

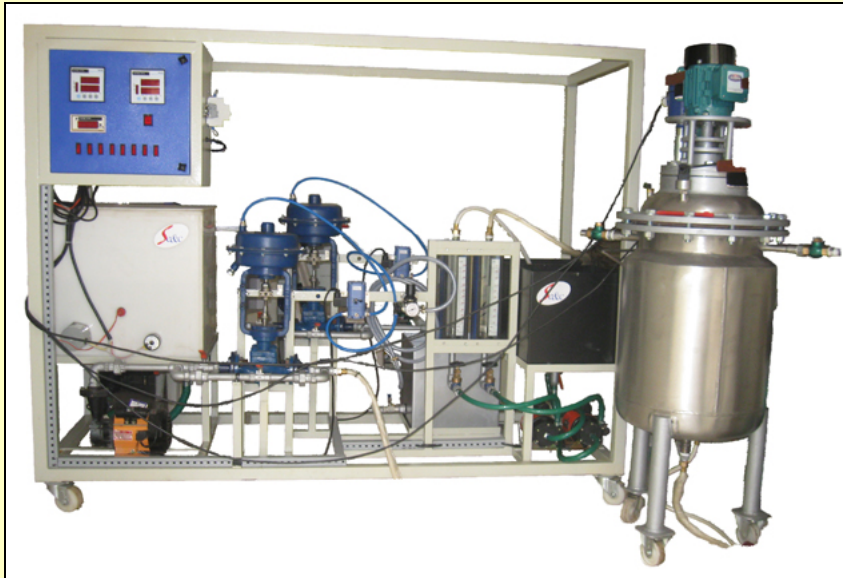
SAP E&C CSTR CONTROL SYSTEM TRAINER (PCST-16) COMPUTERIZED



The CSTR Control System Trainer is the system, which outlines the basics of Temperature and Pressure Control inside CSTR and other aspects related to it.

KEY WORDS:

- Feedback control.
- Feedback Pressure control
- Feedback Temperature control.
- PID control.
- P, P+I, P+I+D CONTROLLER ACTION.



Technical Specification: -

- ❖ Hot water Tank (HWT): - Material: polypropylene, rust proof, cover on the top
Capacity: 80 liter. Dimension: 18" (L) × 12" (W) × 20" (H)
- ❖ Reactant Tanks: - 2 Nos., Material: PVC Foam sheet, Capacity: 30 liter.
Dimension: 12" (L) × 12" (W) × 12" (H)
- ❖ Product Tank: - 1 No., Material: PVC Foam sheet, Capacity: 30 liter.
Dimension: 12" (L) × 12" (W) × 12" (H)
- ❖ Pump For HWT: - Type: Centrifugal pump, Capacity: ½ HP, Supply: 230V AC
Temperature: 100° C, Discharge: 1200 LPH, Size: 19mm×19mm.
- ❖ Piping: - ½" GI, Class B, with ½" SS ball valves: 20 nos
- ❖ Pump for reactants:- Type: Centrifugal pump, Capacity: ¼ HP, Supply: 230V AC
Temperature: 100° C, Discharge: 1000 LPH, Size: 19mm×19mm.
- ❖ Temperature Transmitter: - Input: RTD, Output: 4-20 mA,
Type: 2-wire type, Range: 0-200 ° C,
- ❖ Electronic PID Controller: - 02 Nos., with Serial PC Interface (ASCII Protocol) RS232,
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, Alarm annunciation on Front fascia.
- ❖ Computer: - PC with color monitor: 17", PC Pentium Dual Core,
with serial communication ports, 80 GB HDD,
512MB RAM, CD Drive.
- ❖ SCADA Application Software: - 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.

- ❖ Pressure Transmitter: - Input: 0-2.5 Kg/cm²/ 0-4 Kg/cm², Output: 4-20 mA
Type: 2-wire Piezoresistive type, Mounting: Top ½” BSP connection
- ❖ Level Transmitter: - Input: 0-500 mm, Output: 4-20 mA
Supply: 24 V DC, 100 mA. Type: 2-wire
Capacitance Type, Mounting: Top 2” Screwed Connection
- ❖ Level Indicator:- 3 ½ Digit Display, Inbuilt 24VDC Supply, Operation on 230V AC, 50Hz
- ❖ Miniature Level Switch: - Mounting: Side mounting, NO/NC type selectable,
230 V AC operating.
- ❖ E/P Converter: - 02 Nos., Input: 4-20 mA, Output: 3-15 psi, Connection: ¼” NPT / BSP,
Supply: 1.4 Kg/cm².
- ❖ Heater coil: - Size: Circular in shape, 1” diameter, Mounting: Side mounting on the tank.
Connection: 1 ½”, Power: 4000 Watts, 230 V AC.
- ❖ Pneumatic control valve: - 02 Nos., Size: ½”, Characteristics: Equal %,
Type: Two ways Globe type (Air to close)
Cv: 5 US GPM & 2 US GPM, with diaphragm actuator. Area 18 sq. inch.
Flange connection: PCD: 60 mm, ID: 16 mm, OD: 90 mm.
- ❖ Rotameter: - 2 Nos., Range: 100-1000 LPH, Glass Tube Type/ Acrylic body,
Connection: ½”, Bob material: SS 304,
Mounting: Inlet Bottom Outlet Top, Temperature: 100° C
- ❖ Thermostat:- (Temperature controller) Type: Bi-metallic type, Length: 8”, Temperature Range: 0-150° C
Mounting: Side mounting thermo well insertion Type,
- ❖ Rotameter: - 02 Nos., Range:0-1000 LPH, Glass tube type,
Bob Material: SS 304, Connection: 1”, Mounting: Inlet Bottom Outlet Top.
- ❖ 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. Use of 1sq mm multistrand 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).

- ❖ **REACTOR:-**
 - Shell Position:- Vertical
 - Inside Diameter:- 300mm
 - Straight Height:- 600mm
 - Top Head:- Dished, Bolted
 - Bottom Head:- Dished, welded
 - Shell Gross Volume:- 40ltrs
 - Design Temperature:- 200deg.C
 - Designed pressure:- 5kg/cm²
 - Thickness:- 4mm
 - MOC:- SA-240Gr.304
 - Mixer model:- AX-C-0.18
 - Motor:- Crompton make, 0.18kW/1350RPM
 - Mixer speed:- Direct driven
 - Impeller:- 1X pitched blade
 - Shaft length:- 500mm

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.
- ❖ Computer Interface (Optional).
- ❖ SCADA software connectivity for analysis of temperature and pressure control loop.

System Components:

- ❖ CSTR with stirrer.
- ❖ Water heating system.
- ❖ Hot water & reactants storage tanks.
- ❖ Hot water & reactants circulation system.
- ❖ Flow monitoring on rotameter.
- ❖ Level indicator.
- ❖ Capacitive Level transducer
- ❖ RTD based Temp. Transmitter with 4-20 mA o/p for reactor temperature.
- ❖ Pump(3 Nos.) for hot water and reactants.
- ❖ Pneumatically operated control valves & electro pneumatic converter for regulation of hot water through jacket for control of temperature inside reactor.
- ❖ PID controller(2 Nos.) with RS- 232 port connectivity.

Range Of Experiments:

- ❖ Feedback Temperature Control Loop.
- ❖ Feedback Pressure Control Loop
- ❖ Study of SCADA Application Software/ Computerized Control of CSTR.
- ❖ System Dimensions: **6 Ft. (L) X 2.5 Ft. (W) X 5.5 Ft. (H)**

Services Required:

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

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 AND CONSULTANTS	
Regd. Off.	: Shop No. 26, 27 Srushti, S. No. 82/11+12++33+34, Eklavya Clg Rd (D. P. Road), Kothrud, Pune- 38
Telephone	: (020) 25384737
Mobile	: (+91) 9422088946, 9552475082
Fax	: (020) 25383544
Email	: pravinsdeode@vsnl.net
Website	: www.sapengineers.com / www.sapengineers.co.in

