VIRTUAL AIR PRESSURE TANK SYSTEM FOR OPEN AND CLOSED LOOP SIMULATION

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ABSTRACT

The purpose of this paper is to develop virtual air pressure tank system for open and closed loop simulation. The development of the system is accomplished via G-programming language potentialities of LabVIEW™ version 2011 running on ACER Intel Core™ i5-2430M 2.4GHz with Turbo Boost up to 3.0GHZ, 4GB DDR3 computer with Window7 Home Premium operating system. The system is designed to mimic the air pressure control trainer model SOLTEQ SE121 which installed at the Process Control Laboratory, Faculty of Electrical Engineering, UiTM Shah Alam. The system developed able to offer as a learning tool to help student more understand experimental work in which students able to differentiate between open loop and closed loop experiment as well as determine the process parameters before entering to the actual laboratory.

Keywords- LabVIEW; Virtual Air Pressure Tank System; Open Loop; Close Loop; Process Parameters

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CHAPTER 1

INTRODUCTION

1.1 PROJECT BACKGROUND

Monitors the manufacturing environment and electronically controls the process, control systems application design tuning or manufacturing flow based on the various set-points given by user is exactly the definition for process control system . There will be different parameters for critical processes that have to be monitored in a manufacturing setup. All the parameters will be fed to a central control system by the real time value. Corrective action can be taken when all the value are compared with the preset set-points through feedback systems and the necessary alert are output on the display system [1]. Sensors, a controller and a final control element is the really major components of a control system which seeks to maintain the measured process variable (PV) at set point (SP) of unmeasured disturbances (D) [2].

Leading laboratory session has a particular challenges and opportunities that differ from those in a standard classroom environment [1-3]. Besides the laboratory procedures and instructions for laboratory works, students need to prepare themselves with related theory before run the experiments. Simulations and related learning aid that can lead to the experimental works is needed in order to prepare the students with ideas and motivations to conduct the experiments[2].