BUILDING ENERGY SAVINGS

WAN SULAIMAN BIN WAN MOHAMAD

(2001476161)

MUHAMAD NIZAM BIN AB. WAHAB

(2001448829)

A thesis submitted in partial fulfillment of requirement for the award of Bachelor Engineering (Hons) (Mechanical)

Faculty of Mechanical Engineering

Universiti Teknologi MARA (UiTM)

MARCH 2004

"I declared that I read this thesis and in our point of view this thesis is qualified in term of scope and quality for the purpose of awarding the Bachelor of Mechanical"

Signed :.....

Date :..... 7/4/04

Project Advisor

Ir. Mohd Shif Bin Ismail (Associate Professor)
Faculty of Mechanical Engineering,
Universiti Teknologi MARA (UiTM),
40450 Shah Alam,
Selangor.

ABSTRACT

In this thesis, chapter 1 addresses the introduction to the project. It deals with the energy efficiency and energy savings. Apart from that, the objectives of this project are described as well as the scope of project. Chapter 2 includes the methodology of the project. Chapter 3 introduces the district cooling concept in brief. The theory of air-conditioning is presented in chapter 4. All the theories are based on the thermodynamics and heat transfer point of view. In this chapter, the relevant equations that is important for the energy analysis is defined. Chapter 5 and 6 put forward the energy analysis of the plant 1and 2. In these chapters, the system's energy balance is analysed. Chapter 7 relates the costing analysis of plant 1. This includes the cost analysis to the theoretical design and actual operating modes. The cost for partial and full-storage system is carried out based on the theoretical operating design. Hence, the payback period for partial and full storage system is obtained. Some improvements to the system is analysed in chapter 8. It involves the modification and replacement of certain component. This analysis is followed by the savings gained through the improvements. The discussion, conclusion and recommendation are imparted in chapter 9, 10 and 11 respectively.

TABLE OF CONTENTS