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Decreasing water resources and a comprehensive approach to seawater reverse osmosis (SWRO): Case study—Cost analysis of a sample SWRO system

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ABSTRACT

Water is used for a number of different purposes that are predicted to be affected by global warming. Good management of future water resources will become increasingly important as global warming takes its toll. The purpose of this study was to make a cost analysis of seawater desalination in Turkey for reverse osmosis systems, which would be filling a gap in the current literature. Investment costs, operating costs and total production costs of these systems were analyzed. Furthermore, the effects of varyingly priced consumption materials on operating and total production costs were determined. Due to the fact that energy costs constituted the greatest part of the operating costs (70%), the most discussed part of Seawater Reverse Osmosis systems, has been the energy recovery booster pumps. Thus leading to the utilization of energy recovery booster pumps as the decision criterion, as it was examined in detail in this study. It was concluded that implementation of the energy recovery system was beneficial both economically and environmentally.

Keywords: Desalination; Seawater reverse osmosis systems; Energy recovery; Cost analysis

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