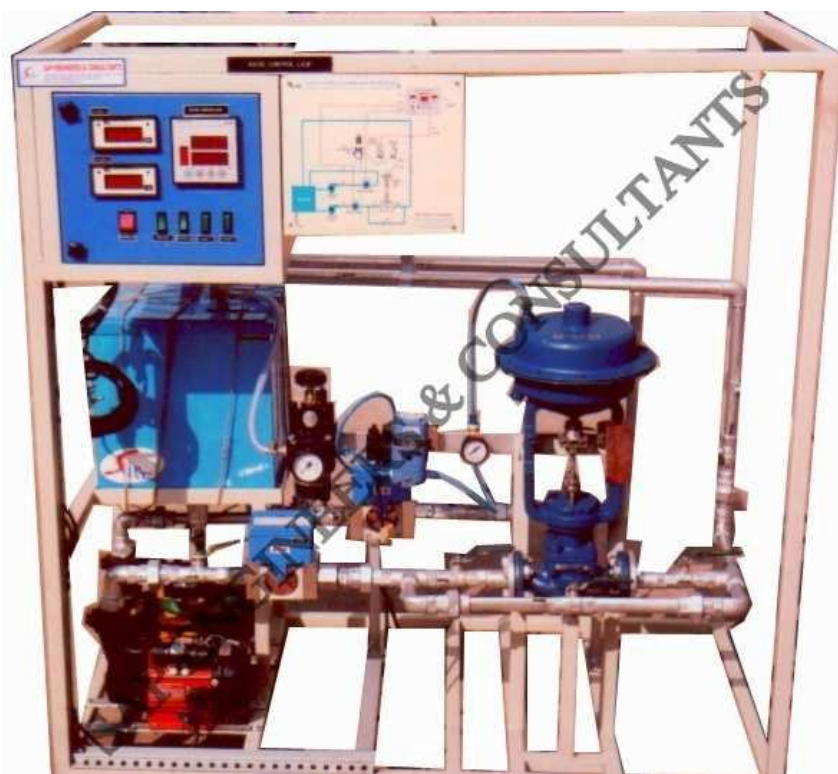


SAP E & C RATIO CONTROL SYSTEM
(PRODUCT CODE: PCST - 06) COMPUTERIZED (OPTIONAL)



The **Ratio Control System Trainer (PCST-06)** Is The System, Which Outlines The Basics Of Ratio Control Loop Associated Aspects.

KEY WORDS:

- Feedback Control.
- ON-OFF & PID control.
- OPEN/CLOSE loop response.
- MANUAL/AUTO tuning of controller
- Feedback Flow Control.
- SCADA BASED Ratio Control. (Flow1+ Flow2).
- PID Control.
- P,P+I,P+I+D Controller Action
- TRANSIENT response analysis study.
- USB / RS 232 / Modbus Communication
- Ability to hook up with DCS (Distributed Control System Trainer)

Technical Specification-

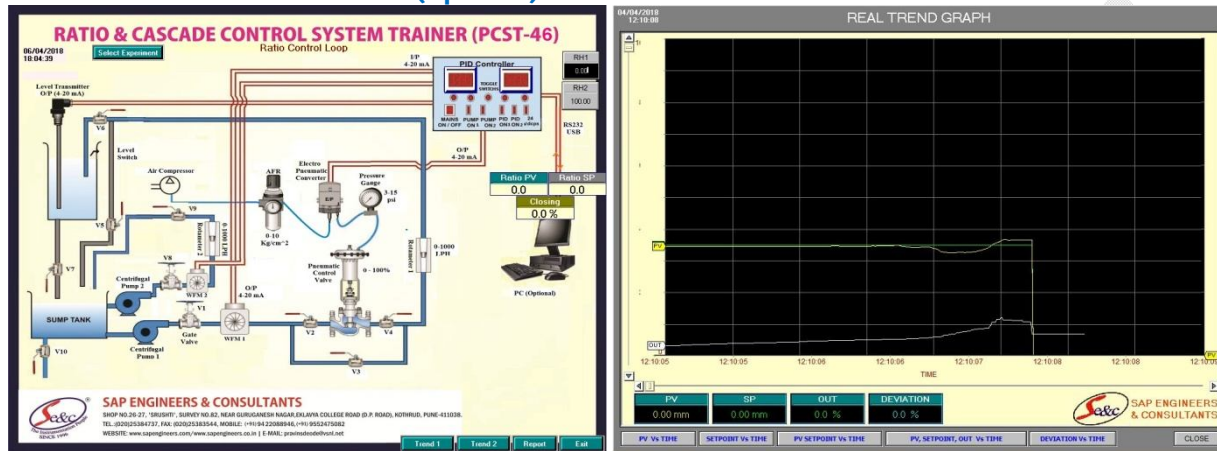
No.	Item Name	Technical Specifications
1	Sump tank-	Material: Stainless Steel, 1.5 mm thick/P.P.5mm thick , Capacity: 30 litres, with top cover, Dimension: 1ft (L) ×1ft (W) ×1ft (H).
3	Piping-	½" Class B GI, with ½" SS ball valves: 08 No.s
4	Centrifugal Pump-	½/¼ H.P., 1φ 230 V AC supply, Surface mounting.
5	Flow meter-	½", turbine type / wfm type, Range: 0-600 LPH / 0-1000 LPH. Output: 4-20 mA, Type: 3-wire type, Supply: 24 V DC, 100 mA, Mounting: Horizontal, Connection: ½"
6	Flow Indicator	2 no. 3 ½ Digit Display, 230 VAC supply
7	Pneumatic Control Valve-	Size: ½", Type; Two way Globe type (Air to Close), CV: 5 US GPM with diaphragm actuator, Equal Percentage Type, Flange connection: PCD: 60 mm, ID16 mm, OD: 90 mm.
8	Rotameter-	1 no. Range: 0-1000 LPH, Glass tube type/ Acrylic body, Connection: ½", Bob material: SS 304, Mounting: Inlet Bottom Outlet Top.
9	E/P Converter-	Input: 4-20 mA, Output: 3-15 psi, Connection: ¼" NPT / BSP.
10	A.F.R. / F.R.L. Unit-	0-10 Kg/cm ² with pressure gauge, Connection: ¼" NPT / BSP.
11	Electronic PID Controller-	Dual 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	SCADA Application Software (Optional)-	SCADA 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.

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13	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. Dimension: 1ft (L) ×1ft (W) ×1ft (H)
14	Computer (Optional)-	PC with color monitor: 15", PC Pentium Dual Core/i3, with serial communication ports, 250/500 GB HDD, 2GB RAM
15	Air Compressor (Optional)-	Tank capacity: 25 Litres, 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 Proportional (P), Integral (I) and Derivative control (D).
- ❖ 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 programming and operation of PID controller.
- ❖ Study of stability Ratio Flow Control System.
- ❖ Study of multivariable loop, Ratio control.
- ❖ Study of P, I, P+I, P+I+D control Modes.
- ❖ Study of data logging & Feedback, Ratio control system.
- ❖ Study of Computerized Ratio control of flow system trainer (optional).
- ❖ Study of SCADA Application Software/ Computerized Control of Ratio 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.
- ❖ Inbuilt Safety Measures to avoid improper usage.
- ❖ Computer Interface & SCADA software connectivity for analysis of Ratio Control Loop(Optional)

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Software Specifications-

- ❖ Use of Personal computer for Process Control (Optional).
- ❖ On line Process Monitoring with SCADA (Optional).
- ❖ Data Acquisition and Supervisory Control facility (Optional).
- ❖ Graphs, Reports, Historical database generation facility, Printer (Optional).

System Dimension: 4.5 Ft. (L) X 1.5 Ft. (W) X 4.5 Ft. (H)

Services Required:

- ❖ Electric supply 1 ϕ 230VAC, 50Hz.
- ❖ Water Supply and Drainage Arrangement.
- ❖ Clean, dry Compressed air supply at 2.1 Kg/cm²

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.

