PCT SERIES

Temperature Control - PCT52

PCT52 is a visible and easy to understand temperature control process.

A fan blows air over a heater with radial fins and through a vertical clear acrylic duct. Sensors measure the surface temperature of the heater and the air temperature in the duct. This allows two different control implementations to be demonstrated with very different parameters, i.e.

▶ Temperature control of the heater surface (Direct Heating)

▶ Temperature control of the air (Indirect Heating)

In each case the temperature is controlled by varying the heater power and repeatable disturbances implemented by switching the fan speed, hence allowing direct comparison of different controller settings.

Demonstration / instructional capabilities

▶ Direct control of heater temperature by varying heater power

▶ Indirect control of air temperature by varying heater power

▶ Direct control or Indirect control using an external controller:

   PID Controller (PCT54)

   PLC Controller (PCT55)

Related products

PCT40 Multifunction Process Control Teaching System

PCT23-MKII Process Plant Trainer

PCT54 Industrial PID Controller

PCT55 Programmable Logic Controller (PLC)

Ordering specifications

PCT52 Temperature Control Process
A temperature control process trainer, comprising:

▶ 50W nominal heater mounted in a 60mm diameter duct

▶ Remotely interchangeable two speed fan blowing air over the heater

▶ Two platinum resistance temperature sensors, 0-150°C range, one measuring the heater surface temperature and one measuring the air temperature

▶ Capable of demonstrating control of both the heater surface or the air temperature

▶ Capable of demonstrating the difference between fast reacting and slow reacting sensors

▶ USB interface to PC, plus connection terminals for interfacing to external controllers

▶ Supplied with educational software for PID control as well as data logging.

Requirements   Scale

| PC | USB | 🚰 |

Mains electrical supply:
110 to 240 V, 50 or 60 Hz.
(Note, the units are supplied with: IEC leads to suit European and UK 230V, 50Hz outlets and USA 115V, 60 Hz outlets.)
PC computer with 2 spare USB ports (not supplied by Armfield) or external controller (PCT54 or PCT55)
Tap Water

Overall dimensions

|	
Length	0.255m
Width	0.230m
Height	0.250m
Packed and crated shipping specifications	
Volume	0.1m³
Gross weight	15kg

Ordering code

PCT52

armfield.co.uk

SOFTWARE AND INTERFACING FOR THE ESSENTIALS OF PROCESS CONTROL UNITS

Each process is supplied complete with software that allows it to be controlled using a Windows PC via a USB connection.

The effect of making changes to the system or to the controller configuration can be quickly investigated by applying repeatable disturbances or step changes to the process. Comparison of the responses obtained with different control settings clearly demonstrates the need for correct matching of the controller to the system characteristics.

Another fundamental aspect of process control is an understanding of sensors and how they are calibrated. This is demonstrated by a sensor calibration apparatus designed specifically to demonstrate this subject.
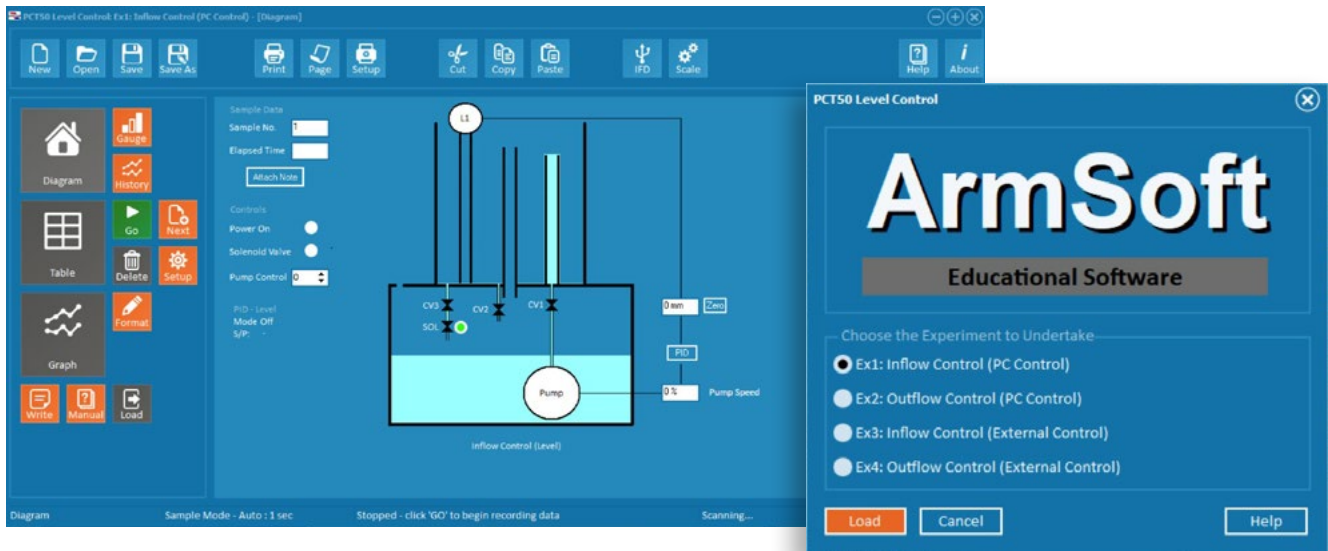
Armfield proprietary software including diagrammatic real-time display.

Pressing the load button allows the operator to select alternative experimental options.
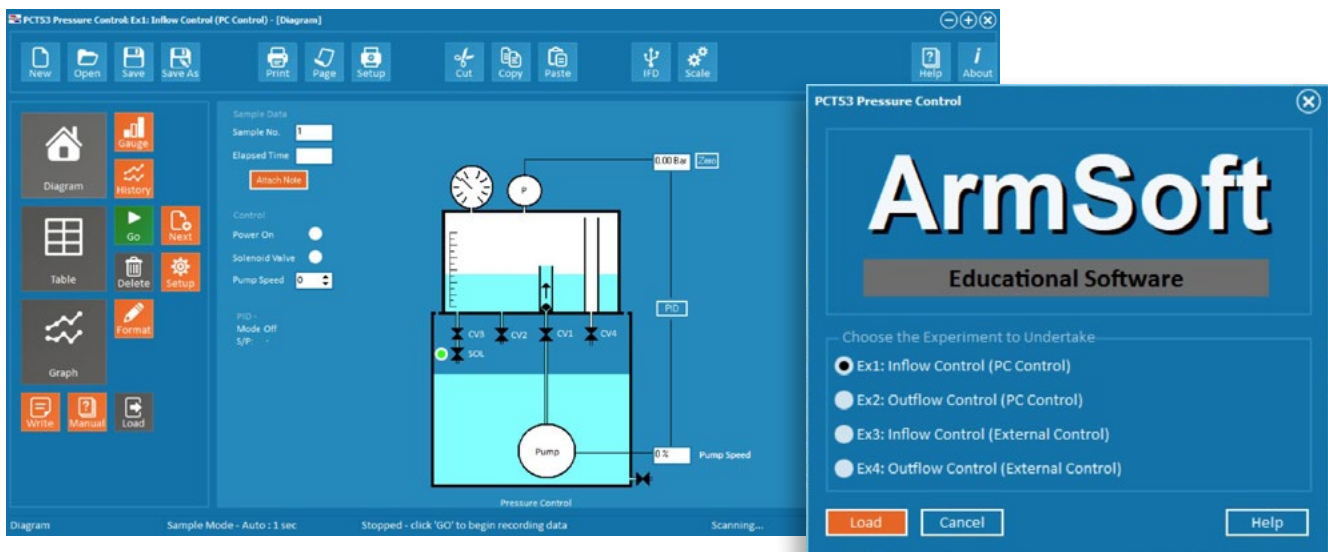
Software

Primarily computer controlled the ArmSOFT software demonstrates a real time diagrammatic display with readings of the relevant sensor outputs and controls the system inputs. The manual on/off time proportional and PID loops can be configured.

The ArmSOFT software enables the operator to control the pump speed and temperature 0 to 100%. Feedback from the sensors is then displayed in real time for the end user with simultaneous data-logging.

The data trend is also displayed graphically in real time and can be exported to another platform such as Excel for further analysis.
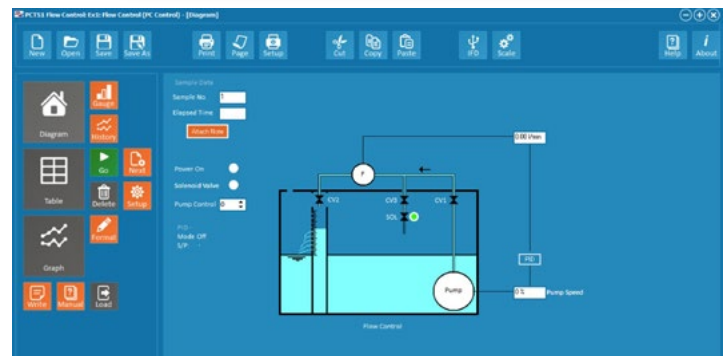
Knowledge base

> 28 years' expertise in research & development technology
> 50 years' providing engaging engineering teaching equipment

Benefit from our experience, just call or email to discuss your laboratory needs, latest project or application.

An ISO 9001:2015 Company

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Commissioning
Training
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