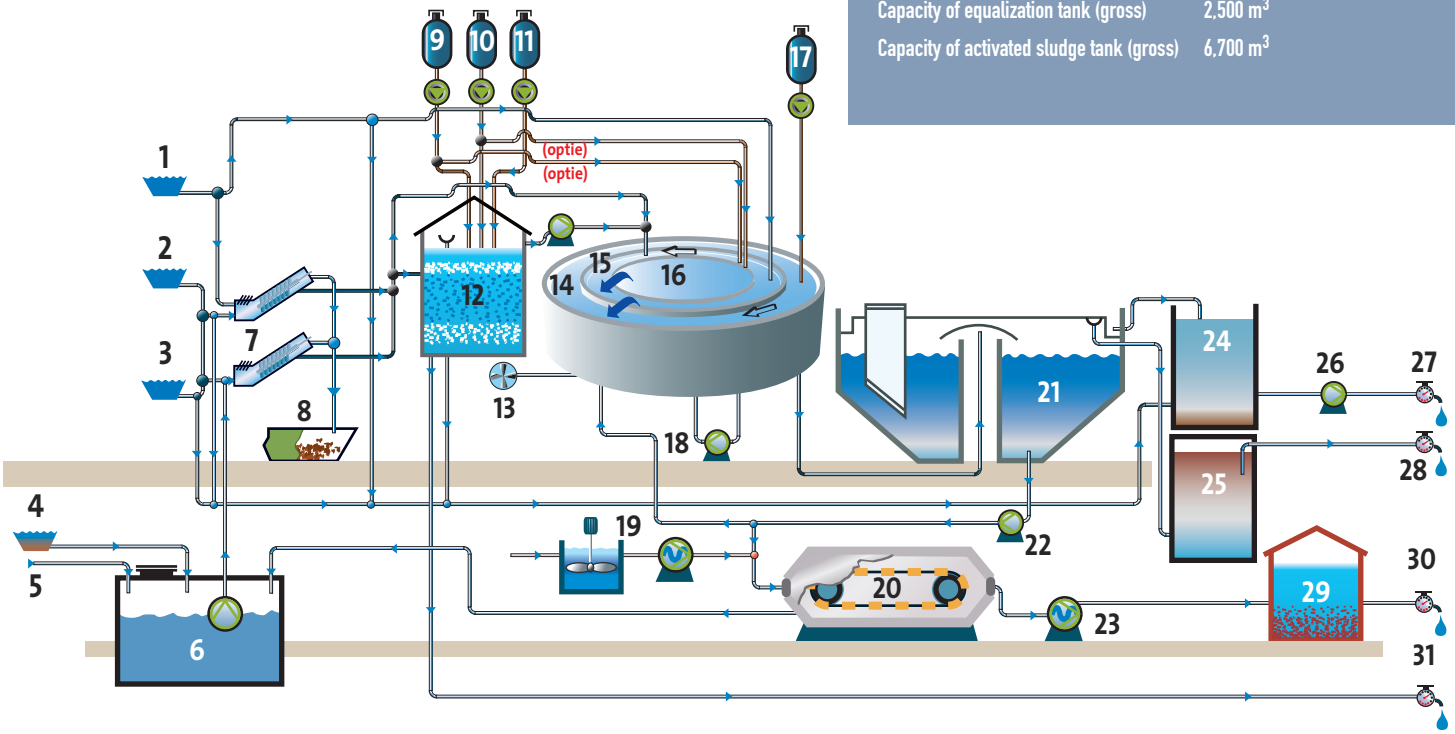
The water treatment plant is operated remotely and process data are registered and analysed centrally. Process engineers and technicians from North Water are responsible for the operation and maintenance, so that the effective performance of the process can always be guaranteed and the installation meets the relevant requirements of legal authorities.

'Save the Eems' award

The Saline Wastewater Treatment Plant, which uses biological treatment, reduces the discharge of the chemical industry park into the River Eems. It prevents the discharge of pollutants to the vulnerable Wadden Sea near Delfzijl. In 2009, as recognition for North Water's work towards a healthy River Eems, the Wadden Sea Society awarded us with the first 'Save the Eems' award for this treatment plant.

Purification data

Activated sludge system	35,000 PE (Pollution Equivalent)
Daily peak of contaminated water	60,000 PE
Hydraulic capacity	250 m^3/hour
Capacity of equalization tank (gross)	2,500 m^3
Capacity of activated sludge tank (gross)	6,700 m^3



1 influent other
2 influent west
3 influent east
4 drainage area
5 landings by truck
6 inlet works
7 screen
8 container
9 Caustic soda
10 Hydrochloric acid
11 nutrients
12 equalization / buffer tank
13 aerator
14 facultative zone
15 denitrification zone
16 Selector
17 poly aluminum chloride
18 recirculationpump
19 Poly electrolyt unit
20 dewatering belt
21 secondair settlingtank
22 returnsludge pump
23 sludge pump
24 effluent pit
25 scum removal pit (floting removal settling tank)
26 effluent pump
27 effluent discharge (Zeehavenkanaal)
28 scum removal by car
29 sludge buffer
30 sludge discharge by car
31 Calamity overflow

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North Water is a joint venture of Waterbedrijf Groningen and Evides Industriewater.