



The Cascade Control Trainer is the system, which outlines the basics of Cascade Control considering Flow, Level parameters.

KEY WORDS:

- 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

Sump tank	Material: Stainless Steel, 1.5 mm thick/PP 5 mm thick, Capacity: 30 litres, with cover, Dimension: 1ft (L) X1ft (W) X 1ft (H).
Level Tank	Material P.P. 5mm thick, Dimension: 150(L) mmX150(W) mmX600(H)mm
Piping	½" Class B GI, with ½" SS ball valves: 08 Nos.
Centrifugal Pump	½ / ¼ H.P., 1f 230 V AC supply, Surface mounting.
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"
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.
Level Switch	Float operated, Float Material: SS304, Switching Current:0.5A, Switching voltage: 240 VAC \ 200 VDC, Switch Action: Reversible, Weight: 150 Gms
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.
Rotameter	1 no. Range: 0-1000 LPH, Glass tube type/ Acrylic body, Connection: ½", Bob material: SS 304, Mounting: Inlet Bottom Outlet Top.
E/P Converter	Input: 4-20 mA, Output: 3-15 psi, Connection: ¼" NPT /BSP.
A.F.R. / F.R.L.	Unit- 0-10 Kg/cm2 with pressure gauge, Connection: ¼" NPT /BSP.
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.
52202 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.
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)

Note: Specifications are subject to change.

Tesca Technologies Pvt. Ltd.

IT-2013, Ramchandrapura Industrial Area, Sitapura Extension,
Near Bombay Hospital, Vidhani Circle, Jaipur-302022, Rajasthan, India,
Tel: +91-141-2771791 / 2771792; Email: info@tesca.in, tesca.technologies@gmail.com
Website: www.tescaglobal.com

52201 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.
52203 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

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.

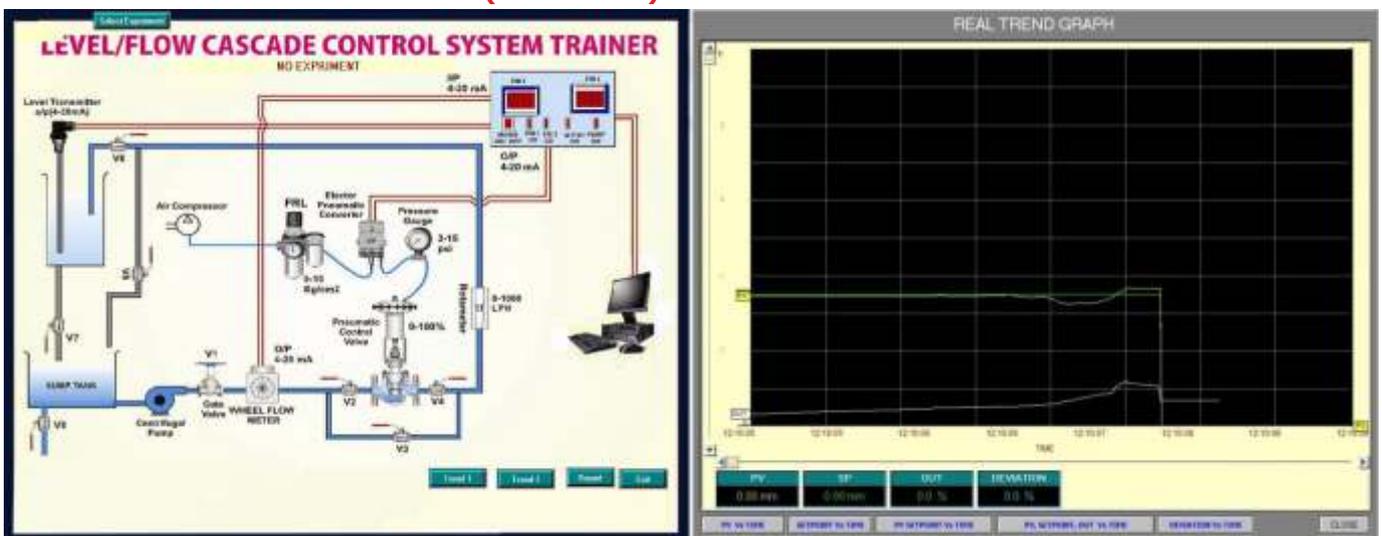
Features: -

- 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 1φ 230VAC, 50Hz.
- Water Supply and Drainage Arrangement.
- Clean, dry Compressed air supply at 2.1 Kg/cm².
- Laptop/Desktop computer (for SCADA)

SCADA APPLICATION SOFTWARE (OPTIONAL):



Tesca Technologies Pvt. Ltd.

IT-2013, Ramchandrapura Industrial Area, Sitapura Extension,
Near Bombay Hospital, Vidhani Circle, Jaipur-302022, Rajasthan, India,
Tel: +91-141-2771791 / 2771792; Email: info@tesca.in, tesca.technologies@gmail.com
Website: www.tescaglobal.com