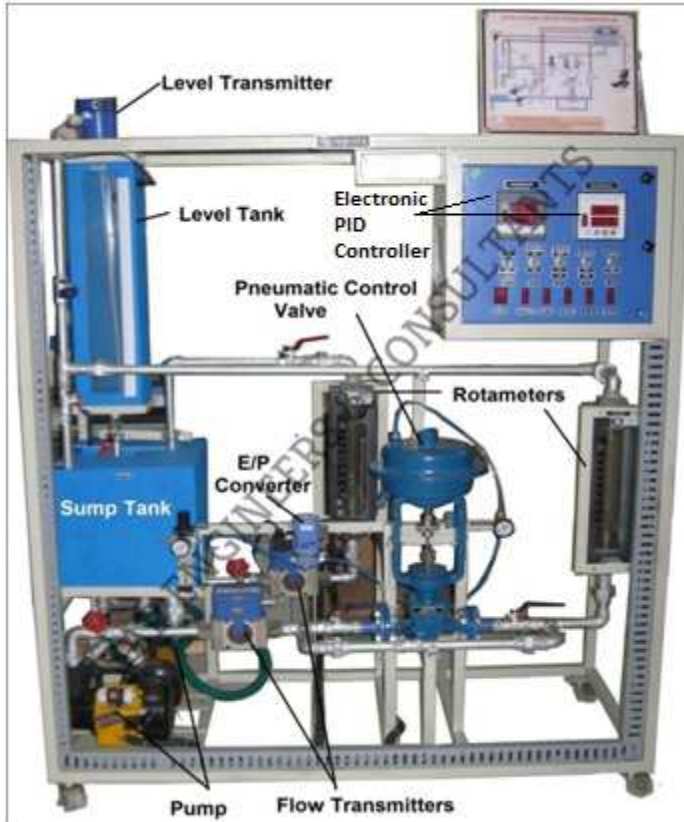
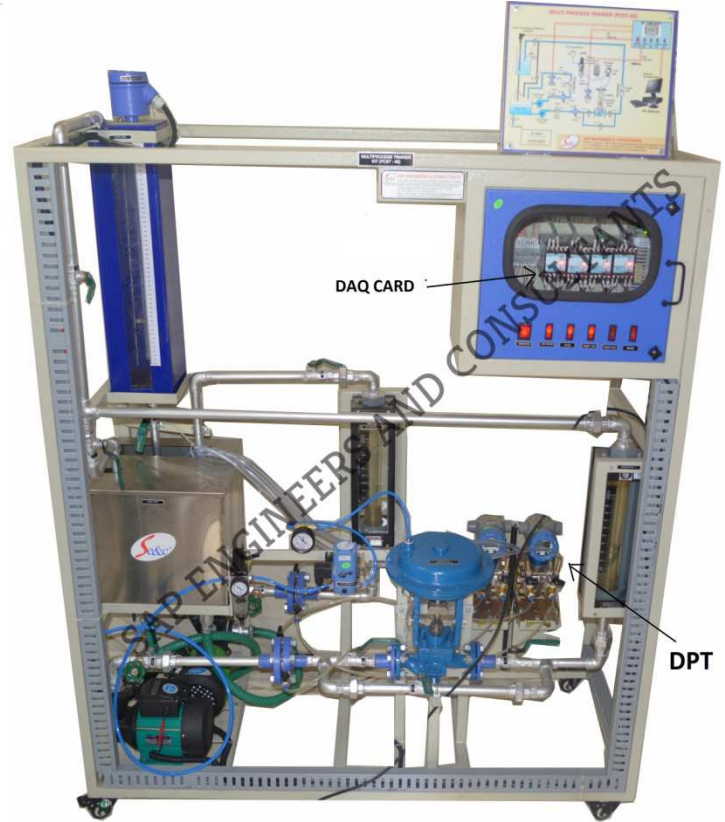


**SAP E & C FEEDBACK, CASCADE AND RATIO CONTROL TRAINER
(FEED FORWARD CONTROL FOR PCST-46A ONLY)
(PRODUCT CODE: PCST-46 AND PCST-46A)**



**Feedback, Cascade and Ratio Control Trainer
(Product Code: PCST-46)**



**Feedback, Cascade, Ratio and Feed Forward Control
Trainer
(Product Code: PCST-46A)**

The **Feedback, Cascade and Ratio Control Trainer (PCST – 46)** and **Feedback, Cascade, Ratio and Feed Forward Control Trainer (Product Code: PCST-46A)** is the system, which outlines the Basics of Feedback, Cascade, Ratio and Feed Forward (For PCST-46A) Control considering Flow, Level as Process Parameters.

KEY WORDS-

- Feedback Control.
- Feedback Flow Control.
- Feedback Level Control.
- Cascade Control (Flow + Level)
- Ratio Control (Flow + Flow)
- Feed Forward (For PCST-46A Only)
- PID Control.
- SCADA/Labview Based Control.

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, Dimension: 1ft (L) ×1ft (W) ×1ft (H).
2	Level Tank-	Material P.P. 5mm thick, Dimension: 150(L) mm×150(W) mm× 600(H) mm
3	Piping-	½", Class B GI, with ½" SS ball valves: 10 Nos.
4	Centrifugal Pump-	½ H.P., 1ϕ 230 V AC supply, Surface mounting.

**SAP E & C FEEDBACK, CASCADE AND RATIO CONTROL TRAINER
(FEED FORWARD CONTROL FOR PCST-46A ONLY)
(PRODUCT CODE: PCST-46 AND PCST-46A)**



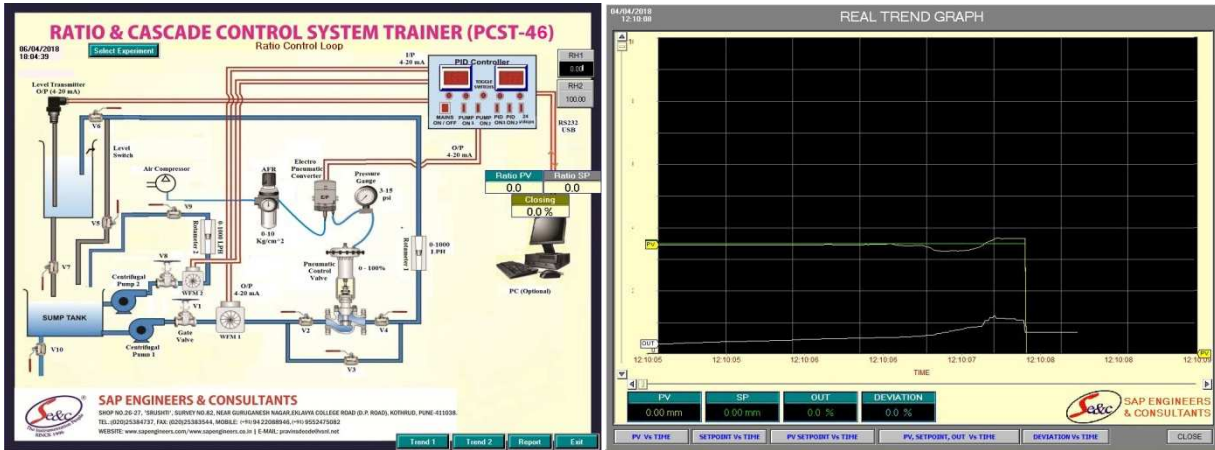
5	Flow Meter/DPT-	a) Type: Turbine Type / WFM type, 2 Nos. Range: 0-600 LPH/0-1000 LPH, Output: 4-20 mA, Type: 3-wire type, Supply: 24 V DC 100 mA, Mounting: Horizontal, Connection: ½” OR b) Type: DPT, 2 Nos. (For PCST-46A) Range: -400 to 400 in H ₂ O, Output: 4-20 mA, 2-Wire HART Compatible Power supply: 24 V DC, 30 mA
6	Signal Isolator- (For PCST-46A only)	4 Nos., Input: 4-20 mA, Output: 0-10 V, 230 V AC Supply (3 Nos.) Input: 0-10 V, Output: 4-20 mA, 230 V AC Supply (1 Nos.)
7	Level Transmitter-	Input: 0-400 /0-500 mm, Output: 4-20 mA, Supply: 24 VDC, 100 mA. Type: 2-wire Capacitance type, Mounting: Top 2” screwed connection.
8	Level Switch-	Float operated, Float Material: SS304, Switching Current: 0.5A Switching voltage: 240 VAC/200 VDC, Switch Action: Reversible, Weight: 315 Gms
9	Pneumatic Control Valve-	Size: ½”, Type; Two way Globe type (Air to Close), Equal Percentage Type, Cv: 5 US GPM, with diaphragm actuator. Flange connection: PCD: 60 mm, ID16 mm, OD: 90 mm.
10	Rotameter-	2 no. Range: 0-1000 LPH, Glass tube type/acrylic body, Connection: ½”, Bob material: SS 304, Mounting: Inlet Bottom Outlet Top.
11	E/P Converter-	Input: 4-20 mA, Output: 3-15 psi, Connection: ¼” NPT / BSP.
12	A.F.R / F.R.L. Unit-	0-10 Kg/cm ² with pressure gauge, Connection: ¼” NPT / BSP.
13	Electronic PID Controller/DAQ Card-	2 no. Single input PID (1 No.) & Dual input (1 No.) for Cascade and Ratio, 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 annunciations. OR Make: NI USB-6001 DAQ/Eqvt., 01 No. (For PCST-46A only) Analog input: 4, Analog output: 2, Digital input: 2, Digital output: 2 USB Communication
14	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)
15	SCADA Application Software (Optional)-	Make: Elipse/Labview/Eqvt. PID control setting (P, P+I, P+D 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. *Labview is mandatory for PCST-46A for its Operation
16	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.
17	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 .

SAP E & C FEEDBACK, CASCADE AND RATIO CONTROL TRAINER (FEED FORWARD CONTROL FOR PCST-46A ONLY) (PRODUCT CODE: PCST-46 AND PCST-46A)

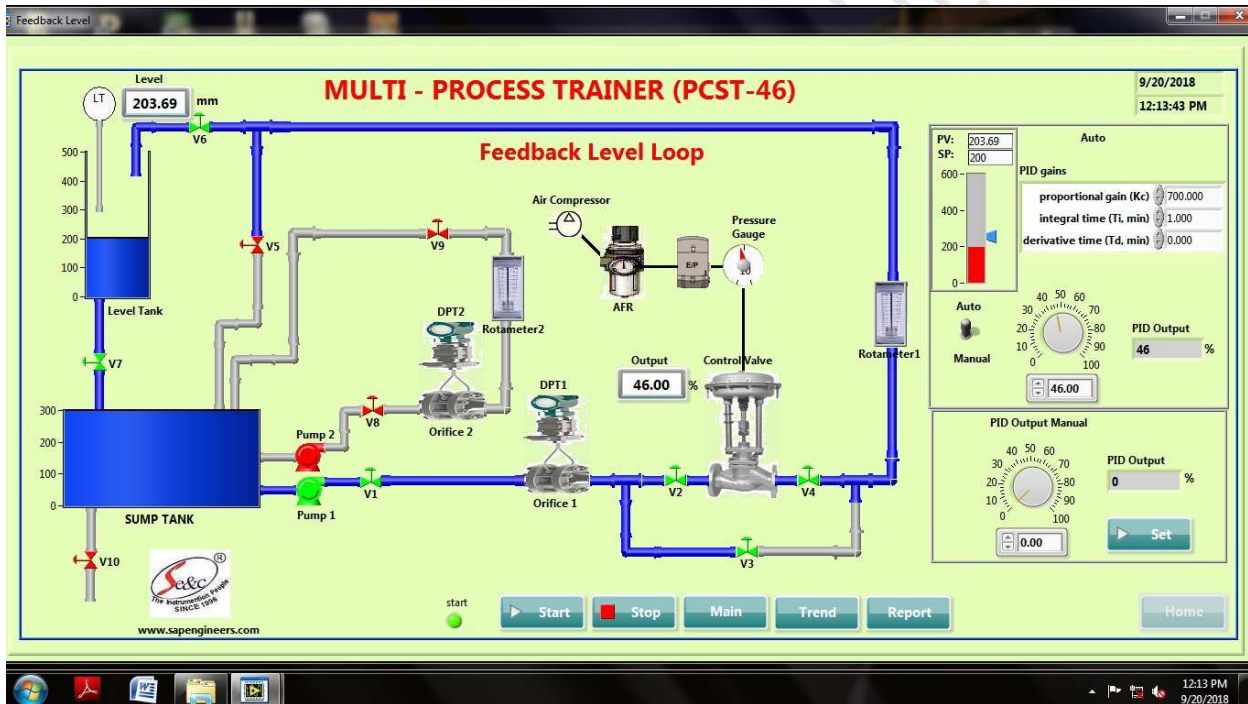


SCADA APPLICATION SOFTWARE (Optional):

For PCST-46



For PCST-46A



Range of experiments:

- ❖ Study of Feedback Control, Cascade Control, Ratio Control Loop and Feed Forward Control (For PCST-46A).
- ❖ Study of Feedback Flow, Feedback Level Loop.
- ❖ 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 stability of dual loop cascade (Flow - Level Control) & ratio control system.
- ❖ Study of Rotameter, capacitance type level sensor, wheel flow meter & control valve.
- ❖ Study of SCADA Application Software/Computerized Control of Cascade and Ratio Control System (Optional).

**SAP E & C FEEDBACK, CASCADE AND RATIO CONTROL TRAINER
(FEED FORWARD CONTROL FOR PCST-46A ONLY)
(PRODUCT CODE: PCST-46 AND PCST-46A)**



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 Application Software connectivity for analysis of Cascade Control Loop (Optional).

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

Weight: Approx. 90 Kg

Services Required-

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

