

عنوان مقاله:

Numerical Study of Entropy Generation for Natural Convection in Cylindrical Cavities

محل انتشار:

مجله تحقیقات انتقال حرارت و توده, دوره 3, شماره 2 (سال: 1395)

تعداد صفحات اصل مقاله: 12

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خلاصه مقاله:

In this paper, an enhanced computational code was developed using finite-volume method for solving the incompressible natural convection flow within the cylindrical cavities. Grids were generated by an easy method with a view to computer program providing. An explicit integration algorithm was applied to find the steady state condition. Also instead of the conventional algorithms of SIMPLE, SIMPLEM and SIMPLER, an artificial compressibility technique is applied for coupling the continuity to the momentum equations. The entropy generation, which is a representation of the irreversibility and efficiency loss in engineering heat transfer processes, has been analyzed in detail. The discretization of the diffusion terms were very simplified using the enhanced scheme similar to the flux averaging in the convective term. Additionally an analysis of the entropy generation in a cylindrical enclosure was performed. In order to show the validation of this study, the code was reproduced to solve similar problem of cited paper. Finally, the solutions were extended for the new cases

کلمات کلیدی:

Artificial compressibility, Entropy, Explicit finite-volume method, Natural convection, Nusselt number

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