ECONOMIC LOAD DISPATCH WITH POLLUTION CONSTRAINTS

This thesis is presented in partial fulfilment for the award of the

Bachelor of Electrical Engineering (Hons) of

MARA INSTITUTE OF TECHNOLOGY

MAZNIDA SHAHILA BTE MAT SALLEH
Department of Electrical Engineering
MARA Institute of Technology
40450 Shah Alam
MAY 1997

ACKNOWLEDGEMENT

In the name of **Allah**, the Beneficent, the Merciful. It is wish the deepest sense of gratitude to **Allah** who has given me the strength and ability to complete this project and the thesis.

I would like to express my deepest gratitude and appreciation to my project supervisor, **Dr. Gattu Kesava Rao** for his continuous guidance and invaluable advice in giving the ideas and assistance to me to complete this project. He was actively associated with me and was a source of constant inspiration throughout the completion of this project.

I am also would like to express my special gratitude to my family for their inspiration and invaluable support along the duration of my studies until this thesis is completed. Last but not least, to **all my friends** for their valuable assistance who have helped me directly or indirectly in carrying out the work and reached the goal.

Maznida Shahila binti Mat Salleh

MARA Institute of Technology

Shah Alam

SELANGOR DARUL EHSAN

SYNOPSIS

The economic load dispatch (ELD) problem pertains to the optimum generation scheduling of available generators in a power system to minimise the cost of generation subject to system constraints. Due to increased concern over environmental pollution caused by fossil based generating units, operating at the absolute minimum cost of generation may no longer be a suitable criterion. Therefore, we attempt to solve the economic emission load dispatch (EELD) problem to minimise the total cost of generation and pollution control simultaneously. Several optimisation techniques such as classical, linear programming (LP), non-linear programming (NLP) and quadratic programming (QP) methods are in vogue for solving the ELD problem [2].

This thesis attempts to explore the feasibility of developing relevant models, based on classical technique, to solve the EELD problem without line flow constraints to minimise the cost of generation or pollution level control simultaneously. The concept of total cost of generation and pollution level control is introduced for solving the EELD problem for varying degrees of compromise factor for the cost of generation and cost of pollution control required by the decision maker as reflected by his utility function.

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