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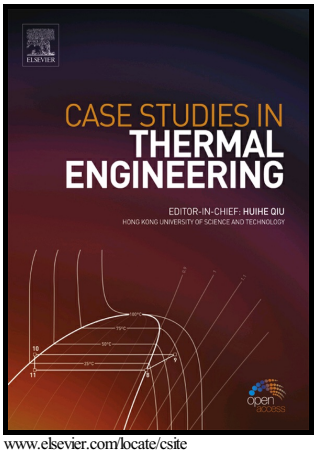

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Heat Transfer Behavior of Flat Plate having Spherical Dimpled Surfaces

Nopparat Katkhaw[a*], Nat Vorayos[a], Tanongkiat Kiatsiriroat[a], Atipoang Nuntaphan[b]

[a]Department of Mechanical Engineering, Chiang Mai University, Chiang Mai 50202, Thailand

[b]Thermal Technology Research Laboratory, Mae Moh Training Center, Electricity Generating Authority of Thailand, Mae Moh, Lampang 52220, Thailand

[*]Corresponding Author: Mr. Nopparat Katkhaw, Department of Mechanical Engineering, School of Engineering, University of Phayao, Phayao, Thailand, 56000. Tel.: 6654-466666, fax. 6654-466662. nopparat_ka@hotmail.com

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ABSTRACT

In the present study, heat transfer analysis of dimpled surfaces of external flow was investigated. A total of 14 types of dimpled surfaces are studied. The effect of dimple pitch was examined. The experiments were carried out with air stream flows over the heated surface with dimples. The temperature and velocity of air stream and temperature of dimpled surfaces were measured. The heat transfer of dimpled surfaces was investigated and compared with the result of smooth surface. For the staggered arrangement, the computed results show that the maximum Nusselt number for dimpled surfaces are about 26% better than smooth surface. And for the inline arrangement, the results show that the maximum Nusselt number for dimples surfaces are about 25% better than smooth surface.

Keywords

Vortex, Dimple, Enhanced Heat transfer

NOMENCLATURE

A_s Surface area (m^2)

D Dimple diameter (mm)

h Average heat transfer coefficient (W/m^2K)

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