

Technology for Water



ENVIROCHEMIE

Reusing water sustainably

Treatment concepts for industry

Reusing water

From challenge to opportunity...

With water shortages a growing problem, water reuse is becoming ever more important for businesses – securing the availability of water for company sites, helping to save costs, minimising the amount of wastewater generated, and contributing to achieving sustainability goals.

Industrial water reuse reduces your financial and environmental burdens. Transform wastewater into a valuable resource.

The reasons for water reuse are clear:



Mitigate regional water shortages

Secure the supply of fresh water for your production processes by reusing water. Achieve a predictable water supply.



Cut costs

Reduce your consumption of fresh water and your wastewater generation. Adjust the water quality of the treated water to suit the specific application (fit-for-purpose).



Comply with statutory requirements

With innovative water conditioning solutions, you can meet the most stringent of water quality requirements. For new plants (greenfield projects), water reuse or wastewater reduction is required.



Avoid production bottlenecks

Avoid problems with fresh water supply or wastewater disposal when expanding production.



Promote sustainability

Water reuse contributes to achieving environmental and social (ESG) goals, as well as reducing the burden on local water networks and public wastewater infrastructure.

Reusing water

Sustainable and cost-effective

A well-founded water management concept is essential for sustainable and resource-efficient water use. We take a holistic view of the potential water sources and consumers in your plant and develop a water management concept for you that saves resources and costs. Water-intensive processes and relevant water streams are recorded and analysed, and specific usage targets are taken into account.

EnviCheck – Water Footprint Optimisation

We work with you to develop the ideal solution for water reuse, including a cost estimate. The following options are being evaluated and prioritized:



- **Reducing water consumption**
- **Direct recirculation**
- **Separate pre-treatment of partial streams**
- **Water reuse as an end-of-pipe solution**
- **Minimal or zero liquid discharge**

We use the general water management concept as a basis for developing optimisation and treatment concepts, keeping them cost-effective and sustainable by selecting the right procedures, optimising processes and using digital solutions.



Reusing water

In partnership with EnviroChemie

We are your partner in overcoming the challenges of water reuse for your business. Together, we will shape the future of your water management – efficient, reliable and sustainable.

Water reuse requires bespoke solutions that are tailored to the specific requirements and constraints of your business.

Careful planning and implementation are key to minimising risks and achieving sustainable results.

We support you in identifying and effectively managing technical, operational, financial and regulatory risks.



Advantages for you with EnviroChemie:

- A holistic approach: Consultation, planning, plant construction, operation, service, digitalisation and water treatment products, all from a single source. That minimises the number of interfaces.
- Technology-neutral approach: Your specific needs are our focus. We develop the right solutions for you, making use of our extensive range of processes: biological processes (Biomar®), chemical-physical processes (Enviochem®) and membrane technology (Envopur®).
- Bespoke solutions: We tailor water reuse solutions to your specific requirements regarding location, production, and water quality.
- Experience and expertise: Benefit from the years of experience our technology and industry experts have to offer.
- Concept validation: We validate complex solutions for water reuse in our own laboratories and technical centre to give you maximum planning reliability.

Treatment concepts

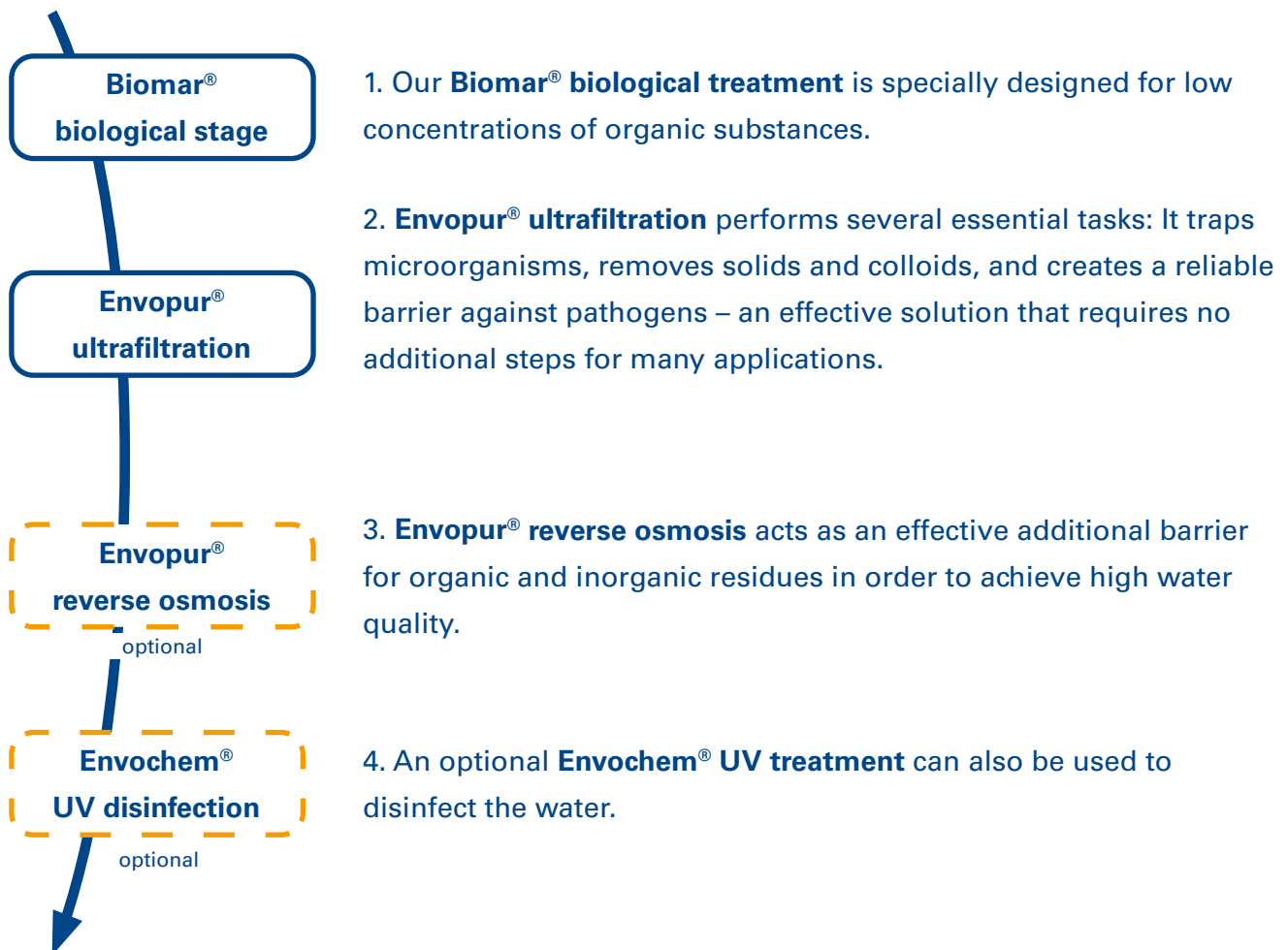
We tailor our treatment concepts for water reuse to your individual requirements. For typical tasks, we use tried-and-tested solutions and adapt them flexibly.

Multi-barrier concepts ensure that the water meets the highest microbiological quality standards – ideal for water reuse in food production, for example. Depending on the target quality, process stages for the treatment of ultra-pure water can be added.

All of our systems are highly automated to ensure maximum reliability and low operating costs.

Example treatment concepts

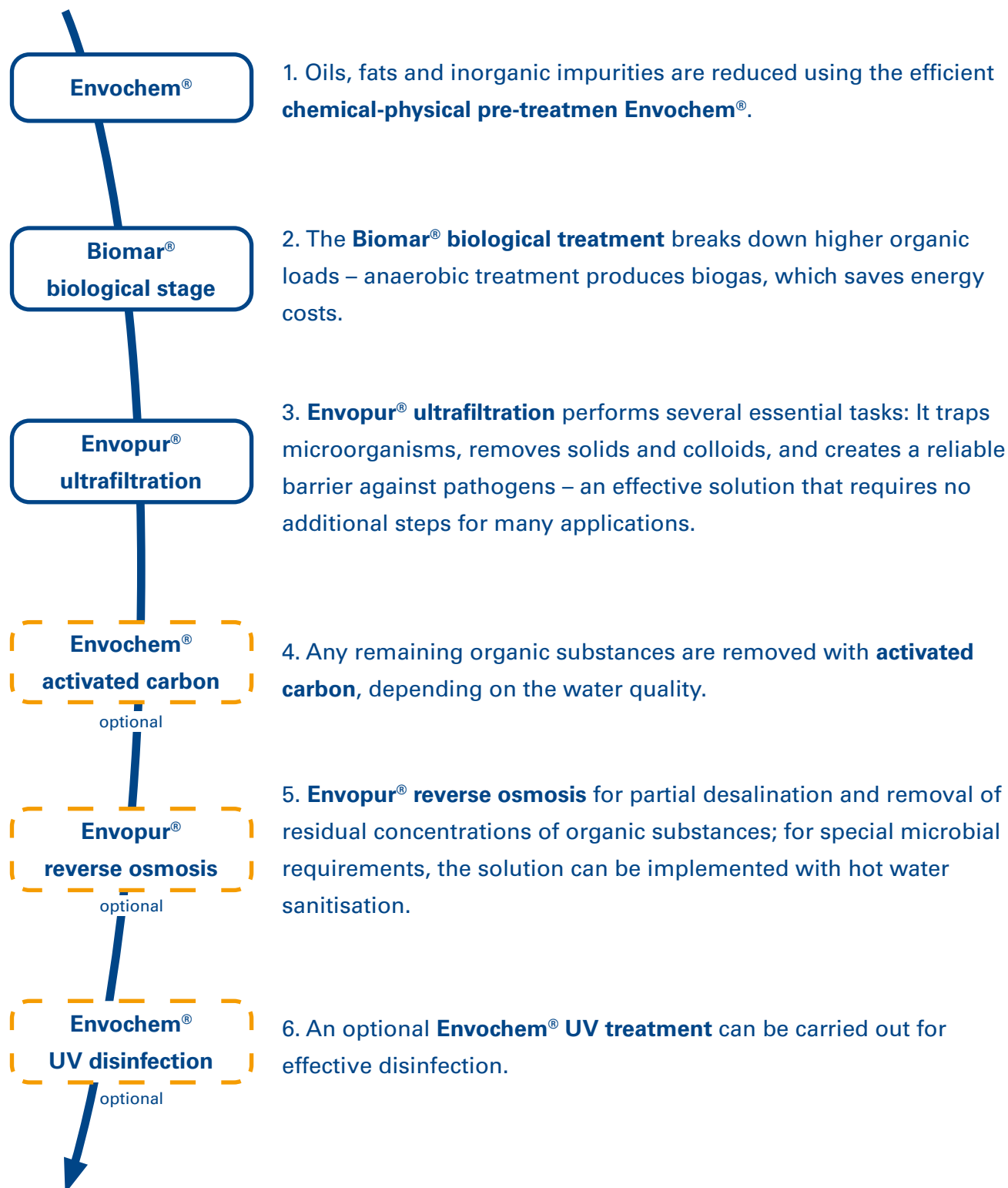
Process solution for water with low organic contamination



Reusing water

Treatment concepts

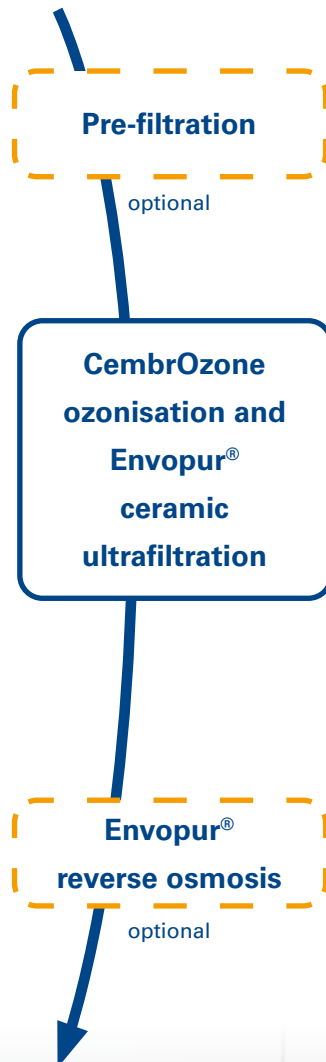
Process solution for water with high organic contamination



Reusing water

Treatment concepts

Process solution for wastewater with primarily inorganic contamination



1. **Pre-filtration** involves removing coarse particles from the water. This serves to optimise the subsequent ozonisation.

2. Our **CembrOzone ozone treatment** performs two essential functions: It continuously cleans and disinfects the ceramic ultrafiltration system and prevents membrane fouling – for stable and energy-saving operation.

The **Envopur® ceramic ultrafiltration** reliably removes solids, colloids and bacteria from the water and benefits from its resistance to ozone. Together with the ozone treatment, it forms an effective multi-barrier concept.

3. Depending on the specific water quality requirements, additional treatment steps may be necessary: **Envochem® ion exchangers** primarily remove heavy metals, while **Envopur® reverse osmosis** ensures that especially high purity requirements can be met.



Reusing water

Practical examples



Water reuse in food production at a German site

Challenge:

To comply with the approved discharge volume, despite expanding production and reducing costs.

Our approach:

- Operational management by EnviroChemie
- Expansion of the existing wastewater treatment plant to include an additional stage for water reuse.
- Filtration of pre-treated wastewater with ultrafiltration and reverse osmosis as well as UV and chlorine disinfection

The result:

- Up to 1,800 m³ of wastewater efficiently treated per day
- 40% of the treated wastewater is reused, ensuring compliance with the approved discharge volume
- 400,000 Nm³ biogas from wastewater used annually for heat generation
- Expansions and adjustments to the plant technology reduce total energy consumption by 55%
- Flexibility for future expansion



Reusing water

Practical examples

Water reuse in cosmetics manufacturing at the production site of a global corporation in Brazil

Challenge:

To implement sustainable and economical water management in view of growing water scarcity in Brazil.

Our approach:

- Analysis of all water and wastewater streams
- Development of concept based on lab and pilot tests
- Compact EnviModul design, made in Germany
- Biological treatment of wastewater with organic contamination
- Treatment of wastewater with inorganic contamination using reverse osmosis

The result:

- Up to 170 m³ of wastewater efficiently treated per day
- 90% of the wastewater is reused in production
- The production site is secure in the long term despite water scarcity
- Rapid installation thanks to pre-assembled and tested modules
- Flexible system concept with capacities of up to 100 m³/h and modular construction for easy expansion



Reusing water

Practical examples



Generating high-quality process water from urban wastewater

Challenge:

To reduce the burden on local drinking water resources by securing the supply of 1.1 million m³ of low-salt process water per year.

Our approach:

- Use of treated urban wastewater as an alternative water source for industrial consumers
- Treatment with a multi-barrier concept
- Installation of a modular water conditioning plant
- Adaptation of the non-potable water quality to industrial requirements (fit-for-purpose)

The result:

- More than 3,000 m³ of wastewater per day made available as process water
- Sustainable and economical use of urban wastewater for industrial processes
- Reduced burden on the local drinking water supply
- Protection of local groundwater reserves
- Flexible, modular system concept for future expansions



Reusing water

Practical examples

Reducing the water footprint of a dairy through vapour condensate treatment

Challenge:

To reduce fresh water consumption and streamline wastewater treatment while cutting costs

Our approach:

- Concept development and validation through pilot tests
- Pre-assembly at EnviroChemie's premises and implementation on site
- Treatment using biological processes, ultrafiltration and reverse osmosis, supplemented by UV disinfection

The result:

- Wastewater volume reduced by more than 85%
- Treatment of 1,000 m³ of water per day for use as rinsing water, cooling tower make-up water and boiler feed water
- Pilot and demo plant supplements the process with additional capacity
- Cost-effective water conditioning that is not dependent on fresh water prices
- Compact design of the treatment plant



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More information

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