



Performance Evaluation of an Evaporative Cooling Air-Conditioning System for a Data Center

Amphawan Wandt, and Atit Koonsrisuk*

School of Mechanical Engineering, Institute of Engineering, Suranaree University of Technology, Muang District, Nakhon Ratchasima 30000, Thailand

* Corresponding Author: atit@sut.ac.th

Abstract. Data centers consume a lot of electricity, especially for the air conditioning. This study investigates numerically the using of a conventional, indirect evaporative cooling, and direct evaporative cooling technologies as the air-conditioning system for a data center. The simulations were conducted using a program called TRNSYS, which can be used to simulate the behavior of transient systems. The weather data of Nakhon Ratchasima province is used as an input to TRNSYS. It was found that the desired air conditions can be attained regularly by using either of the evaporative cooling systems. It was also found that the electricity consumptions of the evaporative systems are lower than that of the conventional air conditioning system.

Keywords: data center, direct evaporative cooling, indirect evaporative cooling, TRNSYS.