PREFACE

There are many chemical reactions industrial processes and experiments which requires temperature to be maintained at a predetermined value. Many ways exist to regulate the temperature, complexity and the cost of the system involved increases with precision and accuracy evaluated for particular process. There are many modes e.g. ON / OFF, Proportional derivative, PID etc. available, for control applications. Of late fuzzy logic control systems have became very popular over the conventional control logic for implementing the control, mainly because the process of fuzzy logic control is, simply to put, the realization of human control strategy, where as conventional controls relay on the mathematical formulations and are involved.

Keeping this view in mind the method to control the temperature of small furnace using fuzzy logic is presented in this dissertation. This dissertation has been divided into four chapters.

Chapter I ☞ Deals with historical development of fuzzy logic, fuzzy set, advantages, disadvantages and applications of fuzzy logic, methods of fuzzication and defuzzicaton have been explained. Literature survey and orientation of the problem are given at the end of this chapter.

Chapter II ☞ Deals with classification and characteristics of temperature transducers, special attention is given to thermisters characteristics and design of sensor section by conventional method as well as fuzzy-logic approach. Results of sensor are presented at the end of this chapter.

Chapter III ☞ Deals with fuzzy control system design, hardware to implement the controller action and software development, flowchart, assembly language programming, membership functions, lookup tables for defuzzified PWM and tuning process. Results of the controlling action have been summarised in a table.

Chapter IV ☞ Highlights summery and conclusions of the work. A list of references is given at the end every chapter.

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