

SIMULATION OF THE PERFORMANCE OF AN AIR CONDITIONING SYSTEM

by

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Project Report

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This project is dedicated
to my family

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INTRODUCTION

The science of air conditioning may be defined as that of supplying and maintaining a desirable internal atmospheric condition irrespective of external conditions. Full air conditioning implies the automatic control of an atmospheric environment either for the comfort of human beings or animals or for the proper performance of some industrial or scientific process. The adjective "Full" demands that the purity, movement, temperature and relative humidity of the air to be controlled, within the limits imposed by the design specifications. Full air condition requires different treatments according to climate, latitude and season.

The essential feature of air conditioning is that it aims to produce an environment which is comfortable to the majority of the occupants. The ultimate in comfort can never be achieved, but the use of individual automatic control for individual rooms helps considerably in satisfying most people.

Air conditioning systems can be classified according to their equipment arrangement:

- (i) Unitary or package systems
- (ii) Central-station systems

Another classification of air conditioning systems is according to the direct media used to transfer energy:

- (i) Air (VAV)
- (ii) Water (VWV)
- (iii) Refrigerant (VRV)

The aim of this project is to simulate the performance of an air conditioning system in a building and record the changes of this performance with respect to the changes on the building configuration.

Therefore this project will show the advantages of modeling and simulation and how, when the model has being validated against experimental data, reliable information can be obtained much more quickly and cheaply than by physical experiments.

Also another objective of the project is to simulate the control of the air conditioning system for different modes of operation. This will show how the temperature of the building will vary in real time.