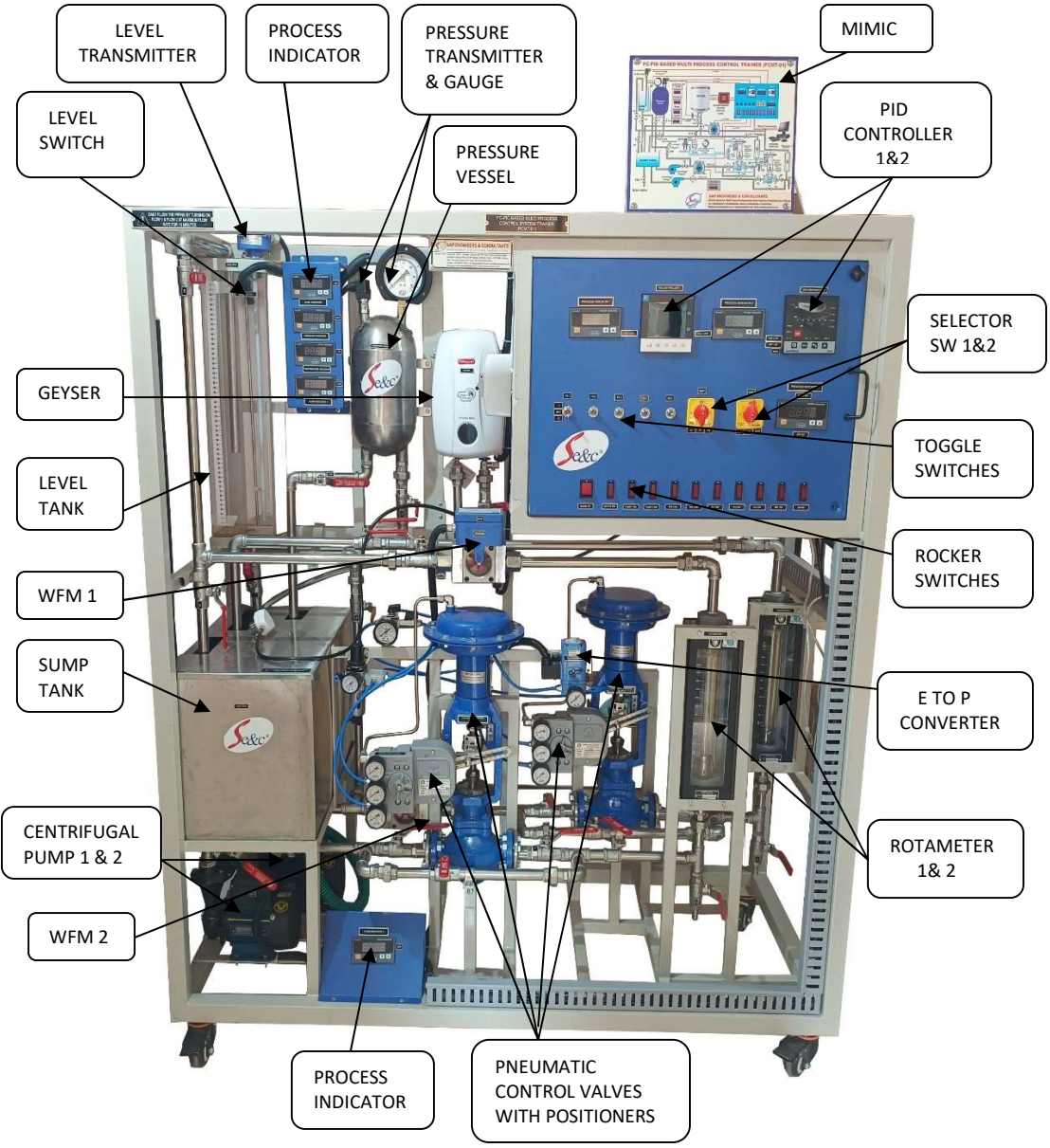
SAP E & C PC-PID BASED MULTI PROCESS CONTROL TRAINER
(PRODUCT CODE: PCMT - 01)



The **PC-PID Based Multi Process Control Trainer (PCMT - 01)** is highly flexible and modular system for studying of various control loops in industrial processes. It has been designed to include these processes in a single structure. The system in fact includes transducers, transmitters, PID controllers, actuators, + computerized control with SCADA application Software.

KEY WORDS:

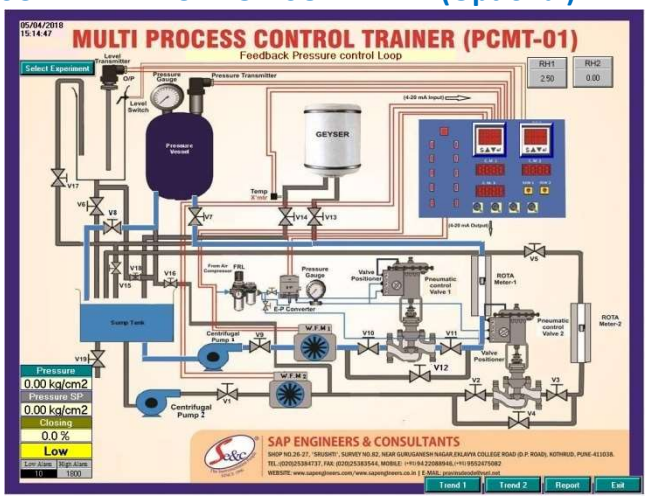
- Feedback Control.
- Feedback Flow Control.
- Feedback Level Control.
- Feedback Pressure Control.
- Feedback Temperature Control
- Cascade Control (Level + Flow, Pressure + Flow)
- Ratio Control (Flow + Flow).
- Split Range Control
- Feed forward control(optional): flow/level

Technical Specification:

No.	Item Name	Technical Specifications
1	**Sump tank-**	1 no., Material: SS 304 1.5 mm thick / PP 5mm thick, with top cover, Capacity: 50 liters, Dimensions: 2 ft (L) ×1 ft (W) ×1.5 ft (H).
2	**Level Tank-**	1 no., Material: Acrylic/ P.P. 5 mm thick, with top cover, Dimensions: 150mm (L) × 150mm (W) × 500mm (H).
3	**Temperature Cabinet/ Process Tank-**	1 no., Process tank with thick insulation wall & Electric Heater Thermostat, Heater: 3 KW, Dimension: 1ft (L) ×1ft (W) ×1.25ft (H).
4	**Centrifugal Pump-**	2 nos., ½ / 1 H.P., 1ϕ 230 V AC supply, Surface mounting.
5	**Pressure vessel-**	1 no., Shape: Cylindrical, Material: CRCC /SS 304, Diameter: 150 mm, Length: 300 mm, Capacity: 15 Kg/cm^2, with ½" BSP connection for Pressure Gauge, Pressure Transmitter, Inlet & Drain facility
6	**Piping-**	½" GI, Class B/SS Piping (Optional), with ½" SS Ball valves: 22 nos.
7	**Flow meter-**	2 nos. Size: ½", Turbine type (WFM type), Range: 0-600/0-1000/0-2000 LPH, Supply: 24 V DC, 100 mA. Output: 4-20 mA, Type: 3-wire type Mounting: Horizontal, Connection; ½"
8	**Level Transmitter-**	1 no., 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.
9	**Pressure Transmitter -**	1 no., Input: 0-2.5 Kg/cm^2 or 0-4 Kg/cm^2, Output: 4-20 mA, supply: 24 V DC, 50 mA, Type: 2-wire Piezo-resistive type, Medium: Water Pressure. Mounting: Top ½" BSP connection
10	**Temperature Transmitter-**	1 No., Type: Head mounting, Input: RTD, Output: 4-20 mA, Type: 2-wire type, Range: 0-100 ° C.
11	**Thyresterized Phase Angle Control Card-**	1 No. Input: 4-20 mA, Output: 0-230 VAC variable, 10 A Max.
12	**Pneumatic Control Valve-**	2 no. Size: ½ ", Characteristics: Equal percentage, Type: Two-way Globe type (Air to Close action for Valve-1 & Air to Open/Close Action for Valve -2), Cv: 5 US GPM, with diaphragm actuator. Flange connection: PCD: 80 mm, ID: 26 mm, OD: 110 mm. Pneumatic Input Signal: 0.2 to 1.0 Kg/cm^2. **With Optional Addition of 2 Nos. Valve Positioner /Electronic Signal Converter 1 No. for Split Range Control.** For Electronic Signal Converter- I/P: 4-20mA, Output: 4-20mA on 2 Channels For Valve Positioner 1: I/P 0.2 to 0.6 Kg/cm^2 & O/P: 0.2 to 1.0 Kg/cm^2 For Valve Positioner 2: I/P 0.6 to 1.0 Kg/cm^2 & O/P: 0.2 to 1.0 Kg/cm^2
13	**Rotameter**	2 Nos., Range: 0-1000/0-2000 LPH, Glass tube type/acrylic body, Bob Material: SS 304 Connection: ½", Mounting: Inlet- Bottom, Outlet- Top.
14	**E/P Converter -**	Input: 4-20 mA, Output: 3-15 psi, Connection ¼" NPT / BSP, Supply 2.1 Kg/cm^2
15	**A.F.R. / F.R.L. Unit-**	0-10 Kg/cm ^{2} with pressure gauge, Connection ¼" NPT / BSP.
16	**Level Switch-**	Float operated, Float Material; SS304, Switching voltage: 24 VDC, Switching Current 0.5A, Switch Action; Reversible, Weight: 315 Gms
17	**Current Meters-**	3 No.s, Range 0-20 mA, Supply: 230 VAC, Cut out: 44mm×92 mm×110 mm.
18	**Isolator-**	2 No.s, Signal Isolators, Input: 4-20 mA, Output: 4-20 mA, Supply: 230 V AC.

19	**Power Supply-**	24 V DC, 5 A, Size: 48mm×126mm×68mm.
20	**Electronic PID Controller**	2 No., Single input PID & Dual Input PID, with Serial Interface USB / Ethernet / RS 485 / RS 232, Cut Out Size; 92×92×144mm, Input: 4-20 mA Output: 4-20 mA, Display: Dual for PV & SP, Bar graph display for Output & deviation, Hi-Low alarm annunciation.
21	**Electrical Control Panel: -**	MS Powder coated panel with switches, indicator, controller on front fascia, UK 2.5, Terminal connectors mounted on DIN rail channel, Use of 0.5 sq mm multi-strand wire with proper insulated Lugs, Ferruling & neat wire dressing & clamping Wires & power cables are seated through 1''×1''PVC cable tray. Dimension: 1ft (L) ×1ft (W) ×1ft (H).
22	**SCADA Application Software (Optional)-**	SCADA Make: Elipse/Eqvt. (Runtime Application Software) SCADA S/W, PID control settings (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.
23	**Computer (Optional)-**	PC with color monitor: 18.5'', Intel Core i3/i5, 500 GB HDD, 4GB RAM, Keyboard & Mouse, DVD Writer, With supporting OS and Communication port.
24	**Air Compressor (Optional)-**	Tank capacity: 20/24/30 Litres, Discharge: 2 CFM Motor: 1 H.P/2 H.P. 230 V AC Operated working pressure: 5-6 kg/cm²

SCADA APPLICATION SOFTWARE (Optional):



Range of experiments-

- Feedback control: - Flow, Level, Temperature and Pressure.
- Cascade control: - Level + Flow 1, Pressure + Flow 2.
- Ratio control: - Flow/Flow.
- Split Range control: - Level/Pressure.
- On-Off control: Flow, Level, Pressure, Temperature.
- Study of SCADA Application Software/ Computerized Control of Multi-Process Control System.
- Feed forward control(optional): flow/level (to be incorporated extra on Demand only)

Process Equipments-

- A sump tank and transparent acrylic tank (secondary) containing water.
- A control system for liquid flow across the two tanks
- A control system for liquid level in secondary tank.

- An Oven/ Process Tank for temperature control.
- A pressure vessel for pressure control.
- Electrical control panel along with PC Interface module.

Features-

- Compact Ergonomic Design.
- User-Friendly, Self-Explanatory Systems.
- Leak proof Safety Measures, sturdy piping.
- 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.
- SCADA software connectivity for analysis of Multi process Trainer.
- Caster wheel mounted movable frame

System Dimension (Approx.): 6 Ft. (L) X 2.5 Ft. (W) X 6 Ft. (H)

Weight: Approximately 250 Kg

Services Required:

- Electric Supply of 1ϕ, 230 V AC, 50 Hz.
- Water Supply and Drain Arrangement.
- Clean, dry, compressed air supply at 2.1 kg/cm².
- Laptop/Desktop Computer for SCADA only (Optional).
- Printer (Optional).

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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