

**ECONOMIC DISPATCH WITH ENVIRONMENTAL  
CONSIDERATION USING PARTICLE SWARM OPTIMIZATION  
(PSO)**

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**This thesis is presented in partial fulfillment for the award the  
Bachelor of Electrical Engineering (Honors)  
Universiti Teknologi MARA (UiTM)**

**JULY, 2012**

## **ACKNOWLEDGEMENT**

Praise to Allah the Almighty that has granted me a good health and allows me to complete my thesis successfully. The completion of this thesis has been almost impossible without the help and support of many individuals.

First and foremost, I would like to thank Allah for answering my prayers and keep on giving me strength to struggle until the end despite of countless obstacles that sometimes made me down. Thank you so much dear Allah in which the completion of this thesis make me feel truly been blessed. Nothing much I would ask for rather than Your best plan on me.

A very deepest and highest gratitude goes to my supervisor and advisor, Assoc. Prof. Bibi Norasiqin bt Sheikh Rahimullah, for her expert guidance, invaluable advice and endless encouragement throughout completion of this thesis. Her full commitment has truly inspired me and I deeply appreciate the patience, confidence and continuous support which had helped me so much even at the lowest point upon the completion of my study. The knowledge and experience that I received has helped me tremendously. For everything and more, I am truly thankful.

To all my classmates and colleagues, thank you very much for everything. Despite the hardship faced throughout the degrees' courses, the priceless friendship, genuine support and share between us has certainly made this journey more meaningful to me. I wish the best in life for everyone.

Last but not least, I am grateful thank to my family who have become my backbone throughout my study! I truly appreciate the continuously support and endless motivation that they have given me. No words can express the appreciation and love I have for them.

Thank you so much!

## ABSTRACT

Efficient load allocation to several generating unit in a power plant can reduce harmful gases emission that give bad impact to human and environment. The best method to allocate the power of generating units is by applying economic dispatch (ED). The primary objective of economic dispatch (ED) is to minimize the total generation cost while satisfying the constraint or the condition that are essential to operation. In this study, emission is proposed to be minimized together with generation cost known as Emission and Economic Dispatch (EED) instead of Economic Dispatch (ED) alone. Particle Swarm Optimization (PSO) algorithm was implemented in emission economic dispatch (EED) calculation in order to obtain optimum power generation of each generating unit to satisfy consumer demand and loses. This method is applied to IEEE 30-bus with six generation unit assumed to be run at all time. The best power allocation for each generating unit that is generated at the end of the optimization process also will minimized total generation cost and emission of sulphur oxide ( $\text{SO}_x$ ), nitrogen oxide ( $\text{NO}_x$ ) and carbon dioxide ( $\text{CO}_2$ ) gases after evaluation of the fitness function.

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