



## Energy analysis of a seawater reverse osmosis desalination system for small marine vessels

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### ABSTRACT

Desalination in the marine world has always been one of the most widely used resources for obtaining fresh water. Its greatest disadvantage is energy consumption, which has led to many studies to investigate how to reduce it. This work presents the results obtained from analysing the energy consumption of a small-scale seawater reverse osmosis desalination plant and its application in small marine vessels. An artificial neural network model was applied to optimise the performance of the plant. For this research, different parameters have been considered, namely, the flow rate, pressure and conductivity of the water demanded in the vessel. In the experimental study, the optimal pressure points applied in the system are estimated to satisfy both the water quality and low energy consumption requirements.

*Keywords:* Desalination; Reverse osmosis; Artificial neural networks; Small vessels

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