HEURISTIC APPROACH TO SOLUTION OF UNIT COMMITMENT FOR ELECTRICAL SYSTEM

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AZIZAN BT HARUN
Department of Electrical Engineering
INSTITUT TEKNOLOGI MARA
40450 Shah Alam , Malaysia
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ABSTRACT

This paper describes in general view of the algorithm developed for a unit commitment solution for electrical system. The unit commitment program optimizes the shutdown and generation cost so as to achieve minimum system fuel costs. The program is flexible and considers numerous special operating restrictions or constraints.

This program applies the heuristic approach, formulated and coded in Turbo C.

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CHAPTER 1

1.0 INTRODUCTION

Activities of human follow as cycles, most systems supplying services to a large population will experience cycles. The total load on the system will generally be higher during the daytime and early evening when industrial loads are high, lights are on, and so forth and lower during the late evening and early morning when most of the population is asleep. In addition, the use of electric power has weekly cycles, the load being lower over weekends then weekdays, the load follows a simple "peak-valley" pattern as shown in Figure 1.1 and Figure 1.2. So to overcome this problem, we can simply commit enough units to cover the maximum system load and leave them running. A great deal of money can be saved by turning units off when they are not needed. The operation of the system is to be optimised, i.e. unit shut down as the load goes down and then recommitted as it goes back up.

The economical operation of a power system requires interaction of the major control functions such as load forecasting, security analysis, unit commitment and economic dispatch, etc. Fuel cost represents a significant part of unit operating cost, consequently, the selection of units in order to meet the forecasted demand will significantly affect production and operation costs. This