

DYNAMIC SIMILARITY IN MODEL TESTING OF THE FLOW IN SOLAR CHIMNEY

Atit Koonsrisuk¹ and Tawit Chitsomboon²

School of Mech. Eng., Institute of Engineering, Suranaree University of Technology,

Muang District, Nakorn Ratchasima 30000 Thailand

E-mail: atit@math.sut.ac.th¹ and tabon@ccs.sut.ac.th²

Abstract

Dimensional analysis is proposed as the design tool for small-scale model of solar chimney, which is proposed to be used for generating electricity. The thermal and flow distributions through a solar chimney, when choosing water and choosing air as the working fluids, are studied. The information obtained is used in choosing working fluid for the model. To make sure that the similarity principle is applied correctly, the similarity variables are validated by comparing the computational results using the computational fluid dynamics (CFD) commercial code, 'CFX'.

Published in: In Proceedings of the 15th International Symposium on Transport Phenomena
Bangkok, Thailand, May 10-12, 2004.