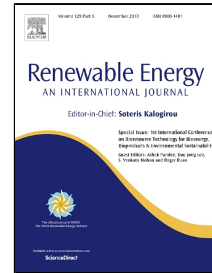


# Accepted Manuscript

Thermal analysis of a finned receiver for a central tower solar system

A. Piña-Ortiz, J.F. Hinojosa, R.A. Pérez-Enciso, V.M. Maytorena, R.A. Calleja, C. A. Estrada





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1           **THERMAL ANALYSIS OF A FINNED RECEIVER FOR A CENTRAL**  
2                                   **TOWER SOLAR SYSTEM**

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4           **A. Piña-Ortiz<sup>a</sup>, J.F. Hinojosa<sup>a</sup>, , R.A. Pérez-Enciso<sup>b</sup>, V.M. Maytorena<sup>a</sup>,**  
5                                   **R.A. Calleja<sup>a</sup>, C.A. Estrada<sup>c</sup>**

6  
7           <sup>a</sup>*Departamento de Ingeniería Química y Metalurgia, Universidad de Sonora. Blvd. Luis Encinas y Rosales,*  
8                   *s/n, Col. Centro, Hermosillo, 83000, Sonora, México, +52(662)2592106, : fhinojosa@iq.uson.mx.*

9           <sup>b</sup>*Departamento de Ingeniería Industrial y de Sistemas, Universidad de Sonora. Blvd. Luis Encinas y Rosales,*  
10                   *s/n, Col. Centro, Hermosillo, 83000, Sonora, México, +52(662)2592100.*

11           <sup>c</sup>*Instituto de Energías Renovables, UNAM, AP 34, Temixco, 62580, Morelos, México. Tel. +52(55)56229744.*

12  
13    **Abstract**

14    In this study, a thermal analysis of a finned receiver prototype for a thermosolar tower system  
15    is presented. The experimental system consists of parallelepiped aluminum enclosure of 1.2  
16    m high, 1.23 m wide and 0.1 m depth. At the interior, 1232 cylindrical fins with a diameter  
17    of 0.0095 m (3/8") and 0.09 m length increases the heat transfer area up to 225%. The vertical  
18    wall receives the incoming solar concentrated radiation from a group of heliostats whilst at  
19    the interior a constant flow of water removes the absorbed energy. Experimental temperature  
20    profiles were obtained at different heights and depths and a comparison was made with  
21    numerical results obtained with the use of commercial CFD software. It was found that the  
22    maximum thermal efficiency of the receiver was 94.4 %, decreasing as the radiative flux  
23    increases.

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