

Thermal Analysis of Earth Air Tube Heat Exchanger for Cooling Tower

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Abstract

This study focuses on the modified utilization of Earth Air Tube Heat Exchanger (EATHE) in the cooling of water supplied to cooling towers. The system involves the heat exchange process between the air and the soil using soil nature. The system can be installed before the cooling tower for the precooling of water. The design of the system includes a tube of 10.26 m in length and 0.15 m in diameter. To blow air through the tubes two blowers of 650 W can be used which will blow the air with a velocity of 4 m/s. The analytical study shows water temperature drop/rise of 4 to 7 °C. This system can be made portable for easy carrying and installation. This paper analyses the co-relation among different parameters of EATHE such as Temperature drop, NTU, Effectiveness, and Length of the tube, etc. to identify the best fit values in the selection of EATHE as a pre-cooler in a cooling tower.

Keywords

Earth air tube heat exchanger Cooling tower Pre-cooling

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