

**DEVELOPMENT OF EDUCATIONAL TOOL IN MODELING
SHORT TERM HYDROTHERMAL SCHEDULING**

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ABSTRACT

The usage of educational tools in helping the users to understand problems related to power engineering has become essential. By simulating the problems in software like MATLAB, the users can get a better picture on specific problems and the ways to solve it. In this thesis, a Graphical User Interface (GUI) has been developed using MATLAB® in modeling and solving short term hydrothermal scheduling on power system. The short term hydrothermal scheduling in this thesis involves 1 hydro plant and 1 thermal plant with their respective constraints. It is hoped that this graphical user interface (GUI) helps in improving the interest and understanding of the users on short term hydrothermal scheduling problem in more interactive and interesting way.

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CHAPTER 1.0

INTRODUCTION

1.1 Introduction

The basic idea of short term hydrothermal coordination is to coordinate the hydro plant and thermal plant to meet the load demand at every interval. Short term hydrothermal scheduling is essential in order to optimize the operational cost for generating electricity. Short term operation planning usually covers a time range between a day up to a week. In dealing with this problem, the thermal system can be represented by an equivalent thermal generator unit. The coordination of the operation of a system of hydro plants is usually more complex compare to the scheduling of an all-thermal generation system. The main reason is the hydro plants usually connected between each other in term of water out flow and water inflow. The water outflow from one hydro plant can affect the inflow of other hydro plant in other words the downstream hydro plants. Usually the marginal cost in the hydro plants is insignificant, thus the problem of minimizing the operational cost of a hydrothermal system reduces to the need of minimizing the fuel cost for thermal plants under the constraints of the water available for hydro generation in a given period of time [1]. In scheduling problem, the load, hydraulic inflows and unit availabilities are assumed. Starting condition such as volume of water available in hydro plant is given.