



Teaching pressure process control to students equips them with the knowledge and skills necessary for success in industries where pressure regulation is critical.

It provides a strong foundation in engineering, automation, safety, and problem-solving, making students valuable assets in the workforce while contributing to the efficiency, safety, and quality of industrial processes.

Improper pressure levels can lead to equipment failure, leaks, or even explosions and emphasizes the importance of maintaining safe operating conditions.

The Armfield PCT63 system introduces students to fundamental control concepts, as in feedback control, proportional-integral-derivative (PID) controllers, and closed-loop control systems. It consists of a variable-speed reciprocating air pump (compressor), the speed of which can be adjusted by the user, a pressure vessel, and an outflow system.

The outflow system allows the air to escape via either a manually operated needle valve - providing an ongoing outflow, or via a solenoid valve and second needle valve - providing a step change in the outflow.

The vessel pressure is measured by a Bourdon-type mechanical gauge along with a pressure sensor. Providing a visual indication of the pressure in the vessel and a means for the user to check and calibrate the controller input from the pressure sensor.

Features/Benefits

- ▶ USB, WiFi, Bluetooth and LAN communications supplied as standard
- ▶ Supplied software includes Basic control, On/Off control and PID control
- ▶ Software dynamically displays Set point, Process value and K_p , K_i , and K_d
- ▶ MATLAB and Labview compatible
- ▶ Supplied with full set of manuals and teaching material

Experimental content

- ▶ Understanding how to control driving devices
- ▶ Understanding the sensors
- ▶ On/Off control systems
- ▶ System time constant
- ▶ P controller
- ▶ PI controller
- ▶ PID controller
- ▶ Zeigler Nichols algorithm
- ▶ Integral wind up
- ▶ Derivative filter
- ▶ Manual tuning
- ▶ Interfacing with MATLAB/ LabVIEW

Ordering specifications

PCT63 Pressure Control Process

A Pressure control process trainer, comprising:

- ▶ 24V PSU 60w 2.5a
- ▶ Pressure process control assembly
- ▶ USB lead
- ▶ Manual Control software allowing low level access to the Drive and Load in each system allowing calibration of sensors and drive systems
- ▶ On/Off Control software allowing control of each system with a simple On/Off algorithm, view software based oscillations and to explore the effects of hysteresis
- ▶ PID Control software allowing users to enter values for K_p , K_i , K_d and see how the system reacts to in-putted values

Related products

- PCT60: Level Process Control System
- PCT61: Flow Process Control System
- PCT62: Pressure Process Control System
- PCT64: Servo Pendulum Process Control System

Requirements

Scale



Mains electrical supply:

110-230V, AC 50-60 Hz.

PC and Display meeting the following minimum specification:

- Processor: 1Ghz or faster
- RAM: 1Gb or more
- HDD Space: 1Gb
- OS: 32 or 64bit Windows 7, 8, 10 or 11
- Display: Recommended minimum (1920 by 1080) full HD

Overall dimensions

Length	64cm
Width	45cm
Height	33cm

Packed and crated shipping specifications

Volume	0.095m ²
Gross weight	12.1kg

Ordering code

- PCT63-UK:** Pressure Process Control System
- PCT63-EU:** Pressure Process Control System
- PCT63-USA:** Pressure Process Control System