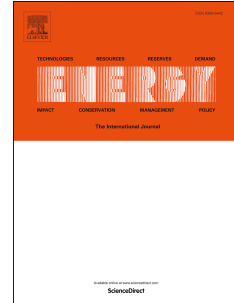


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Analysis and validation of a thermal hydraulic dynamic model for the parabolic trough solar field

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1 **Analysis and validation of a thermal hydraulic dynamic model for the**
2 **parabolic trough solar field**

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10 **Highlights**

11 A thermal hydraulic dynamic model for a parabolic trough solar field is developed.

12 The model is validated with experimental data obtained from a pilot plant.

13 Thermal hydraulic behavior of the solar field is analyzed in detail.

14 A method for balancing the flow distribution is improved upon and verified.

15 **Abstract**

16 In this paper, a thermal hydraulic dynamic model (THDM) is developed to improve the
17 efficiency and controllability of a parabolic trough solar field (SF). The THDM is
18 divided into a hydraulic submodel and a thermal submodel; these two submodels
19 interact via flowrate and temperature of the heat transfer fluid. Three experimental

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