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Mathematical modeling of a desalination system

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Abstract

Given the urgent and growing need to address water scarcity in arid regions and the critical importance of careful planning and sustainable management of water resources to ensure positive long-term outcomes, Seawater desalination has become an industry, and like all industries, technological developments and the need for competitiveness are increasingly leading to the automation of production systems. In this paper, we study the operating system of a seawater treatment unit using reverse osmosis by presenting a new mathematical model. The model provides a comprehensive analysis, including an evaluation of the feasibility of the solution and the stability of the equilibrium points.

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