



THERMAL COMFORT STUDIES IN NON-CONDITIONED ROOM

FAUZAN SHAILE BIN ELIAS
(2000205701)

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

Faculty of Mechanical Engineering
Universiti Teknologi Mara (UiTM)

SEPTEMBER 2002

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

Signed :

Date : 9/10/2002

Fauzan Shaile Bin Elias

UiTM No. : 2000205701

ABSTRACT

In order to achieve Thermal Comfort, there are several factors and parameters that need to be studied and understood. In doing this research, the parameters involve are temperature, relative humidity and air speed.

Thermal design must, therefore, be closely concerned with comfort. This means that the building design and installations must be capable of achieving the necessary balance of environmental factors to give thermal comfort.

To give thermal comfort a building interior must provide environmental conditions, which enable the bodies of occupants to lose heat at the rates and by means, which maintain comfort and also provide a less definable quality, 'freshness'.

The research of Thermal comfort study needs to be done continuously. This because the outdoor climate that always changing time to time depend on the weather and environment. Therefore the studies need to be done continuously in order to get the optimum comfort zone.

To make this research better, the latest and accurate equipment need to be used in taking the data. For only with appreciation and support from many parties in continuing this research will there be the best comfort zone ever.

TABLE OF CONTENTS

CONTENTS	PAGE
PAGE TITLE	i
ACKNOWLEDGEMENT	ii
ABSTRACT	iii
TABLE OF CONTENTS	iv
LIST OF TABLES	xi
LIST OF FIGURES	xii

CHAPTER 1 INTRODUCTION

1.0	Introduction	1
1.1	Objectives	2
1.2	Significant	2
1.3	Method	2

CHAPTER II THERMAL COMFORT

2.0	Thermal Comfort	3
2.1	Comfort	5
2.1.1	Comfort condition	5
2.1.2	Human comfort	5
2.1.3	Sensible heat and latent heat	6
2.2.3.1	Types of sensible heat gain	6
2.2.3.2	Types of latent heat gain	6
2.2.4	The number of human bodies and activities	7
2.3	Comfort Zone	7
2.3.1	Temperature range	7
2.3.2	Relative Humidity Range	7
2.3.3	Air Motion Range	8
2.3.4	Air Purity Range	8
2.4	Factors That Influence The Human Comfort	8
2.4.1	Temperature	8
2.4.2	Relative Humidity	9
2.4.3	Air Circulation	9
2.5	The Effects of Thermal Comfort on Health	10
2.5.1	Direct effect	10
2.5.2	Indirect effect	10
2.6	The Effects of Thermal Condition on Performance	11
2.6.1	Effects by cold	11
2.6.2	Effects by heat	11