



Customer Hoogheemraadschap De Stichtse Rijnlanden

Location Utrecht, Netherlands

Startup April 2018

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Configuration Greenfield

Type Municipal

ADWF 76,271 m³/day

RWF 14,119 m³/day

Effluent Requirements

BOD ₅	< 20 mg/L limit
TSS	< 8 mg/L annual avg
TN	< 5 mg/L annual avg
TP	< 0.5 mg/L annual avg

Pre-treatment 6 mm screening; grit and FOG removal

Post-treatment Sand filtration (for DWF)

Sludge treatment Picket fence thickening;
Dewatering centrifuge

Utrecht WWTP

Description

Utrecht is the fourth-largest municipality in the Netherlands. It is the capital and most populous city of the province of Utrecht, located in the heart of mainland Netherlands, and has a population of approximately 375,000. The award-winning Utrecht plant is the largest Nereda plant constructed to date in the Netherlands.

The challenge

The city of Utrecht required an upgrade to replace the current outdated installation and to meet the more rigorous effluent demands placed upon it by an increased population. Two important effluent parameters for the project were for nitrogen (N total: 5 mg/l) and phosphate (P total: 0.5 mg/l).

The obsolete WWTP was originally built in 1959, where at the time it was located at the edge of the city. Due to its population growth, the city expanded, surrounding the plant by neighbourhoods. This limited expansion of the site and increased importance of an effective, odourless process.

The plant needed a considerable upgrade to meet the project requirements:

- Replacement of ageing infrastructure
- Compliance with new, strict discharge limits
- Located in urban environment with no room to expand

At a glance:



The solution

Following a public tender, in April 2016, the Dutch construction companies Heijmans and GMB were awarded the contract to build a new municipal wastewater treatment plant by water authority De Stichtse Rijnlanden. The €120 million project comprised the design, construction and 10-year maintenance of the plant. The contract was awarded based on its selection of Nereda technology to purify the municipal wastewater to meet the stringent effluent requirements within a compact plant. Construction work to rebuild it commenced in 2017. Owing to the Nereda technology's compact nature, it was possible to construct it on the limited space available alongside the existing plant. The original plant was an AB which has been replaced by six Nereda tanks. The old plant was removed from service once the new plant was commissioned, freeing up additional land on site to be repurposed into an educational nature feature for the community.

By selecting the Nereda technology, the customer was able to respond to the project objectives:

- Upgrading process performance to meet strict regulations of 5 mg/L TN and 0.5 mg/L TP
- Allowing for maintaining operations during construction by constructing on the small available plot
- Eliminating need for additional land acquisition or relocating the site

Result

Operational since 2018, the Nereda plant at Utrecht is the largest constructed so far in the Netherlands with a capacity of 430,000 P.E.

The new wastewater treatment plant treats the same capacity as the previous plant while achieving the following benefits:

- Two times the nitrogen and phosphorous removal
- 30% better energy efficiency
- 60% less footprint

The Utrecht WWTP was awarded "Wastewater Project of the Year" in 2018 by Global Water Intelligence and is host to numerous international delegations throughout the year.

About Nereda

Nereda technology purifies wastewater using the unique features of aerobic granular biomass.

This game-changing technology was invented by Delft University of Technology in the Netherlands and scaled up through a public-private partnership with Dutch Water Authorities and Royal HaskoningDHV. It is now a proven and award-winning technology, which was designated as the top Breakthrough Technology of the preceding decade by Global Water Intelligence in 2020. The technology is widely applied across the globe to serve societies and industries with cost-effective and sustainable wastewater treatment for any flow range and treatment objective.

For more information on Nereda, visit: nereda.royalhaskoningdhv.com