Functional Description

Title of Project: PC–based Control Workstation for Controller Algorithm Evaluation

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Introduction

The objective for the project is to create a PC-based control workstation to control a plant consisting of a Pittman DC motor/rotary encoder. The load for the motor is a DC generator with a power dissipation resistance. A data acquisition board has been purchased from Quanser consulting to interface the plant to the PC workstation. The acquisition board contains I/O ports, D/A, and A/D converters.

Objectives

Objectives for the project consist of:

- Motor drive control from a D/A converter and a linear power amplifier.
- Evaluation and purchase of PWM board.
- Motor bidirectional drive control via PWM board.
- Development of software user-friendly interface.
- Obtain a mathematical model for the system.
- Design of closed loop controllers in C code for velocity control on a 200 MHz Pentium computer.

The various controllers will be tested for varying load conditions. See Figure 1 for a high level system block diagram.
Figure 1 - High Level System Block Diagram