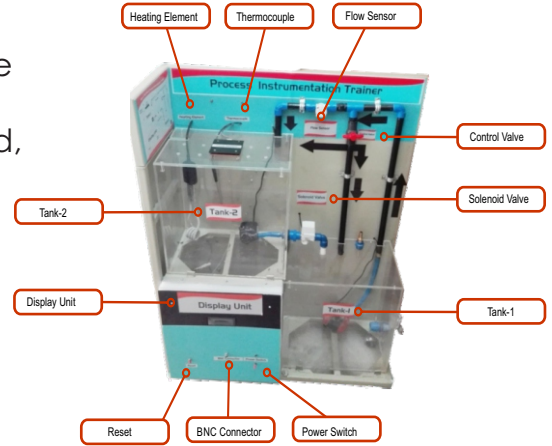
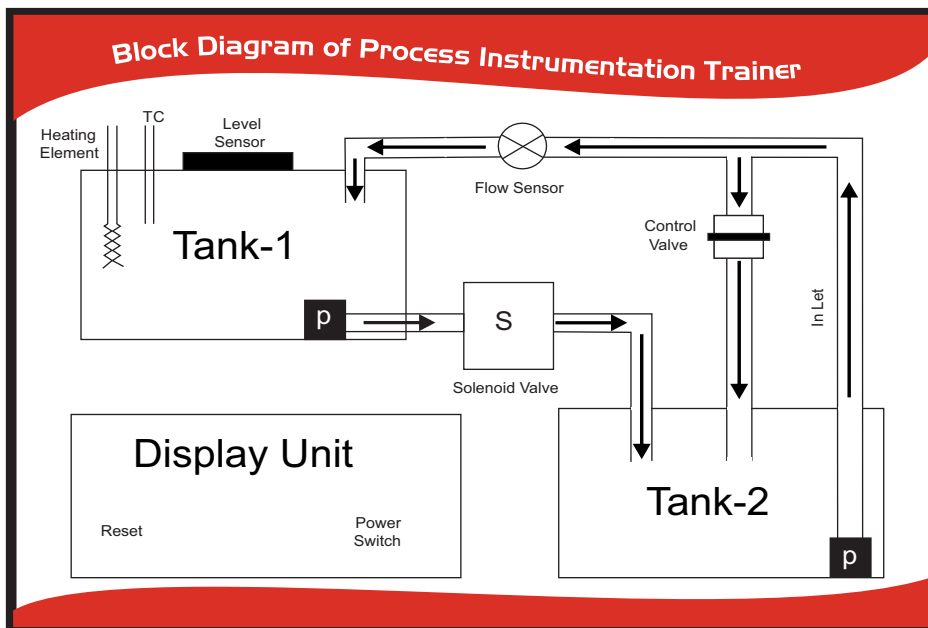
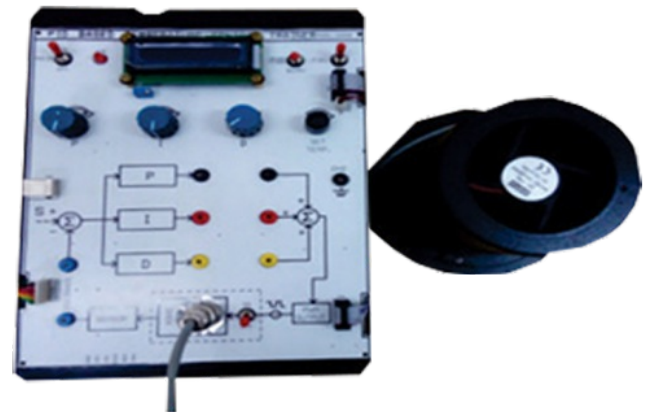


- Process Instrumentation Trainer with facility for temp and level sensors.
- Water level measurement by using ultrasonic sensor.
- Dual tank system of 20ltr water capacity.
- Solenoid valve to control water flow, /min flow rate range m/s, Flow control provision.
- LCD Display 20X4m to display the Flow rate ltr/per second, temp measurement.
- On board socket for CRO.
- Heating element rod to heat the water.
- Temperature measurement using Thermocouple.
- Two motors to pump the water from first tank to second tank.
- The system will be supplied in MS rack to protect from damage.
- The system will be supplied with wheels so we will able to move the trainer.
- Optional facility to plot the reading into excel sheet



Block Diagram of Process Instrumentation Trainer





Introduction

- A PID controller (Proportional - Integral- Derivative Controller) is a generic control loop feedback mechanism (Algorithm) widely used in industrial control systems and Robotics and is the most commonly used feedback controller.
- A PID controller calculates an "error" value as the difference between a measured process variable and a desired set point. The controller attempts to minimize the error by adjusting the process control inputs..

Technical Specification

- Digital PID Based on advance microcontroller
- Study of Proportional control (P)
- Study of Proportional & Integral Controller (PI)
- Study of Proportional Integral and Derivative Controller (PID)
- Operating temperature: Ambient to 90°C
- Separate controls for P, I, D channel gains
- Digital display of set and measured temperature on a 16x2 LCD
- Digital display of P,I,D gain factor on a 16x2 LCD
- Graph between Temperature Vs. Time on PC side on Labview software.
- Store the Data in a excel file

Experiment

- 1) Concept of PWM to control input of oven
- 2) Control the temperature of oven using open loop control
- 3) Control the temperature of oven using closed loop P control
- 4) Control the temperature of oven using closed loop closed loop PI control
- 5) Control the temperature of oven using closed loop closed loop PID control