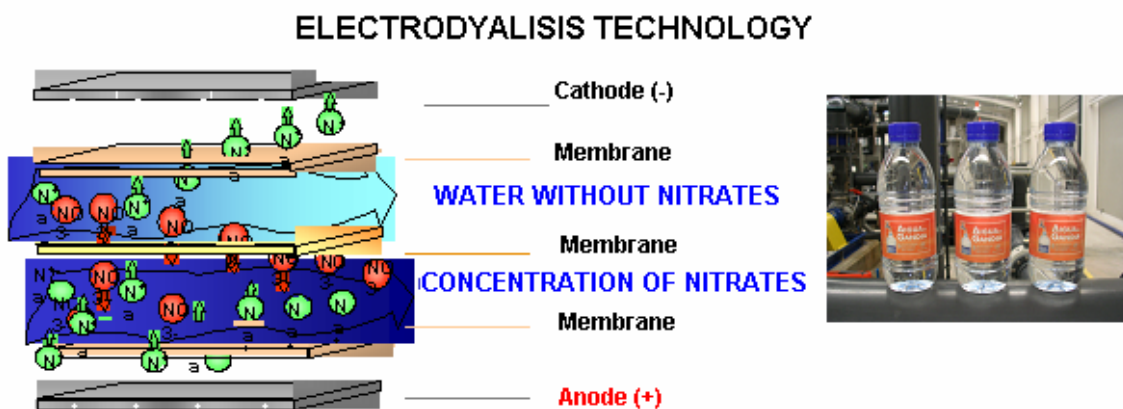


## DESALINATION

### REVERSIBLE ELECTRODYALYSIS (RED)

This is a desalination process in which electronically separated ions are transferred through a membrane from a less concentrated solution to a higher concentrated solution. This basic chemical reaction gives a continuous electrical current.

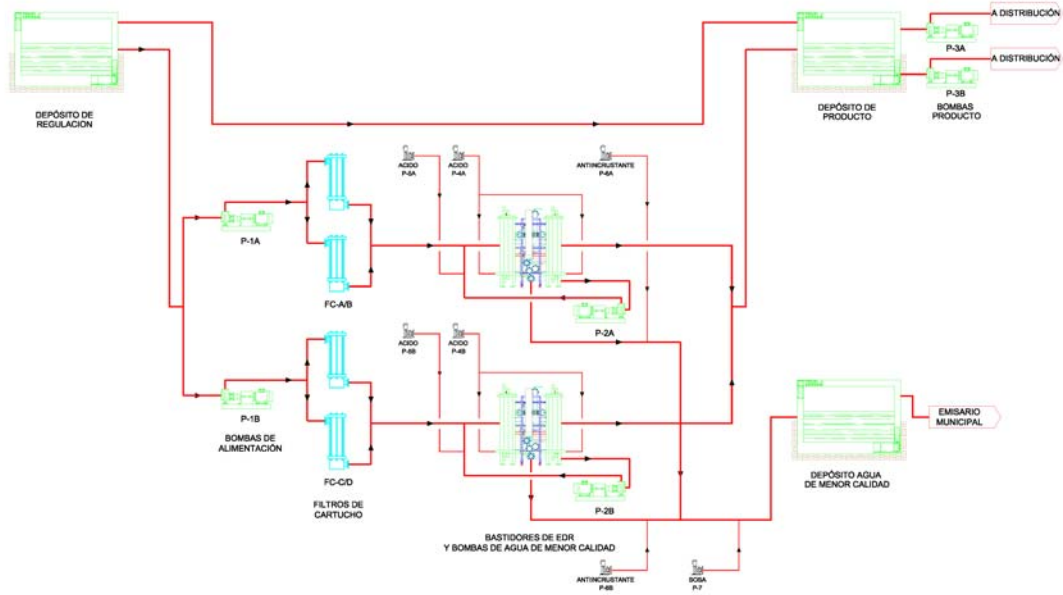
Reversible Electrolysis (RED) is a version of Electrolysis in which the poles of the electrodes are reversed several times per hour. This induces a chemical self-cleansing process. The process allows us to desalinate water sources obtaining high levels of recuperation (around 90%) with minimum pre-treatment and low operation costs (0.15 – 0.20 €/m<sup>3</sup>).



The core of the system, known as cell pair, is made up of two ionic exchange membranes, that selectively filter the transfer of cations and anions, and the spacers that separate the membranes and allow the water to be distributed over the same. The parallel accumulation of up to 600 cell pairs goes to make up what is known as a membrane stack. The netted spacer creates great turbulence through the membrane which eases the transference of ions from the feed water to the membrane surface and thus to the saline solution..

The RED employs direct electrical energy instead of pressurized energy; the ED membranes are impermeable; the consumption of energy is directly proportional to the amount of salts swirled; maximum salt swirl per stage is 40 - 50%; only electrically charged particles are swirled; if chemical products are required, they are not added to the desalination fluid but to the auxiliary saline solution circuit so that the amounts used are always inferior to those used in other systems; the cost of installation is usually greater than that for reverse osmosis and the operative costs usually lower for large plants





**LEYENDA**

- P1 A/B BOMBA ALIMENTACION 210 m<sup>3</sup>/h, 400 kPa.
- P2 A/B BOMBA RECIRCULACION DE AGUA DE MENOR CALIDAD 180 m<sup>3</sup>/h, 300 kPa.
- FC A/B/C/D FILTRO DE CARTUCHOS 40x40" AS3 3/16.
- P4 A/B BOMBA DOSIFICADORA ACIDO ELECTRODO 2.2-22 l/h.
- P5 A/B BOMBA DOSIFICADORA ACIDO A AGUA DE MENOR CALIDAD 2.2-22 l/h.
- P6 A/B BOMBA DOSIFICADORA HEXAMETAFOSFATO 1 - 10 l/h.
- P7 A/B BOMBA DOSIFICADORA SOSA, 95-950 l/h.
- P8 A/B BOMBA PRODUCTO 180m<sup>3</sup>/h, 500 kPa

**Diagrama de Proceso EDR  
Producción de 8.000 m<sup>3</sup>/día**