

ADVANCES IN ENVIRONMENTAL RESEARCH

VOLUME 32

Justin A. Daniels
Editor

In: Advances in Environmental Research, Volume 32
Editor: Justin A. Daniels

ISBN: 978-1-63117-329-5
© 2014 Nova Science Publishers, Inc.

Chapter 10

DESALINATION OF BRACKISH WATER BY ELECTRODIALYSIS: EFFECTS OF OPERATIONAL PARAMETERS AND WATER COMPOSITION ON PROCESS EFFICIENCY

Mourad Ben Sik Ali, Amor Hafiane,*

Mahmoud Dhahbi and Béchir Hamrouni

Desalination and Water Treatment Research Unit, Chemistry Department,
Faculty of Sciences of Tunis, University of El Manar, Manar II, Tunisia
Engineering Preparatory Institute of Nabeul, University of Carthage,
Merazka, Nabeul, Tunisia
Water Researches and Technologies Center, Soliman, Tunisia

ABSTRACT

Electrodialysis is an electro-membrane process for separation of ions across charged membranes from one solution to another under the influence of an electrical potential difference used as a driving force. The transfer of the charged species is carried out according to a mechanism of exchanges of ions between the ions of the solution and the counter ions of the membrane.

This chapter is dealing with the effectiveness of the desalination of brackish water by this process. A laboratory scale electrodialysis cell was used for this purpose.

The desalination of brackish solutions containing only one salt according to the continuous mode (single pass process) was carried out initially. This study revealed that the effectiveness of the process is dependent on the operational parameters of the electrodialysis cell. But the rate of desalination is relatively weak. This rate does not exceed 50% and sometimes does not allow reaching the awaited results.

Study of another configuration was carried out. This configuration is the discontinuous mode or total recirculation mode (batch process). In this mode, the solutions are recycled in the cell until the desired concentration is reached. While

* Desalination and Water Treatment Research Unit, Chemistry Department, Faculty of Sciences of Tunis, 2092 Manar II, Tunisia. Email: mourad.bensikali@gmail.com.

Nice job!

This is a 320x50 test ad.

