CHAPTER ONE
INTRODUCTION

1.1 Introduction

The PID controller has several important functions. It provides feedback, it has the ability t eliminate steady state off sets through integral action it can anticipate the future through derivative action.

PID controllers are sufficient for many control problems. PID controllers are found in large numbers in all industries. The PID controller is by far the most common control algorithm. Most feedback loops are controlled by PID. The determination of the controller parameters is called the controller design or the controller tuning.

Direct Current motor drives have been widely used where accurate speed control is required. The development of high performance motor drives is very important in industrial as well as other purpose applications.

PID can produce a better performance for the speed control of DC motor.

1.2 Problem Statement

The speed control of DC motor problems with a conventional control algorithm is due to the effects of non-linearity of a DC motor. The non-linear characteristics of a DC motor such as saturation and friction could degrade the performance of conventional controllers. Conventional control strategies are of a fixed structure, fixed parameters design, so the tuning and optimization of these controllers is a challenging and difficult task, particular under varying load conditions, parameter change and abnormal models of operation.

1.3 Objectives

The objectives of this research are to introduce the proportional-Integral-Derivative (PID) control algorithm and using the PID controller to control the speed of direct current motor.

1.4 Methodology

A simulation has curried out using of MATLAB/SIMULINK to control a speed of DC motor

1.5 Layout

This research consists of an abstract and five chapters: Chapter one covering an overview research problem, objective also discusses outline methodologies of the study. Chapter two discuses a theoretical background of PID controller: structure, the algorithm, PID terms, tuning methods, filtering. Chapter three represents the model of control (DC) motor, Principle of Operation, construction, types of DC motor, speed control, speed torque characteristics and mathematical model. Chapter four covering MATLAP representation and the simulation results. Finally Chapter five provides the conclusions and recommendations.