

Heat transfer behavior of a PTC receiver tube using transversal focal inserts and CFD.

Mohammed Reda HADDOUCHE¹ and Abdelhadi HADDOUCHE²

¹Institut Nacional d'Educacio Fisica de Catalunya - Campus Lleida

²Universite Abou Bekr Belkaid Tlemcen Faculte de Technologie

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Abstract

The thermohydraulic performance of an enhanced PTC's tube is evaluated in this paper. A passive method is used by introducing transversal inserts on the bottom part of the receiver. The height of the inserts is investigated using MCRT method coupling FVM for Reynolds number range from 2 . 36 [?] 10 4 to 11 . 83 [?] 10 4 . the heat transfer fluid used in this study is the Therminol ®VP1 with. The numerical results show that the tube enhanced by inserts augments the reliability of the system, and the introduction of the inserts into the receiver tube decreases the temperature difference over the circumferential area of the absorber tube and minimizes the heat losses and also increase the lifetime of the receiver.

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