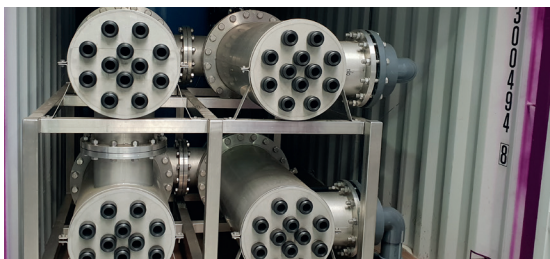


## Reference case

### Removal of pharmaceuticals from waste water treatment plant

#### The background

Increasing numbers of pesticides and other micro pollutants enter our water cycle with our waste water. While greenhouses, hospitals and industries are getting more and more focussed on the possible environmental impact they have the biggest "polluter" is often overlooked. The large majority of the micro pollutants >85% we find in our surface water comes from us, well-meaning humans with the best intentions using a painkiller or cosmetics at home. The good thing is that all this water, even from the industry, hospitals and greenhouses, comes together in one point; the sewage water treatment plant. This is a very important position to treat this water since these plants also use many forms of biology which can grow resistance to the micro pollutants found in this water adding to the problem. WHO predicts that in 2050 antibiotic resistance will be a bigger threat to humanity's health than cancer is now. This makes sewage water treatment plants the most critical, but also the most efficient place to remove these pharmaceuticals.



#### The case

Waterboard Aa & Maas wanted to demonstrate the possibilities of new technologies on the removal of micro pollutants in one of their national hotspot sewage water treatment plants. Van Remmens Advanox™ technology was tested in comparison with Ozonation for the removal of micro pollutant on their treated effluent. This highly publicised project was the first on that scale using Advanced Oxidation on treated sewage water in The Netherlands.

#### Facts

**Contractor**

Waterschap Aa & Maas,  
RWZI

**Location**

The Netherlands,  
Aarle-Rixtel

**Purpose**

Removal of pharmaceuticals from drinking water

**Solution**

Advanox™ Precision

## The solution

Van Remmen UV Technology together with Jotem Waterbehandeling BV developed a containerised Advanox™ unit to demonstrate in this project. This containerised unit contained everything to remotely operate and test the Advanox™ technology on-site at capacities from 10-100m<sup>3</sup>/h.

## Results

The system was tested successfully over a time period of almost a year with multiple optimisations, adaptations and in the end with an added downscaled version to further investigate the synergy with possible pre-treatment. Removal efficiencies of >80% were reliably attained and a strong interaction with the relatively low transmittance of the effluent was investigated and optimised.



## Customer quote:

*Maarten Nederlof, Waterschap Aa & Maas: "We have experienced the collaboration with Van Remmen UV Technology as very constructive; the lines are short due to the relatively small size of the company. The company distinguishes itself in innovativeness through the input of the latest developments in the UV field and flexibility through adaptation of the installation during the test installation. For us, the high energy consumption of UV technology is a point for attention, and this appears to be strongly related to the low transmittance of our waste water. In the final phase of the research, we looked at whether we can increase this transmittance with pre-treatment."*