World Academy of Science, Engineering and Technology
International Journal of Mechanical and Industrial Engineering
Vol:10, No:09, 2016

Numerical Study of a Nanofluid in a Truncated Cone

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Abstract : Natural convection is simulated in a truncated cone filled with nanofluid. Inclined and top walls have constant temperature where the heat source is located on the bottom wall of the conical container which is thermally insulated. A finite volume approach is used to solve the governing equations using the SIMPLE algorithm for different parameters such as Rayleigh number, inclination angle of inclined walls of the enclosure and heat source length. The results showed an enhancement in cooling system by using a nanofluid, when conduction regime is assisted. The inclination angle of inclined sidewall and heat source length affect the heat transfer rate and the maximum temperature.

Keywords : heat source, truncated cone, nanofluid, natural convection
Conference Title : ICFTSE 2016 : International Conference on Fluids and Thermal Systems Engineering
Conference Location : Paris, France
Conference Dates : September 26-27, 2016