nijhuis

# Water-efficient solutions for buildings

#missionwater

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part of saur mission water

# ( Water, an essential resource )

## Complying with regulations | Reducing costs | Removing pollution | Re-using water | Recovering valuable resources


Water is one of our most precious resources. Yet, in many parts of the world, the supply of drinking water is no longer guaranteed. Groundwater levels are decreasing, central water treatment plants are under pressure due to urbanization, and heavy rainfall leads to flooding and sewer overflows. This not only causes environmental problems but also increases water management costs.

At Nijhuis Saur Industries (NSI), we understand the growing need for decentralized water treatment. By treating water locally, we help businesses and communities comply with environmental regulations, reduce costs, and simultaneously recover valuable resources.

## The challenges


- **Water scarcity:** In some regions, groundwater levels are extremely low, making the supply of drinking water uncertain.
- **Pressure on water infrastructure:** Urban expansions with high-rise buildings and additional housing units put central water treatment facilities under strain, and building new infrastructure is costly.
- **Sewer system overload:** Heavy rainfall leads to sewer overflows, causing untreated water to flow into rivers.
- **Industrial and commercial water usage:** In multi-tenant business complexes and stadiums, such as Gillette Stadium in the US, peak water demand is so high that the existing infrastructure cannot handle it. Additionally, toilets are often flushed with clean drinking water, even though more sustainable alternatives exist.

## Our solution

To tackle these challenges, we offer innovative technologies that help:

- Reduce water consumption and costs;
- Reuse water wherever possible;
- Recover valuable resources, such as energy and raw materials;
- Minimize the ecological footprint of water usage.

Our mission is to be a guardian of water, ensuring that governments, businesses, citizens, and NGOs recognize the true value of water. We develop new solutions to encourage water conservation, reduce pollution, and build a resilient future.

We call this **#missionwater.**

# The growing challenge of water scarcity

## Why is local treatment essential?

**Water scarcity is becoming an increasingly urgent issue, especially in urban areas and industrial zones where demand continues to rise due to population growth and real estate development. With global water shortages threatening sustainable growth, decentralized water treatment provides a crucial solution for buildings, residential areas, and industrial sites to achieve water conservation.**

1. **Water consumption in buildings and industries**
   Een gemiddeld commercieel of residentieel gebouw kan dagelijks tussen de 100 en 500 m³ water verbruiken, afhankelijk van de bezetting en het gebruik. Industrieterreinen hebben vaak nog grotere waterbehoeften, waardoor lokaal waterhergebruik en zuivering essentieel worden voor de toekomstbestendigheid.

2. **Water composition: reusing grey water and black water**
   NSI treats both grey and black water to make it reusable:
   **a Grey water:** Originating from showers, washing machines, and sinks. This water contains relatively low levels of contamination and can easily be reused for purposes such as toilet flushing or irrigation.
   **b Black water:** Derived from toilets and industrial processes. It contains high concentrations of organic material and nitrogen, requiring advanced treatment technologies.

3. **Sustainable water strategy: aiming for 100-liter households and water-efficient industrial sites**
   Innovative water reuse systems enable the development of 100-liter households. Industries can close their water loops and recover energy from water flows.

**Types of water:**
- Grey water
- Black water

**Key water streams:**
- Local water extraction and reuse
- Decentralized black water treatment
- Sanitary water treatment

# Your challenges and our innovative solutions

## The expertise of Nijhuis Saur Industries

**With our global expertise, Nijhuis Saur Industries supports a wide range of clients with innovative solutions for local water treatment. Our in-depth knowledge and years of experience enable us to equip buildings, industrial sites, and other locations with efficient and sustainable water treatment systems.**

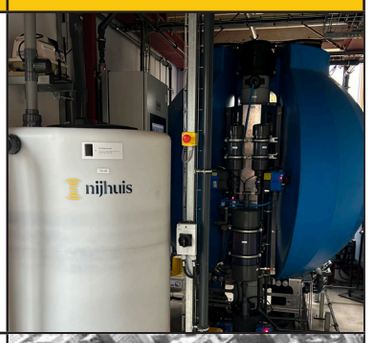
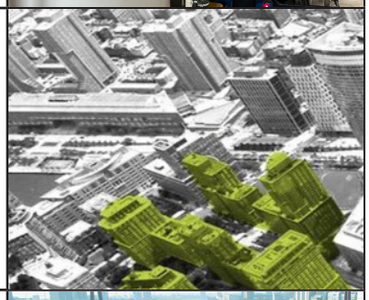
The increasing pressure on drinking water utilities to guarantee supply makes water availability a growing challenge. Our decentralized treatment systems reduce dependence on external suppliers and ensure sustainable water reuse.

We take pride in projects such as Strandpark de Zeeuwse Kust, BlueCity, Heuvelstraat, Battery Park, and Gillette Stadium. Our technologies provide comprehensive solutions for water treatment, reuse, and tailored applications to meet diverse needs.

## Flowchart

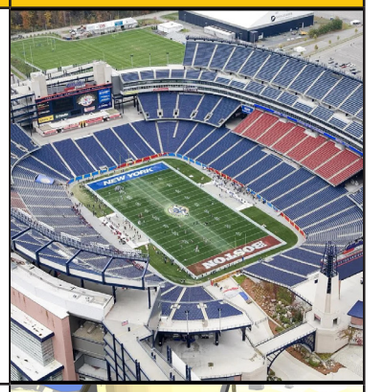
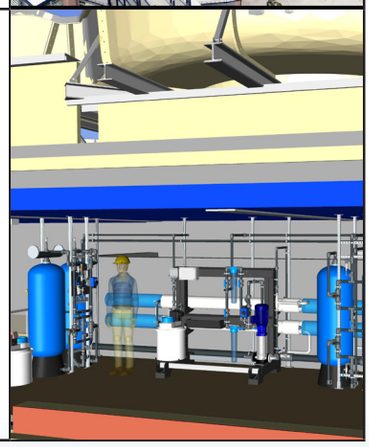
# Your challenges and our innovative solutions

## Solutions for water conservation

| CHALLENGE | SOLUTION | BENEFIT | REFERENCE EXAMPLE |
|---|---|---|---|
| **Water shortage in Achterhoek (Heuvelstraat, the Netherlands)**<br><br>Due to low groundwater levels, the drinking water supply in the Achterhoek region is under pressure. Traditional water purification and drainage methods do not provide a sustainable solution. | In Heuvelstraat, various solutions are applied to save water. Rainwater is collected and converted into drinking water. Shower water is reused as toilet flushing water, and purified wastewater is repurposed for soil infiltration and composting. | **100% Water conservation**<br><br>Rainwater is used twice and then returned to the soil. This reduces dependence on external water resources and prevents wastewater discharge into central treatment plants. |  |
| **Battery Park: smart water management for a sustainable city**<br><br>Heavy rainfall overloads sewers and water treatment plants, leading to flooding and river pollution. | A membrane bioreactor provides an efficient solution for water conservation by treating black water so it can be reused for toilet flushing, cooling, and irrigation. Additionally, heat can optionally be recovered. | **85% Water savings**<br><br>By reducing sewer load, more space remains for rainwater, preventing flooding and improving the efficiency of central water treatment. |  |
| **BlueCity: sustainable water management for urban growth**<br><br>New high-rise buildings and additional housing put pressure on water treatment plants and lead to increased drinking water consumption. In particular, office buildings use excessive drinking water for toilet flushing. | To conserve water, rainwater is purified and used for toilet flushing, while black water is reused for fertilizers and compost. | **40% Less Drinking Water Consumption**<br><br>By treating water locally, drinking water demand decreases, reducing pressure on treatment plants and facilitating new construction projects. |  |

# Your challenges and our innovative solutions

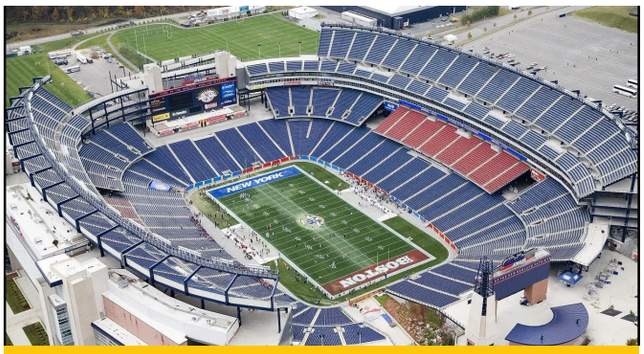
## Solutions for water conservation

| CHALLENGE | SOLUTION | BENEFIT | REFERENCE EXAMPLE |
|---|---|---|---|
| **Gillette Stadium: sustainable water management for a stadium**<br><br>During the construction of Gillette Stadium, it became clear that the water demand on game days exceeded the capacity of Foxborough. The municipal water treatment facility could not handle the peak load, requiring an innovative solution. | A membrane bioreactor, combined with ozone and UV treatment purifies 940,000 liters of water per day for reuse in toilets, cooling systems, and other applications. Water conservation measures, such as infiltration fields under parking lots, enhance the system's sustainability and contribute to more efficient water management. | **50% Less drinking water consumption & zero discharge**<br><br>The system has reduced drinking water use by 50% and completely eliminated water discharge. For twenty years, the stadium has operated without burdening the local water supply, making it a sustainability icon for the region. |  |
| **Sustainable water management for recreation**<br><br>Water disposal costs are high and, during droughts, maintaining sufficient water pressure is challenging. When expanding the park, ensuring a reliable drinking water supply is uncertain. Additionally, the industry is increasingly critical of using clean drinking water for toilet flushing when more sustainable alternatives exist. | To conserve water, shower water is biologically treated with membrane technology for reuse. Pool water is filtered, biologically purified, and further cleaned through reverse osmosis before being reused. Additionally, heat is recovered from the pool water, contributing to energy efficiency. | **35% Water savings in bathhouse, 10% less drinking water use in the pool, and 3% energy savings**<br><br>With this approach, Strandpark De Zeeuwse Kust takes a sustainable step towards future-proof recreation. |  |

# References


**Heuvelstraat, Silvolde (Netherlands)**
Solution: Rainwater harvesting, drinking water production, reuse of shower water, purification of wastewater for infiltration water and compost.

**Battery Park, New York (U.S.)**
Solution: Black water treatment, membrane bioreactor, reuse as flushing, cooling tower, and irrigation water, optional heat recovery.




**Gillette Stadium, Foxborough (U.S.)**
Solution: Water reuse at Gillette Stadium, membrane bioreactor with ozone & UV treatment, infiltration fields, reuse for toilets & cooling.

**BlueCity, Rotterdam (Netherlands)**
Solution: Rainwater harvesting and purification for toilet flushing, black water treatment with fertilizer and compost production (experimental).

**Strandpark de Zeeuwse Kust, Noordwelle (Netherlands)**
Solution: Reuse of shower and pool water through biological treatment, membrane technology, sand filtration, reverse osmosis, and remineralization, with heat recovery from pool water.

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