

SAP E & C CASCADE CONTROL TRAINER
(PRODUCT CODE: PCST - 05)



CASCADE CONTROL SYSTEM TRAINER

The **Cascade Control Trainer (PCST - 05)** is the system, which outlines the basics of Cascade Control considering Flow, Level parameters.

KEYWORDS:

- Feedback Control.
- ON-OFF & PID control.
- OPEN/CLOSE loop response.
- MANUAL/AUTO tuning of controller
- Cascade Control (Flow +Level)
- Feedback Flow Control.
- Feedback Level Control
- PID 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-

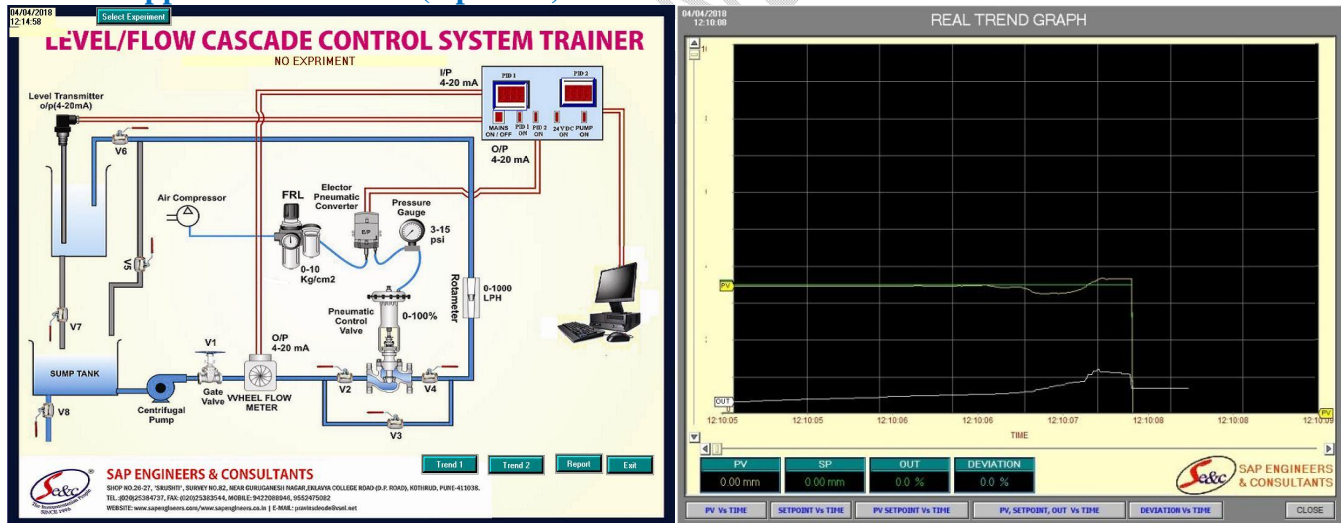
No.	Item Name	Technical Specifications
1	Sump tank-	Material: Stainless Steel, 1.5 mm thick/PP 5 mm thick, Capacity: 30 litres, with cover Dimension: 1ft (L) × 1ft (W) × 1ft (H).
2	Level Tank-	Material P.P. 5mm thick, Dimension: 150(L) mm × 150(W) mm × 600(H)mm
3	Piping-	½" Class B GI, with ½" SS ball valves: 08 Nos.
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 / 0-1000 LPH. Output: 4-20mA, Type: 3-wire type, Supply: 24 V DC, 100 mA, Mounting: Horizontal, Connection: ½"
6	Level Transmitter-	Input: 0-400 / 0-500 mm, Output: 4-20 mA, Supply: 24 V DC: 100mA Type: 2-wire Capacitance type, Mounting: Top 2" screwed connection.
7	Level Switch-	Float operated, Float Material: SS304, Switching Current: 0.5A, Switching voltage: 240 VAC \ 200 VDC, Switch Action: Reversible, Weight: 150 Gms

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8	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: 60mm, ID16 mm, OD: 90mm.
9	Rotameter-	1 no. Range: 0-1000 LPH, Glass tube type/ Acrylic body, Connection: ½”, Bob material: SS 304, Mounting: Inlet Bottom Outlet Top.
10	E/P Converter-	Input: 4-20 mA, Output: 3-15 psi, Connection: ¼” NPT /BSP.
11	A.F.R. / F.R.L. Unit-	0-10 Kg/cm ² with pressure gauge, Connection: ¼” NPT /BSP.
12	Electronic PID Controller-	2 no. Single input PID (1 NO.) & Dual input (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.
13	SCADA Application Software (Optional)-	SCADAS/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.
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	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.
16	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 multivariable loop, Cascade Control.
- ❖ 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 control system (Flow – Level Control).
- ❖ Study of Rotameter, capacitance type level sensor & control valve.
- ❖ Study of SCADA Application Software/ Computerized Control of Cascade Control System.
- ❖ Auxiliary Experiments.

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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 Cascade Control Loop (Optional).

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

Weight: Approx. 80 Kg

Services Required:

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

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