



A design method of the RO system in reverse osmosis brackish water desalination plants (procedure)

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ABSTRACT

This study proposes a simple design method of the Reverse osmosis (RO) system in RO brackish water desalination plants. This method is based on the application of maximum available recovery without scaling of any of the compounds present in the water as silica, calcium carbonate, calcium sulfate, barium sulfate, strontium sulfate, and calcium fluoride, and membrane manufacturer design guidelines, and the plant production. Although the method was originally conceived for application to subterranean brackish waters in the Canary Islands, Spain (principally Gran Canaria, Fuerteventura and Tenerife), it can be extrapolated to other types of region and water treatable with RO systems. The required input data are the chemical composition of the feed water, pH, temperature, silt density index membrane manufacturer design guidelines, and the plant production. The programmed method then determines the design of the RO system. The method whose procedure is described graphically and analytically can be used as an aid in design optimization of RO brackish water desalination plants with acid-free pretreatment processes and only the use of scale inhibitor using spiral wound membranes. Practical applications are presented. The final results for different types of feed water and capacities are showed.

Keywords: Brackish water; Reverse osmosis; Desalination plants; RO system design

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