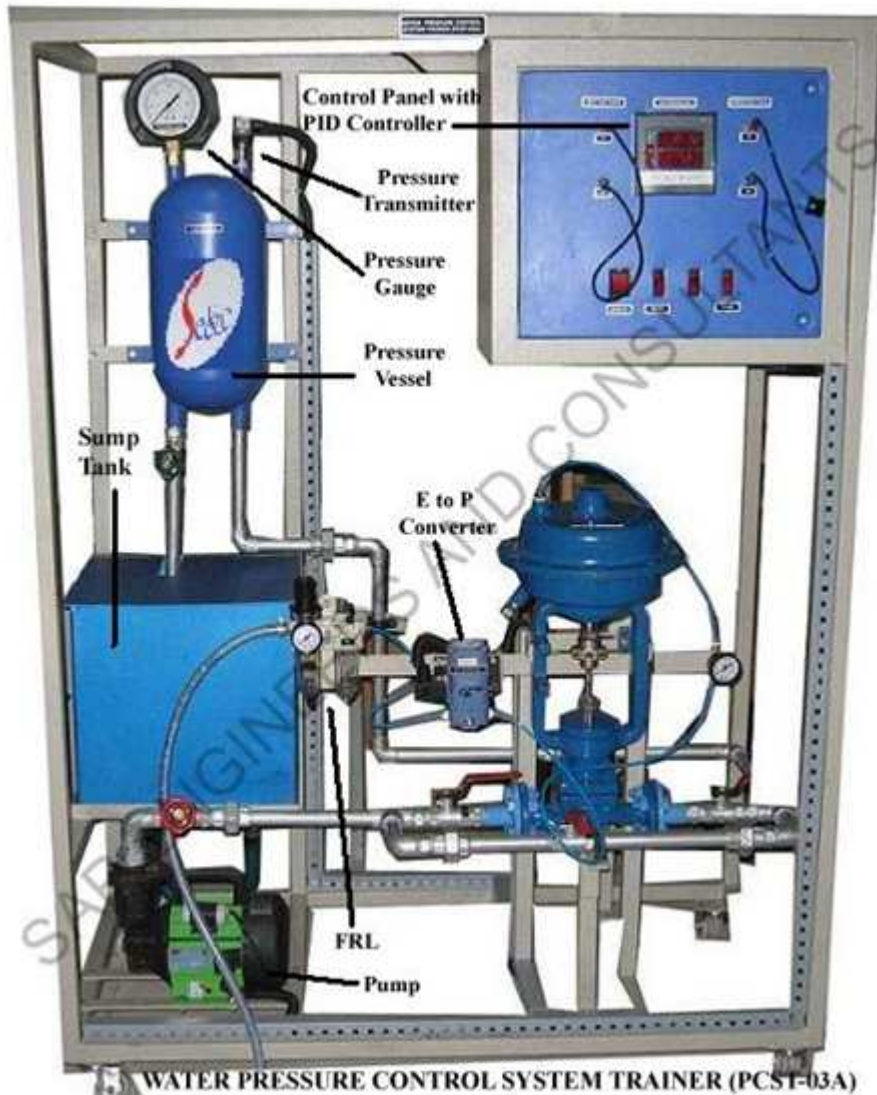WATER PRESSURE CONTROL SYSTEM TRAINER (PCST-03A)

The **Water Pressure Control Trainer (PCST - 03 A)** is the system, which outlines the basics of Closed Loop Water Pressure Control and various aspects related to it

KEY WORDS:

- Feedback Water Pressure control
- ON-OFF & PID control.
- OPEN/CLOSE LOOP RESPONSE.
- MANUAL/AUTO tuning of controller
- SCADA Based Water Pressure Control
- TRANSIENT response analysis study.
- P, P+I, P+I+D Controller Action.
- USB/RS232/RS 485/ Ethernet/ Modbus Comm.
- Ability to hook up with DCS (Distributed Control System Trainer)

Technical Specification-

No.	Item Name	Technical Specifications
1	**Sump tank-**	Material: Stainless Steel, 1.5 mm thick /P.P.5mm thick, Capacity: 30 liters, With top cover, Dimensions: 1 ft (L) ×1ft (W) ×1 ft (H).
2	**Piping-**	½"ʼ GI, Class B, with ½'' ball valves: 6 No
3	**Centrifugal Pump-**	½ H.P., 1φ 230 V AC supply, Surface mounting
4	**Pressure vessel with Pressure gauge-**	Shape: Cylindrical, Material; CRCC 5mm thick / SS 304-1.5mm thick, Diameter: 150 mm, Length; 300mm, Capacity: 15Kg/cm^2, with ½" BSP connection
5	**Pressure Transmitter-**	Input: 0-2.5 Kg/cm^2/ 0-4 Kg/cm^2, Output: 4-20 mA, Type: 2-wire Piezo-resistive type, Supply: 24 V DC, 50 mA, Mounting: Top ½" BSP connection.
6	**Pneumatic Control Valve-**	Size: ½", Type: Two way Globe type (Air to Close), Cv: 5 US GPM, with diaphragm actuator, equal % characteristics, Flange connection, PCD:60 mm, ID: 16 mm, OD: 90 mm.
7	**E/P Converter-**	Input: 4-20 mA, Output: 3-15 psi, Connection: ¼"NPT / BSP, Supply: 2.1 Kg/cm^2
8	**A.F.R / F.R.L. Unit-**	0-10 Kg/cm^2 with pressure gauge, Connection: ¼" NPT / BSP.

9	Electronic PID Controller-	With Serial PC Interface (ASCII/MODBUS Protocol) USB / Ethernet / RS 485 / RS232 for SCADA option only, Cut Out Size: 92mm×92mm×144mm, Input: RTD/4-20 mA Input type, Output; 4-20 mA, Display: Dual for PV & SP, High-Low Alarm annunciation, Bar graph display (Optional)
10	SCADA Application Software (Optional)-	SCADA App. S/W, PID control setting (P, PI, PD and PID mode), Auto/Manual Tuning of PID, Data Storage, Off Line analysis, online Data Acquisition, Simulation and Printing of data in Graphical and Tabular form. Interactive Graphical User Interface (GUI) included.
11	Electrical Control Panel-	MS Powder coated panel with switches, indicator, test Points, controller on front facia, UK 2.5 Terminal Connectors mounted on DIN rail channel, Use of 0.5sq mm multi-strand wire with proper insulated Lugs, Feruling & neat wire dressing & clamping, Wires & power cables are seated through 1"×1" PVC cable tray. Dimension: 1ft (L) ×1ft (W) ×1ft (H)
12	Computer (Optional)-	PC with color monitor: 18.5'', Intel Core i3, 500 GB HDD, 4GB RAM, Keyboard & Mouse, DVD Writer, With supporting OS and Communication port.
13	Air Compressor (Optional)-	Tank capacity: 25 Liters, Discharge: 2 CFM, Motor: 1 H.P. 230 V AC Operated, Working pressure: 5-6 kg/cm^2

SCADA APPLICATION SOFTWARE (Optional):
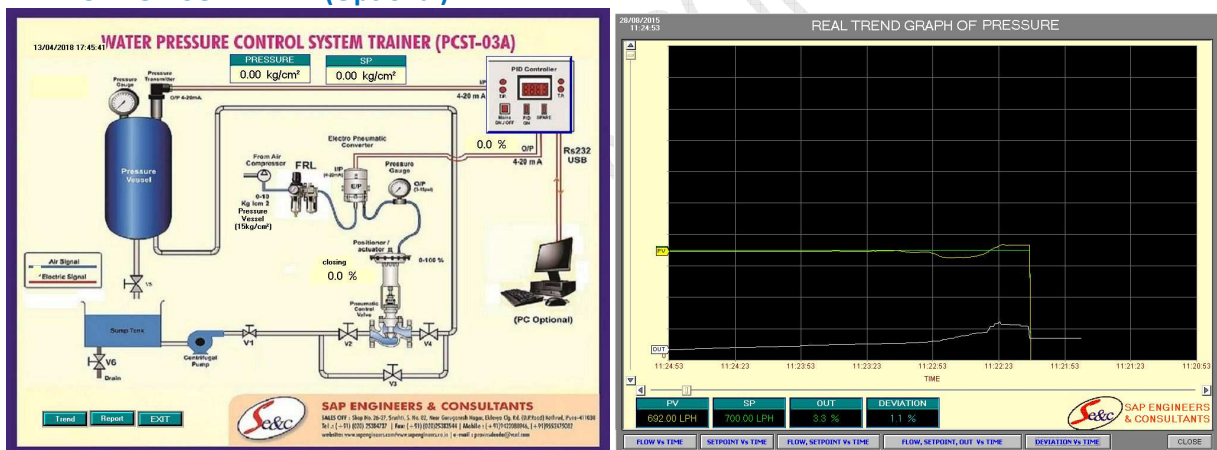
Range of experiments:

❖ Study of single loop Feedback Proportional (P), Integral (I) and Derivative control (D4)actions .
❖ Study of operation and calibration of transmitters, I/P converter and Control Valve.
❖ Study of OPEN LOOP/CLOSE LOOP TUNNING & AUTO TUNNING of controller.
❖ Study of STEP response & Transient response of controller (process curve).
❖ Study of tuning and operation of PID controller.
❖ Study of stability of single loop Water Pressure Control System.
❖ Configure microcontroller based controller to give manual output, changing controller modes (Manual/Auto), Checking ON-OFF, Proportional, Integral, Derivative, PI and PID control actions, change local Set point, configure and run a set point ramp, configure measured values to either percentage or Engineering units.
❖ Study of Communication Protocols and interfacing of System with DCS / SCADA etc.
❖ Study of SCADA Application Software/ Computerized Control of Water Pressure Control System.

Features: -

- ❖ Illustrates the concept of feedback Water Pressure control loop.
- ❖ User Friendly, Self Explanatory Systems.
- ❖ Leak proof Safety Measures, sturdy piping.
- ❖ Enhanced Electrical Safety Considerations.
- ❖ Training Manual & Mimic Charts for Operation Ease.
- ❖ System Frame with Caster Wheel Arrangement for ease in movement.
- ❖ M.S. powder coated cubical plant with standard Instrument Mountings.
- ❖ Inbuilt Safety Measures to avoid improper usage.
- ❖ Computer Interface (Optional), SCADA Application software connectivity for analysis of Water Pressure Control System Trainer.
- ❖ Caster wheel mounted movable frame

System Dimension: 4Ft. (L) X 2 Ft. (W) X 4.5 Ft. (H)

Weight: Approx. 70Kgs

Services Required:

- ❖ Water supply and drainage arrangement.
- ❖ Electric supply 1φ 230 V AC, 50 Hz.
- ❖ Clean, dry and dust free Compressed air supply 2.1 kg/cm².
- ❖ Laptop/Desktop computer with latest configuration (for SCADA).

Note:

All descriptive matter and illustrations are intended to give only a general idea of the equipment Detailed specifications may be altered at the company's discretion without any notice.

Manufactured/Marketed By

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