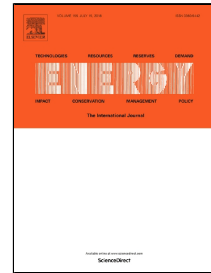


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Thermal analysis of a conceptual loop heat pipe for solar central receivers

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2 **central receivers**

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11 **Abstract**

12 This study presents a novel loop heat pipe central receiver for the solar power tower
13 (SPT) plant. For the first study, the evaporator section of the proposed receiver is
14 simulated by a three-dimensional numerical model to study the flow, heat transfer and
15 the evaporation phenomenon of the working fluid. In addition, effects of the outlet
16 boundary pressure at the vapor groove and the solar irradiation heat flux on the
17 absorbing surface are analyzed. The results show that most of the working fluid
18 vaporizes at the liquid/vapor interface close to the casing. The heat transferred from the
19 casing to the vapor working fluid is negligible, and thus the vapor temperature in the
20 groove can be assumed to be constant in simulating the whole loop heat pipe central
21 receiver. A lower temperature difference between the liquid/vapor interface and the

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