SIMULATION STUDY OF DC-DC BOOST CONVERTER USING FUZZY LOGIC CONTROLLER

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ABSTRACT

This thesis focuses on the DC/DC boost converter using fuzzy logic controller (FLC) to improve the dynamic performance by using MATLAB-SIMULINK. The evaluation has been carried out and was been compared between open loop and closed loop system to demonstrate fuzzy logic controller. Normally, Fuzzy Logic controller is better than proportional integral (PI), proportional derivative (PD), and proportional integral derivative (PID) to produce desired output voltage. It can also improve the performance of boost converter by reducing the percentage of overshoot. The rules of fuzzy logic also can be selected to produce the good performance of DC/DC boost converter

In addition, MATLAB-SIMULINK can produce several performance measures such as peak voltage, overshoot, rise time, settling time and steady state waveform. Its purpose is to make sure the circuits of dc-dc boost converter operate successfully.

Besides that, design and the calculation component in the circuit of boost converter has been done to ensure the converter operate in continuous mode. The precious calculation of the parameters will guide to the maximum performance of the system.

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CHAPTER 1

INTRODUCTION

1.0 INTRODUCTION

Nowadays the control systems for many power electronic appliances have been increasing widely. Crucial with these demands, many researchers or designers have been struggling to find the most economic are reliable controller to meet these demands. Figure 1.1 shows a power electronic system block diagram. From this figure, the output of the power processor (voltage, current, frequency, and the number of phases) is as desired by load. Normally, feedback controller compares the output of the power processor unit with a reference value, and the error between the two is minimized by the controller[1].

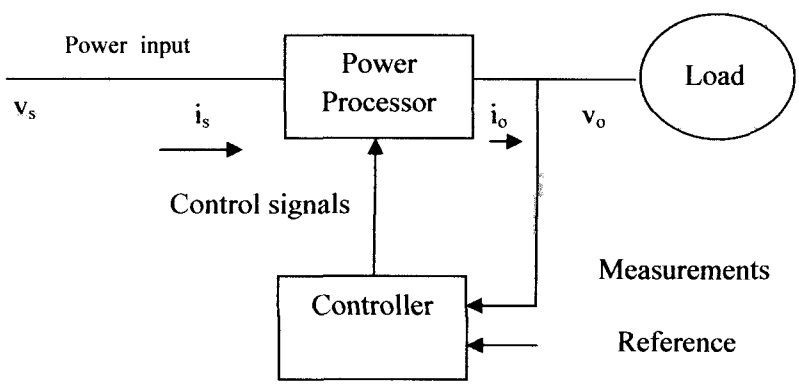

Figure 1.1: Block Diagram of Power Electronic System