

Effects of membrane fouling on operating parameters in reverse electrodialysis

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Reverse electrodialysis (RED) is an energy conversion technology from chemical mixing potential to an electrical potential by the difference between concentrated salt solutions (e.g., sea water) and diluted salt solutions (e.g., fresh water). The RED stack is comprised of an alternating arrangement of cation- and anion-exchange membranes between two electrodes. However, there are potential foulants in sea and river water to make the membranes fouled. Effects of this fouling on the membrane cause the reduction of the electrical potential. In this study, the influence of membrane fouling on the operating parameters in RED was investigated experimentally using various potential foulants (i.e., natural organic matters and divalent ions), and open circuit voltage, stack resistance, and power density were measured at different operation conditions.

This research was financially supported by the New and Renewable Energy of Korea Institute of Energy Technology Evaluation and Planning (KETEP) grant funded by the Korean government's Ministry of Trade, Industry and Energy (No. 20143030071240).