SIMULATION OF SINGLE PHASE INDUCTION MOTOR FED BY SINGLE PHASE AC TO AC MATRIX CONVERTER

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ABSTRACT

This project focused on a model in Simulink which consists of Single Phase ac to ac Matrix Converter (SPMC), an Induction Motor and an ac Power Supply. This project also concerned with the process of current commutation in Single Phase Matrix Converter (SPMC). Simulation is performed using MATLAB in order to predict the behavior of Single Phase Induction Motor fed by Single Phase ac to ac Matrix Converter. The Sinusoidal Pulse Width Modulation (SPWM) is present as switching strategies to synthesize 50Hz output with IGBTs present as the power switching devices.

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CHAPTER 1

INTRODUCTION

1.1   Introduction

The demand for control of electric power for electric motor drive system and industrial controls existed for many years, and this led to early development of the Ward-Leonard system to obtain a variable dc voltage for the control of dc motor drives [1]. Power electronics have revolutionized the concept of power control for power conversion and for control of electrical motor drive [2].

The term of power electronic may define as the applications of solid-state electronic for the control and conversion of electrical power. With the development of power semiconductor technology, the power handling capabilities and the switching speed of the power device have improved tremendously. The development of the microprocessor and microcomputer technology has a great impact on the control and synthesizing the control strategy for the power semiconductor devices [1].

In modern industry today, power electronic combine power, electronics, and control. Control deals with the steady-state and dynamic characteristics of closed loop systems [4]. Power electronic refers to the control and conversion of electrical power by semiconductor device. Today, silicon-controlled rectifiers or SCRs or in the other hand it called thyristors rectifier [1], [4] were developed that had applications in areas such as electrical drives, power supply and etc. Power electronics devices have applications in control of electrical power ranging from a few watts to several MW. It not only controls but also converts one form of electrical power to another.