



**FEEDBACK FLOW-LEVEL CONTROL TRAINER**

The **Automated Flow and Level Control Trainer (PCST – 05 A)** is the COMBINED system, which outlines the basics of Feedback Flow and Feedback Level Control Loops.

**KEYWORDS:**

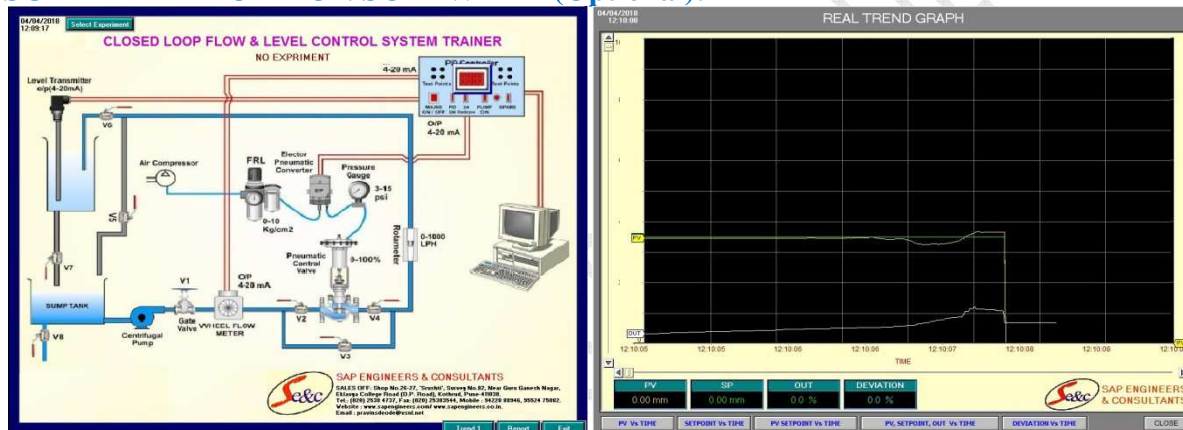
- ON-OFF & PID control.
- OPEN/CLOSE loop Response.
- MANUAL/AUTO tuning of controller
- Feedback Level Control.
- Feedback Flow Control.
- P, P+I, P+I+D Controller Action.
- TRANSIENT response analysis study
- USB/RS 232 / Ethernet/ Modbus Communication
- Ability to hook up with DCS (Distributed Control System Trainer)

**Technical Specification-**

No.	Item Name	Technical Specifications
1	<b>Sump tank-</b>	Material: Stainless Steel, 1.5 mm thick/PP 5mm thick , Capacity: 30 litres, With top cover, Dimensions: 1ft (L) ×1ft (W) ×1ft (H).
2	<b>Level Tank-</b>	Material: PP 5mm thick, Dimension: 150(L) mm×150(W) mm×600(H) mm
3	<b>Piping-</b>	½” Class B GI, with ½” SS ball valves: 10 Nos.
4	<b>Centrifugal Pump-</b>	½ HP, 1φ 230 V AC supply, Surface mounting.
5	<b>Flow Meter-</b>	½”, Turbine type (WFM type), Range: 0-500 LPH/0-1000 LPH. Output: 4-20 mA, Type: 3-wire type, Supply: 24 V DC: 100 mA Mounting: Horizontal, Connection: ½”
6	<b>Level Transmitter-</b>	Input: 0-400/0-500 mm, Output: 4-20 mA, Supply: 24 V DC, 100 mA Type: 2-wire Capacitance type, Mounting: Top 2” screwed connection.
7	<b>Pneumatic Control Valve-</b>	Size: ½”, Two way Globe type (Air to Close), Type: Equal Percentage, Cv: 5 US GPM with diaphragm actuator. Flange connection: PCD: 60 mm, ID16 mm, OD: 90 mm.
8	<b>Rotameter-</b>	1 No., Range: 100-1000 LPH, Glass tube type/Acrylic body, Connection: ½”, Bob material: SS 304, Mounting: Inlet Bottom Outlet Top.
9	<b>E/P Converter-</b>	Input: 4-20 mA, Output: 3-15 psi, Connection: ¼” NPT/BSP
10	<b>AFR/FRL Unit-</b>	0-10 Kg/cm <sup>2</sup> with pressure gauge, Connection: ¼” NPT/BSP

11	<b>Electronic PID Controller-</b>	1 no. Single input PID (1 No.) with Serial PC Interface (ASCII Protocol) USB/Ethernet/RS 485/RS 232, Cut Out Size: 92mm×92mm×144mm, Input: 4-20 mA, Output: 4-20 mA, Display: Dual for PV & SP, Bar graph display for Output & deviation, Hi-Low Alarm annunciation.
12	<b>SCADA Application Software (Optional)-</b>	SCADA Application 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) includes.
13	<b>Electrical Control Panel-</b>	MS Powder coated panel with switches, Indicator, test Points, Controller on front facia, UK 2.5 Terminal Connectors mounted on DIN rail Channel. Dimension: 1ft (L) ×1ft (W) ×1ft (H)
14	<b>Computer (Optional)-</b>	PC with color monitor: 18.5", Intel Core i3, 500 GB HDD, 4GB RAM, Keyboard & Mouse, DVD Writer, With supporting OS and Communication port.
15	<b>Air Compressor (Optional)-</b>	Tank capacity: 25 Liters, Discharge: 2 CFM, Motor: 2 H.P. 1φ 230 V AC Operated, Working pressure: 5-6 kg/cm <sup>2</sup>

### SCADA APPLICATION SOFTWARE (Optional):



### Range of experiments:

- ❖ Study of Feedback Control.
- ❖ Study of OPEN LOOP/CLOSE LOOP TUNNING & AUTO TUNNING of controller.
- ❖ Study of STEP response & Transient response of controller ( process curve).
- ❖ Study of single loop proportional (P), integral (I), and derivative (D) control.
- ❖ Study of operation and calibration of transmitters, I/P converter and pneumatic control valve.
- ❖ Study of programming and operation of PID controller.
- ❖ Study of Feedback Flow Control loop and Feedback Level Control loop.
- ❖ Study of Rotameter, capacitance type level sensor & control valve.
- ❖ Study of SCADA Application Software/ Computerized Control of Feedback Flow and Level Control System.
- ❖ Auxiliary Experiments.

### Features:-

- ❖ Compact Ergonomic Design.
- ❖ User Friendly, Self Explanatory Systems.
- ❖ Leak proof Safety Measures, Sturdy Piping & Robust Construction.
- ❖ Enhanced Electrical Safety Considerations.
- ❖ Training Manuals & 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.

**SAP E & C    FEEDBACK FLOW AND LEVEL CONTROL TRAINER**  
**(PRODUCT CODE: PCST-05 A)**



- ❖ Inbuilt Safety Measures to avoid improper usage.
- ❖ Computer Interface & SCADA software connectivity for analysis of Feedback Flow and Level Control Loop (Optional).
- ❖ Caster wheel mounted movable frame

**System Dimension:** 4.5 Ft. (L) X 2 Ft. (W) X 5 Ft. (H)

**Weight:** Approx. 80 Kg

**Services Required:**

- ❖ Electric supply 1 $\phi$  230VAC, 50Hz
- ❖ Water Supply and Drainage Arrangement
- ❖ Clean, dry Compressed air supply at 2.1 Kg/cm<sup>2</sup>
- ❖ Laptop/Desktop computer ( 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

**SAP ENGINEERS & CONSULTANTS**



Regd. Off. : Shop No. 26-27, 'Srushti', Survey No.82, Near Guru Ganesh Nagar,  
Eklavya College Road (D.P.Road), Kothrud, Pune - 411 038, India

Telephone : (020) 2538 4737

Mobile : +91 94220 88946, +91 9552475082

Fax : (020) 2538 3544

Email : [sales@sapengineers.com](mailto:sales@sapengineers.com)

Website : [www.sapengineers.com](http://www.sapengineers.com) / [www.sapengineers.co.in](http://www.sapengineers.co.in)