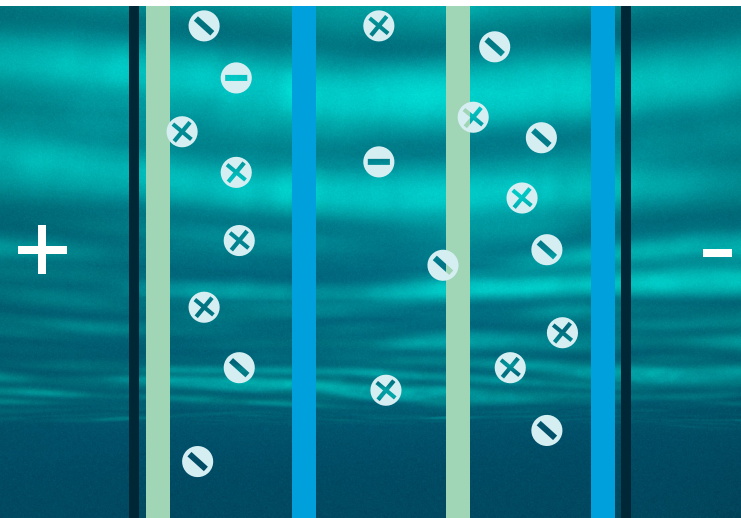


THE ELECTRODIALYSIS PROCESS



Salt in seawater takes the form of positive and negative ions. In Electrodialysis an electric current is applied, which forces these ions to move through ion exchange membranes. Unlike other desalination technologies, with Electrodialysis only the ions flow through the membranes. The desalinated water stays behind.

This has a number of benefits:

- Decreased energy consumption – which means lower CO2 emissions and less money spent on energy.
- Flexibility to work with variable energy input – which makes it suitable for combination with solar and wind energy
- With Electrodialysis the membranes stay cleaner for longer - which means a reduced amount of chemicals and energy are necessary to keep the membranes clean and efficient.



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10 PARTNERS



6 EUROPEAN COUNTRIES

**LOW-ENERGY
DESALINATION
FOR AFFORDABLE
AND ACCESSIBLE
FRESHWATER**

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SAFE WATER FROM BRACKISH SOURCES



The project designed a new small standalone desalination system for rural areas powered by solar energy. The electro dialysis system can treat brackish water of varying salinities. Various systems are operating in the field.

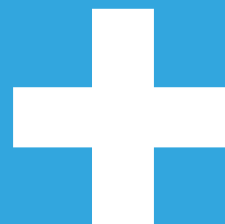
- 1 in Somaliland
- 1 in Tanzania
- 1 in Djibouti
- 2 in India
- 2 more systems will be installed in Africa.

The first of these systems was installed in Somaliland in March, 2018, and remains operational.

ELECTRODIALYSIS FOR SEAWATER DESALINATION

The latest innovations in ion exchange membranes allow the use of electro dialysis to desalinate seawater. The REvived water project went one step further, applying reverse electro dialysis (RED) as a pre-desalination step. This approach can be used when a low salinity water stream is available. In such cases, ions move naturally out of the seawater, reducing the desalination load on the main electro dialysis process, without the need for any energy input.

A multi-stage (R)ED unit was tested with real seawater at Afsluitdijk, the Netherlands, and is being scaled up to an industrial pilot unit capable of producing 25m³ of fresh water per day.



COMPATIBILITY WITH ESTABLISHED TECHNOLOGIES



Electro dialysis can also be added as a pre-desalination step to existing reverse osmosis systems, producing more drinking water from the same amount of seawater with less energy consumption, and at affordable costs. Since May 2019, an industrial-scale pilot plant in Burriana, Spain has been demonstrating this concept.

Co-located with the local wastewater treatment plant, the pilot desalination system also uses the RED pre-desalination step and is currently producing 25m³ of high-quality drinking water per day from seawater.

