

**IMPLEMENTATION OF AUTOMATIC FREQUENCY
CONTROL SYSTEM AT SAMANALAWEWA
POWER STATION**

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Degree of Master of Science

Department of Electrical Engineering

University of Moratuwa

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DECLARATION

“I declare that this is my own work and this dissertation does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any other University or institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

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(Dr.D.P.Chandima)

Date:

ABSTRACT

Electricity cannot be stored, what is produced has to be consumed immediately. The frequency control theory is used for balancing the power system; it means electrical energy should always be equal to summation of demand and system losses. Samanalawewa Power Station where the frequency control system is operated manually has experienced the need of an automatic frequency controlling system. Therefore a microcontroller based automatic frequency control unit is used to correct the errors mainly due to human factors and also it is more accurate than manual system and gives lot of benefits. Finally it saves the valuable time and money to the public. Therefore automatic frequency control system is essential.

The system basically composes with a microcontroller, an LCD Display, Relays and a Selector switch. This report describes the theoretical background on frequency control, concepts and implementation, about the microcontroller, preparation, software installation and programming, Result interpretation and finally the conclusion of automatic frequency control to be implemented at the Samanalawewa Power Station.

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LIST OF ABBREVIATIONS

Abbreviation	Description
CEB	Ceylon Electricity Board
PMG	Permanent Magnet Generator
SSG	Speed Signal generator
PT	Potential Transformer
CT	Current Transformer
EHT	Electro Hydraulic Transducer
LVDT	Linear Variable differential Transformer
RVDT	Rotor Variable differential Transformer
USB	Universal Serial Hub
AGC	Automatic Generation Control
AFC	Automatic Frequency Controlling
LCD	Liquid Cristal Display
GV	Guide Vanes