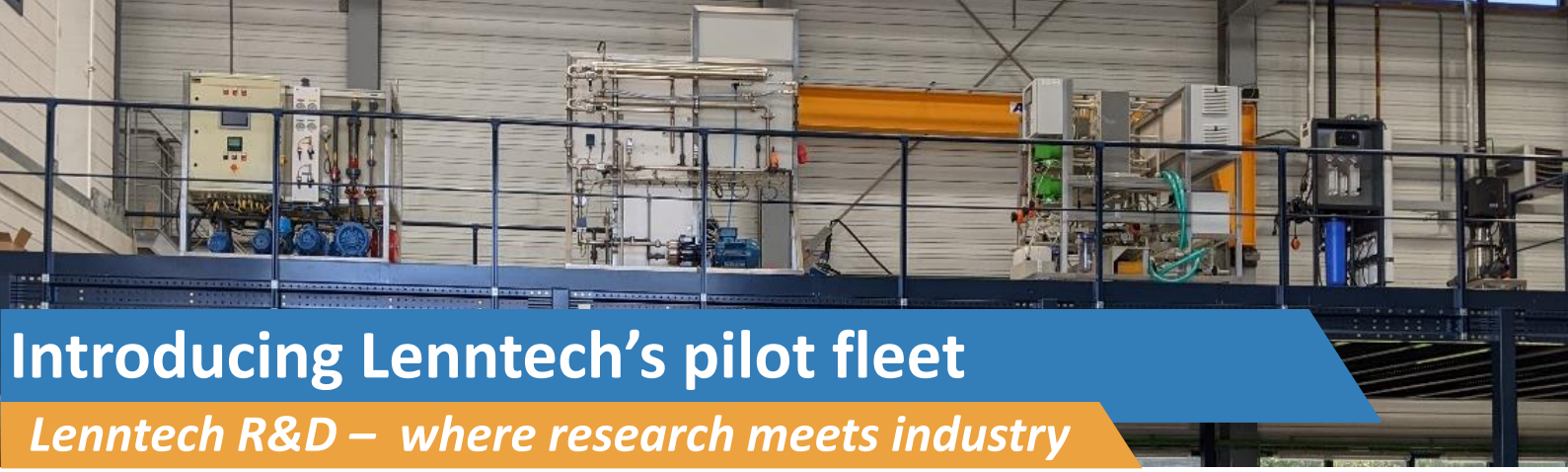
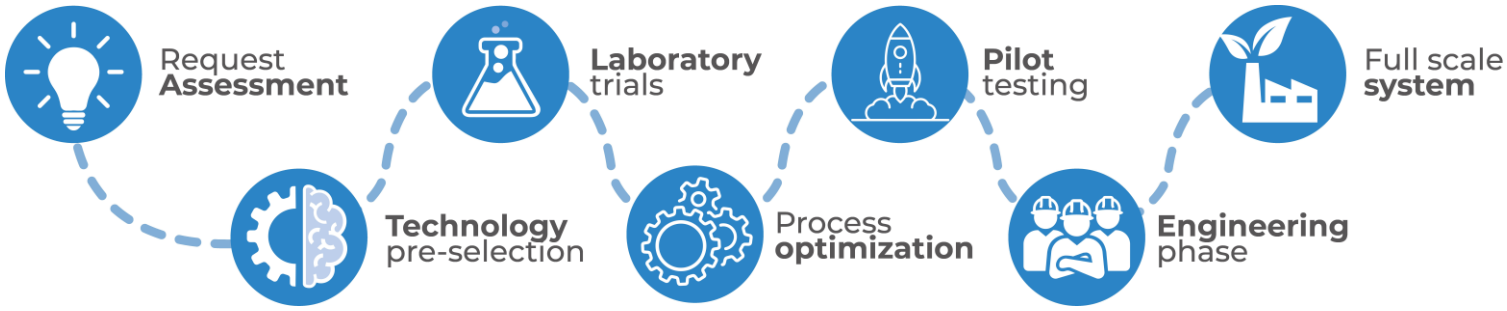


Introducing Lenntech's pilot fleet

Lenntech R&D – where research meets industry



Technologies

As a logical step before designing a reliable full-scale system, Lenntech can deliver a large range of (combined) **pilot technologies** for **long-term testing (1 - 6 m^3/h)**.

- Multi-media filtration
- Ultrafiltration
- (Ultra High Pressure) nanofiltration/reverse osmosis
- Closed-circuit reverse osmosis
- (Bipolar membrane) electrodialysis
- Electrocoagulation
- Ion Exchange

Applications

- Recovery of organics, minerals and metals
- Water recovery or water reuse
- Residual stream volume minimization
- Concentrating or separating solutes
- Production of chemicals

If you wish to **treat** or **valorize** an **industrial stream** with challenging targets, we can guide you through our options. We use the results to provide you with a **reliable** and **tailor-made full-scale design**.

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CHEMICAL PRODUCTION OF ACIDS AND BASES

Lenntech R&D – where research meets industry

INNOVATIVE

Thinking outside the box and combining conventional technology with unconventional ideas.

APPLIED

Adapting practical approach to target-oriented research to identify and **fill relevant gaps in industry.**

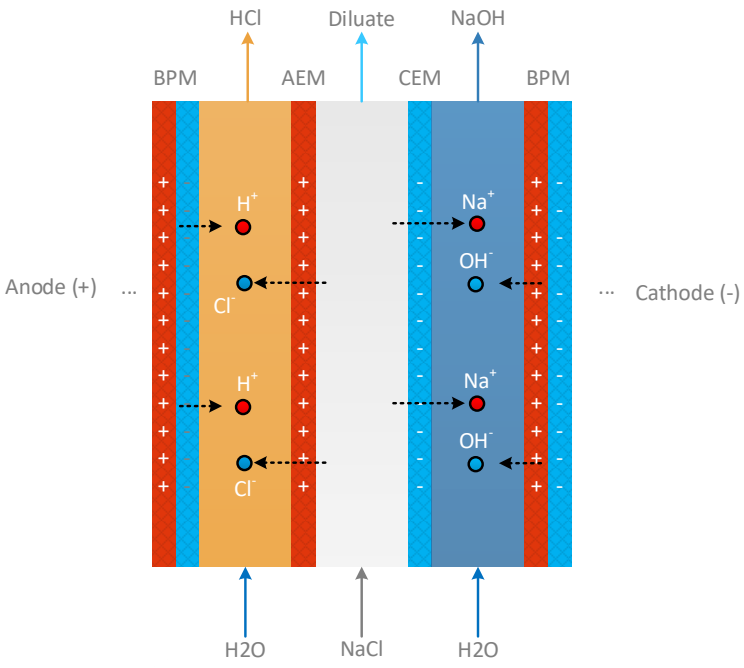
TAILOR MADE

Creating solutions for existing processes and **supporting process development.**

The chemical industry is striving towards a circular and climate-neutral economy with zero pollution, by adopting safer and sustainable chemicals in production processes. Lenntech is proactively backing the recycling of waste streams into valuable products, to support this pursuit.

Principle of BPMED

Bipolar membrane electrodialysis (BPMED) is a specific application of ED in which bipolar membranes are used to produce acids and bases from saline solutions.
Cation exchange membranes (CEM), anion exchange membranes (AEM) and bipolar membranes (BPM) can be variably arranged according to the production goal.
BPMs contain two layers with positive and negative charges. Once an electric potential is applied, water is dissociated into protons (H^+) and hydroxide ions (OH^-) within the BPM. Due to the arrangement of CEM and AEM, ions are transported or retained to form acid and base in separated chambers.
When considering an inorganic salt such as NaCl, the produced acid and base would be HCl and NaOH, respectively. It is also possible to convert organic salts to acid and base.



Applications

Industries that benefit from acids and caustic reuse from waste brine.

- Biofuel production
- Mining and Metallurgy
- Chemical manufacturing
- Chemical synthesis

LENNTECH
WATER TREATMENT SOLUTIONS