

Fouling in reverse electrodialysis: study, monitoring, and control

REVERSE ELECTRODIALYSIS:

Salinity gradient energy consists in the generation of electricity from aqueous solutions with different salinities, like seawater and river water. Its technical potential worldwide is estimated at 23% of the global electricity consumption. Clean, renewable and sustainable.

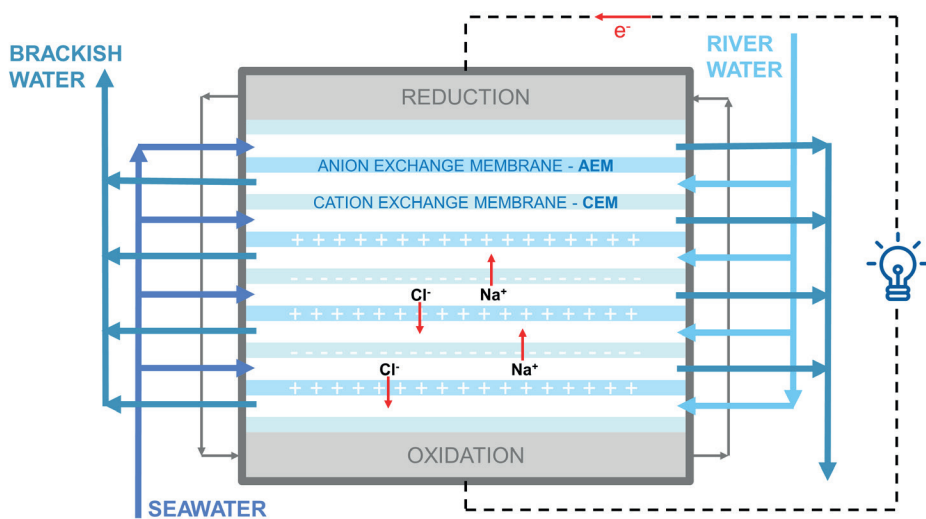
Reverse electrodialysis (RED) is one of the most developed technologies to harvest salinity gradient energy. It is based on the use of non-porous ion exchange membranes, enabling ion transport.

Technological challenge:

When using natural feedwaters to power RED stacks, undesired elements, like multivalent ions and natural organic matter, interact with the membranes, leading to fouling and reduced power output. Therefore, it is important to develop monitoring tools and process or material design-based techniques to limit fouling.

Research objectives:

- Study of organic and/or inorganic fouling;
- Characterization of new membranes;
- Fouling monitoring with novel electrochemical methods.



Requirements:

- Chemical engineering, materials engineering, environmental engineering or similar background;
- Experience with laboratory work;
- Good level of spoken and written English;
- Knowledge (beginner level) of Matlab is highly appreciated;
- Proficiency with MS Office suite.

Benefits:

- Wetsus offers a 175€/month allowance to students (only for applicants who do not receive Erasmus funding).
- If our research results in a publication, your name will be listed as a co-author.

Who can apply:

- EU citizens enrolled in any university;
- non-EU citizens already living in The Netherlands and enrolled in a Dutch university.

How to apply:

If you are interested in this project, send an email to: diego.pintossi@wetsus.nl (object: Student application for internship/thesis)

The following material is required:

- updated curriculum vitae;
- motivation letter (max 1 A4, Arial 11, specific to the project);
- transcript of records;
- if possible, an example of an English scientific writing assignment carried out in the past (report for previous internship, literature review, etc.).

Selection procedure:

1. Evaluation of CV and motivation letter.
2. Skype interview(s).

Starting date:

flexible, from January 2020 (min. 5 months).

Wetsus is a research centre located in Leeuwarden, the European capital of Water Technology. Here the inspiring and multidisciplinary collaboration between companies and research institutes from all over Europe results in innovations that contribute significantly to the solution of the global water problems.

You will be working in a new, innovative, dynamic, idea driven and future-directed environment. You will be able to put your mark on the development of new water technology. The unique characteristic of Wetsus is the multidisciplinary of its program.



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