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Abstract

The profitability of a reverse osmosis application has been evaluated by using a well-known economic model based on experimental data, where additional operating costs were considered to represent a more realistic estimation. A calculation template was included to provide an easy-access to a preliminary economic evaluation of a specific membrane installation. The response of the model was checked with a real reverse osmosis application as this is the condensate recovery from a dairy ultra-high-temperature plant. A sensitivity analysis was performed to show the model behaviour when subjected to some process parameter fluctuations. The base case, which considers a design flow of 20 m³/h, produced a payback period of 3.3 years, being a cost-effective facility for the amortization period studied. The recovery rate proved to be a relevant parameter of influence in the economic viability of the process, as an increase of 20% produced an improvement of 48.6% in the net present value estimated.

Keywords

Membrane costs; Economic assessment; Dairy industry; Reverse Osmosis; Wastewater reclamation

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