# Reuse of effluent or upgrading processflows by electrodialysis technologies

**Project:** CS-01-06
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**Partners:** Purac, NL GUTS, Cosun, DMV International, Huntsman, Nedmag
**Budget:** 50 K€
**Duration:** Successfully completed

## Incentive:

Separaration of effluent in reusable parts, such as water, salt, acid or lye.
Effective upgrading of process fluids without the use of chemicals.

## Objective:

- Desalting without chemical use
- Upgrading products
- Acid recovery

## Approach:

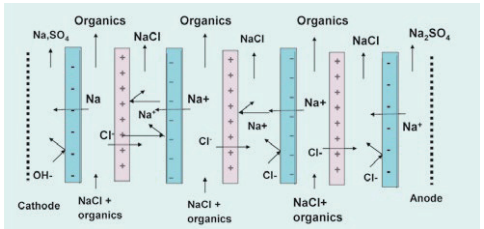
On labscale different separations are tested to find out the technological and economical feasibility of electrodialysis with or without bipolar membranes.

## Example of results

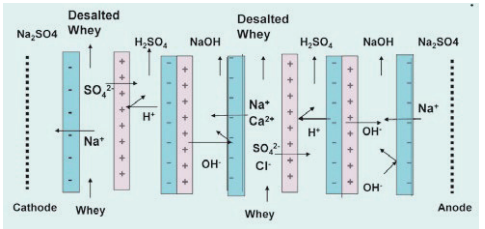
- **Salt removal with electrodialysis**
  Currently this organic product is desalted with ion exchange with high costs for chemicals and a salty waste stream. Present costs for this treatment are Eur 8/ton With electrodialysis abt. 80 % of the desalting can be achieved at costs of abt. Eur 2/ton

*Lab scale unit*

- **Acid recovery with bipolar membranes**
  From a process stream now the sulfuric acid is removed with calcium resulting in a calciumsulfate waste stream. With electrodialysis with bipolar membranes the sulfate can be removed as sulfuric acid and reused in the process.




*Salt removal with electrodialysis*




*Acid recovery with bipolar membranes*