

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

In these modern days, energy usage and its impact on the environment have become a huge problem worldwide. The world is facing a serious problem with how to secure the resources needed to generate energy and meet the increasing demand associated with the economic growth and continuous development. Much of the effort is focused on securing sufficient supplies of oil, gas, fossil fuels and others at affordable prices, but reducing energy demand at the source can be a better alternative for this problem. The energy usage management will deliver us the useful method of developing the logical use of our resources, and the energy efficiency enhancement becomes among the main objectives of many national energy policies. In this research, an attempt is made to identify areas and propose recommendations on effective ways to decrease energy usage in order to make the existing Administration Block of the Faculty of Mechanical Engineering in UMP, Pekan be more energy efficient.

1.2 BACKGROUND OF STUDY

Energy management and its efficient usage have become a national agenda for our nation these days. Many people around the nation, including researchers take part in solving this increasing problem. Many Asian countries are experiencing huge industrial development and a high economic growth since the 20th century. As a consequence of this development, energy demand shows a significant increase worldwide and this will lead to increasing environmental problems. Management of the energy usage could be a

big step in sustaining this negative impact. It is the only way to save our mother earth from global warming from the perspective of rapid economic growth.

During these years, as the other Asian countries, Malaysia is not excluded from the impact on the energy demand as we are also facing a rapid development. A 2006 study of Household Energy use by CETDEM led by Ir. Gurmit Singh in cooperation with Majlis Petaling Jaya found that the large consumption of office building's electricity is used for air conditioning which makes up to 64% of the whole usage, 24 % of the equipment used and 12% of the lighting as shown in Figure 1.1 below.

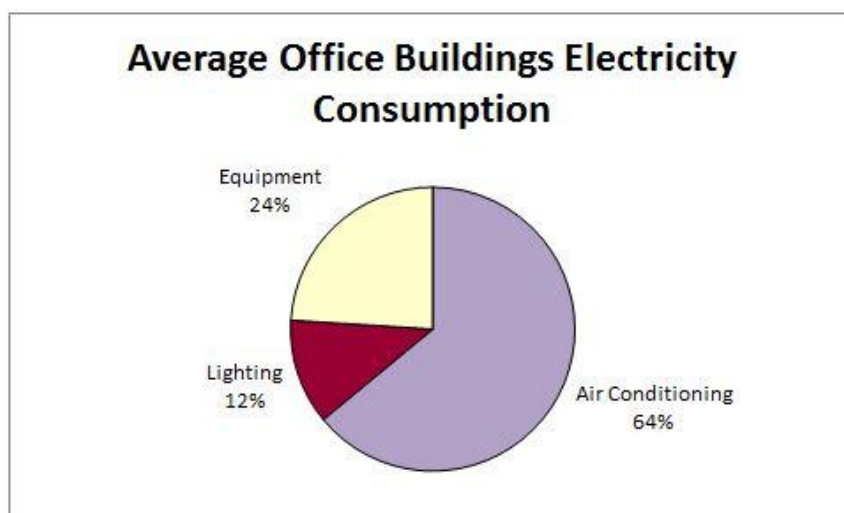


Figure 1.1: Office Buildings Electricity Consumption by CETDEM

Source: CETDEM (2006)

Energy should be sustained through better utilization and consumption. In other word, achieving maximum energy efficiency in the office would be a great help in saving our world. By practicing sustainable energy use in the office, we will improve the environment by reducing the emissions of greenhouse gases, conserve natural resources by using renewable source energy such as solar, biomass, wind, and wave, yet bringing more benefits to the organization such as reducing costs.

1.3 PROBLEM STATEMENT

As Malaysia faces rapid development, the number of modern buildings also increases as time moves forward. This means that the energy demand also increases drastically from day to day. Buildings are reflected as among the biggest energy consumer in the world and in hot-climate countries the major part of the energy is used in air-conditioning systems. The objective of installing the air-conditioning system is to deliver human with comfortable and acceptable indoor condition. Malaysia is located in the tropical climate which is hot and humid. In order to offer the good indoor working condition, almost all of the non-residential or office buildings enormously uses energy on the cooling system of the buildings.

A general office worker spends around 90% of his/her time indoors during working hours- the appeal of the indoor environment is of high significance on how a worker falls. Some international and even local standards such as ASHRAE, ISO7730, and Malaysian Energy Efficiency Guidelines developed as the result. The problem arises when the actual thermal comfort standards are usually constructed in laboratory study and research by ignoring the real situation of the building's environment. The same goes to the lighting in the buildings as some of the building can reduce their energy usage on lightings by harnessing as much natural lighting as possible.

With the increased interest on efficient energy usage in buildings, it is essential to take a step in managing the energy usage to distinguish the importance and the priority of the comfort factors to reduce wastage.

1.4 OBJECTIVES

The objectives of this study are:

- (i) To study the characteristics of the FKM Office Building and its building features, services and design that have an impact on energy efficiency,
- (ii) In making recommendations on how some of these characteristics can be improved for energy efficiency.