DESIGN AND SIMULATION AUTOMATIC ROOM TEMPERATURE AND LIGHTING CONTROL BY USING FUZZY CONTROL

By

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT

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In air conditioning system, efficient operation of air conditioning equipment to suit the user demand is important and to achieve that, Fuzzy Logic controller can play a key role in formulating the next generation of control technology for the traditional air conditioning equipment. Similar kind of control system is needed also for the control of lighting system to achieve a better efficiency and better comfort level for the users.

The target of this research is to develop a fuzzy logic control which will allow less usage of energy by Optimum operation of air conditioning and Lighting which would also promote Conservation of Energy. The control system in this study also would need to achieve a Stable Climate Condition in the room within the limits of control set points including a Stable Visual Comfort in term of Lux level and promote convenient to the users by automatic control.

The control strategy proposed in this thesis work is fuzzy logic controller (FLC). A MATLAB fuzzy program tool is used to develop a fuzzy logic controller to achieve within the comfort parameters of temperature and artificial lighting as well as energy savings. Simulink program in MATLAB will also be used to simulate the fuzzy logic in this Thesis work. Based on the findings observed on the case study described in this Thesis Report, the savings achieved by the Fuzzy Logic Air Conditioning System is about 66% while the savings achieved by the Fuzzy logic Lighting Control System is about 23%. With these results, it can be concluded that the objective of this Thesis work has been full filled.

Keywords: Fuzzy, Split Air Conditioning Control, Lighting Control

DEDICATION

I dedicate this works to my family, friends and for the future of Mechatronics Engineering.

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I have found my Master Degree program to be stimulating, effective and thoughtful, providing me with the tools and knowledge to explore into the world of Mechatronics engineering.

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