In this modern era, instrumentation & control engineering have major share for the industrial growth, whilst process control is a vital concept of it. The functionality and complexity of process control have been increased.

Mini Process Control Demonstrator endows students and industry professionals to understand the concepts and working of thermal process control which enables them to learn advance and more complex thermal process; and contribute in the growth of instrumentation arena. It formulates students to accumulate, develop and practice the fundamentals of thermal process control.

Mini Process Control Demonstrator has sensors like temperature sensor, liquid level sensor, level indicators. It has safety measures such as emergency shutdown and overheat protector. There is a wide range of experiments that can be performed on the trainer. It also has computer interfacing with real time graphical analysis which helps to perform mathematical calculations required to state stability of process using methods like root locus, bode plot, etc. This feature increases the scope of doing research and implementing ones innovative ideas related to thermal process control.

Study of process with two position controller, PID controller and optionally with PLC.

- Study of thermal Process Control
- Temperature Controller
- Use of Industrial Process Control Elements
- Signal Conditioning
- Control Quality and Optimum Control
- Process Loop Tuning & Stable Process
- Real-time PC interface with ADC & Digital input/output
- Process Control by ON/OFF Controller
- Process Control by PID with Auto Tuning
- Optional process control by using PLC
- Process Control Loops
- Mathematical Modeling and Calculations
- Stability of Process using Root Locus, Bode Plot , etc
- Process Indicators
- PC Interface for Open Loop & Close Loop Control
- PC Based Temperature Indicator
- Print and Save Feature for Real Time Data and Graph
- Real Time Graphical Representation
- User Friendly Software
- Exhaustive Course Material & References

Technical Specifications

Vessel Capacity	:	2 Litres
Temperature Measurement	:	RTD (-99 to 850°C)
Heater	:	230 V AC

Note: Specifications are subject to change.
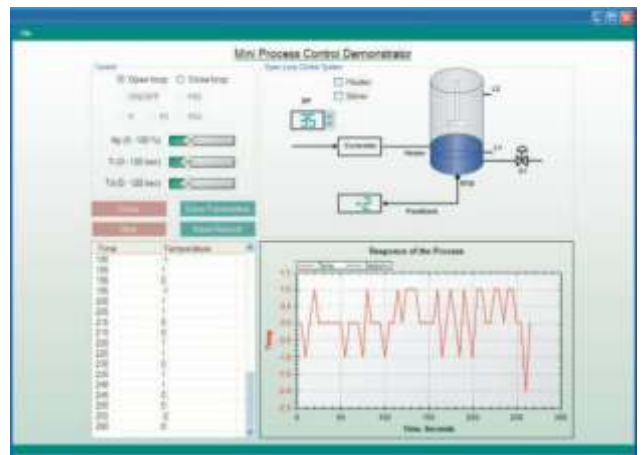
Software Window

Temperature Range	:	from room temperature to 100°C
Temperature Indicator	:	0 to 850°C
Control Valve	:	Manually Operated
Stirrer	:	0 or 5 V DC
Level Sensor	:	0 or 5 V DC
Indicators	:	Level Indicators Stirrer Indicator Heater Indicator
Relay Action	:	Forward for Cooling and Reverse for Heating
PID Controller	:	Hardware based & Computer based
ON/OFF Controller	:	Hardware based & Computer based
Computer Interface	:	USB
Analog Input	:	One (0 to 5 V DC)
Digital Input	:	Two (TTL)
Digital Output	:	Two (TTL)
Switches	:	Two (TTL)
Signal Conditioning	:	Amplifiers with gain of 1 and 10
PC Based Temperature Indicator	:	0 to 100°C
Power Supply	:	230V ± 10%, 50 Hz (others on request)

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