



## **SIMULATION OF CHILLER WATER STORAGE**


**HAFIZ ZAIM BIN HUSSIN  
(2006154229)**

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“I declared that this report is the result of my own work except the ideas and summaries which I have clarified their sources. The report has not been accepted for any degree and is not concurrently submitted in candidature of any degree.”

Signed :  .....

Date : 20/5/2010 .....

**HAFIZ ZAIM BIN HUSSIN**  
**(2006154229)**

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## **ABSTRACT**

Chilled water storage systems are used in commercial buildings to shift the timing of cooling energy purchase from on-peak periods. Typically, this is done by chilling water during the night, storing it in a tank, and drawing from it during the day to provide space cooling. This reduces building electrical demand without sacrificing occupant comfort and can contribute to improved utility load factors. In stratified tank, thermal separation between warmer and cooler water is maintained by the action of buoyancy forces. A sharply defined transition layer, or thermocline, forms between the warm and cool bodies of water. Water enters and leaves the tank through diffusers at the top and bottom designed to reduced mixing and promote good stratification. Four main mechanism contribute to the degradation of stored cooling capacity in a stratified tank: heat gain from the tank surroundings, vertical conduction in the tank wall, thermal diffusion from the warmer water to cooler water, and mixing caused by diffuser inlet jet. This CFD project have helped student or engineer understand thermal profile during charging and discharging of chiller water storage tanks.

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