

**MODELLING AND SIMULATION OF UNINTERRUPTABLE  
POWER SUPPLY (UPS) SYSTEM WITH POWER FACTOR  
CORRECTION (PFC) USING MATLAB/SIMULINK**

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In the name of Allah, The Most Gracious, The Most Merciful. Praised be to Prophet Muhammad S.A.W, his companions and those who are on the path as what he preached upon.

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## ABSTRACT

This thesis presents a modelling and simulation of UPS system with power factor correction (PFC) using MATLAB/Simulink (MLS). The purpose of this project is to investigate and understand the UPS system with PFC with the main focus on modelling and simulation. This work focus on the effect of PFC that function to correct the supply current to become in phase with the voltage at the input side of the rectifier.

All part of the model is design to be reliable and synchronies to each other henceforth make the overall system efficient in term of losses and harmonic. This modeling and simulation will be contributing to major improvement to the work of others on power electronics field.

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# **CHAPTER 1**

## **INTRODUCTION**

### **1.1 POWER ELECTRONICS**

The new era has shown the world now become more complicated and sophisticated in all core, term, and subject. The technology is gradually changed to more reliable, effective and efficient due to human need. Today, human cannot live without electricity. The grid system was built to transmit the electricity to the consumer or load by the company who provides and sell the power. The loads which are important and cannot be interrupted is classified as a critical load. The non linear loads make the system low in their quality.

The increasing of load makes the power company to increase the supply power. This increase in power causes the power companies to use heavier supply lines, otherwise self-heating can cause burnout in the neutral line conductor. Energy losses in supply lines increase with increasing current. Power companies therefore require that customers, especially those with large loads, maintain the power factors of their respective loads within specified limits or be subject to additional charges.