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Optimal operating conditions analysis of a multi-effect distillation plant

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ABSTRACT

A study which aims to determine the optimal operating conditions and the effects that the operational parameter variations produce on the experimental solar thermal desalination system at CIEMAT-Plataforma Solar de Almería (PSA) AQUASOL has been performed. A mathematical model of the experimental MED plant, previously developed, has been used to provide the information required for the analysis of the performance and improve the operation strategies in this plant. The mathematical model was implemented using the equation-based object-oriented modeling language Modelica and was validated using experimental data measured in the real facility. In this paper, a genetic optimization algorithm with three objectives and five decision variables has been considered and the results are shown and discussed.

Keywords: Optimal operation; Energy consumption; Multicriteria optimization; Desalination; Modelica

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