IMPACT: International Journal of Research in Engineering & Technology (IMPACT: IJRET)
ISSN (P): 2347-4599; ISSN (E): 2321-8843
Vol. 5, Issue 7, Jul 2017, 51-58

NATURAL VENTILATION IN A ROOM BY A COMPOSITE WALL

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ABSTRACT

In recent years, a considerable research effort has been devoted to the study of heat transfer induced by natural convection within a cavity.

The interest in these phenomena of natural convection is due to the numerous potential applications in engineering. These applications include the extraction of geothermal energy, dispersion of pollutants in aquifers, safety problems in the core of nuclear reactors, and thermal building. In recent years, natural ventilation, similar to the phenomenon of the natural convection of living quarters, is approached numerically using primarily the CFD code. It is in this context that our study is located and wants an additional contribution and which is centered around the modeling and the simulation by finite volumes of a system of natural ventilation of a room in a region arid by a composite wall Used in the ventilation system or the passive heating of buildings (analysis of the natural convection phenomena).

The results are presented in the form of temperature fields and current lines for Rayleigh number 10^5, air flow mass and local and average Nusselt numbers.

KEYWORDS: Air Quality, Finite Volume Method, Natural Convection, Natural, Simulation