ALTECNIC ASSESSMENT: 01/03

SIZING OF PRESSURE REDUCING VALVES



DO YOU HAVE WHAT IT TAKES TO ANSWER ALL CORRECTLY?

Answer the following multiple-choice questions to challenge your subject knowledge about the Sizing of Pressure Reducing Valves.

QUESTION:1

How is pressure drop across a PRV typically calculated?

- A Using water temperature readings
- B Using manufacturer's graphs based on flow rate and valve size
- C Trial and error
- D Only through physical testing

QUESTION:2

Which standard provides design guidance for domestic water systems?

- A BS 5950
- B BS EN 806
- C BS 8558:2015
- D ISO 14001

QUESTION:3

Why is it important to choose the correct size of a PRV? (Select all that apply)

- A To maintain the required flow rate to appliances
- B To increase energy usage
- C To avoid noise and damage to the system
- D To increase pressure beyond safe limits

QUESTION:4

What are the main steps in calculating design flow rate? (Select all that apply)

- A Multiply pipe diameter by pressure
- B Calculate total flow rate based on appliance types
- C Choose the simultaneous usage factor
- D Define design flow rate using diagrams or standards

QUESTION:5

What is true about by-pass PRVs? (Select all that apply)

- A They are set at a lower pressure than the main PRV
- B They support low-flow demand in the system
- C They are usually sized for 20-30% of the systems design flow rate
- D They replace the main PRV entirely

QUESTION:6

When is it necessary to install PRVs in series? (Select all that apply)

- A When a very large pressure reduction is needed
- B When water temperature is too high
- C When the reduction ratio is too high for a single valve
- D When using gravity-fed systems only

QUESTION:7

In which scenarios is a combined by-pass and series PRV application beneficial? (Select all that apply)

- A In systems with both high and low flow demands
- B Where no pressure regulation is needed
- C When the system operates at a constant temperature
- D When flexibility and efficiency are required across pressure ranges

QUESTION:8

What problems can result from oversizing a PRV? (Select all that apply)

- A Cavitation
- B Reduced noise
- C Unstable operation
- D Longer lifespan

QUESTION:9

What determines flow velocity when selecting a PRV?

- A Size of building
- B Water temperature
- C Flow rate and pipe cross-section
- D Type of insulation used

QUESTION:10

What issues can result from excessively high water pressure? (Select all that apply)

- A Increased water efficiency
- B Pipe and appliance damage
- C Water noise (e.g., banging or hissing)
- D Lower risk of leaks

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ALTECNIC ASSESSMENT: 02/03

DIRT AND AIR IN COMMERCIAL SYSTEMS



DO YOU HAVE WHAT IT TAKES TO ANSWER ALL CORRECTLY?

Answer the following multiple-choice questions to challenge your subject knowledge about Dirt and Air in Commercial Systems.

QUESTION:1

Which of the following describes the working principles of a Deaerator?

- A The metal mesh surfaces increase water temperature to remove impurities and air bubbles
- B Micro-bubbles adhere to the metal surfaces, increase in volume, and are expelled by a float-operated valve
- C The device relies on a chemical reaction to separate impurities from the water
- D Impurities are filtered through a mesh net and dissolve in the water

QUESTION:2

Which of the following is recommended for installing a Dirt Separator?

- A The dirt separator should be installed on the supply circuit, downstream of the pump
- B The dirt separator can be installed in any orientation as long as it is upstream of the boiler
- C The dirt separator should be installed on the return circuit, vertically, and upstream of the boiler and pump
- D The dirt separator should only be installed in systems without magnetic extraction

QUESTION:3

What are the benefits of using Dirt and Air Separators? (Select all that apply)

- A Increase system efficiency
- B Extended system life
- C Cause abrasion and corrosion
- D Regular removal of impurities

QUESTION:4

The efficiency of separating impurities in a closed circuit system is dependent on particle size, speed of the medium, and the number of recirculations. As particle size increases, speed decreases, and recirculations increase, the efficiency of separation improves

- A True
- B False

QUESTION:5

Which of the following statements is true regarding the maintenance of filters in systems?

- A Older systems with more metal components require less frequent maintenance due to the robustness of the materials
- B Newer systems with plastic pipework require frequent flushing due to high corrosion risks
- C Blocked filters can be identified by lower flow rates, pressures, or noise in the system
- D Systems without a sight glass do not need maintenance as they are self-cleaning

QUESTION:6

What are the advantages of using a combined Deaerator-Dirt Separator over installing separate components?

- A It allows the system to function without any electrical connections
- B It takes up less space and requires fewer connections
- C It is ideal for systems where two separate components can be easily installed
- D It increases the overall cost of the system but improves efficiency

QUESTION:7

Which of the following statements is true regarding mechanical dirt separation?

- A Mechanical dirt separation uses magnetic fields to remove solid particles from fluids.
- B Magnetic filtration is effective at removing non-ferrous particles from fluids such as oil and water.
- C Mechanical dirt separation is used in applications like water treatment and manufacturing to protect equipment from damage
- D Magnetic filtration is used to remove contaminants from fluids but cannot be applied in heating systems due to the risk of corrosion

QUESTION:8

What effect can dirt build-up have on a heating system? (Select all that apply)

- A Reduce heat transfer efficiency
- B Increase pressure losses
- C Cause wear or damage to system components
- D Improve water circulation

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ALTECNIC ASSESSMENT: 03/03

SYSTEM BALANCING



DO YOU HAVE WHAT IT TAKES TO ANSWER ALL CORRECTLY?

Answer the following multiple-choice questions to challenge your subject knowledge about System Balancing.

QUESTION:1

Which of the following are features of Pressure Independent Control Valves (PICVs)? (Select all that apply)

- A Combination valve
- B DPCV diaphragm
- C Not settable flow rate
- D Optional ON/OFF or modulating heads

QUESTION:2

Which of the following are the disadvantages of Constant Volume Systems? (Select all that apply)

- A Automatic balancing
- B Increased energy use
- C Increased number of control valves
- D Terminal unit bypasses

QUESTION:3

Pressure Independent Control Valves (PICVs) systems are very flexible, should be low cost, give better control and do not require additional FCU control

- A True
- B False

QUESTION:4

'The percentage of the total flow in each branch remains constant irrespective of the mass flow rate' is one of the basic principles of system balancing

- A True
- B False

QUESTION:5

As an alternative to a proportional linear actuator, pressure independent control valves can not be controlled with an ON/OFF type thermoelectric actuator for simpler temperature control logic

- A True
- B False

QUESTION:6

Which are the disadvantages of Automatic Balancing Valves? (Select all that apply)

- A The cartridge does no need to be removed for flushing
- B Has to be manufactured to a specific flow rate
- C Flow rate is flexible and can be adjusted
- D Affected by dirt

QUESTION:7

What do you need to check before balancing? (Select all that apply)

- A Pipe work is complete and pressure tested
- B System flushed and clean
- C Strainers remain clean after 36 hours continuous operation
- D All valves are closed

QUESTION:8

Which of the following are features of Differential Pressure Control Valves (DPCVs)? (Select all that apply)

- A Holds differential pressure stable
- B Can not be adjusted or fixed
- C Often supplied with a partner valve
- D All of the above

QUESTION:9

What can happen in an Unbalanced Heating System? (Select all that apply)

- A Distant circuits can be starved of flow
- B Circuits closer to the energy centre can receive excessive flow
- C Underflows and overflows can occur
- D Every circuit automatically receives the correct flow

QUESTION:10

By how much can hydraulic balancing of an existing system reduce energy consumption?

- A Up to 10%
- B Up to 20%
- C Up to 35%
- D Up to 50%

QUESTION:11

What is the advantage of Variable Volume Systems?

- A Energy savings
- B Reduction in capital cost
- C Automatic or self-balancing
- D All the above

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