

1. What is the primary mode of operation for a reciprocating compressor?

- a) Rotary motion
- b) Linear motion
- c) Centrifugal motion
- d) Oscillating motion

Answer: b) Linear motion

Explanation: Reciprocating compressors operate by using a piston in a cylinder that moves back and forth (linear motion) to compress air.

2. In a single-stage compression process, how does the work input compare to a multi-stage compression process?

- a) Work input is higher in single-stage compression
- b) Work input is lower in single-stage compression
- c) Work input is the same in both single-stage and multi-stage compression
- d) Work input depends on the size of the compressor

Answer: a) Work input is higher in single-stage compression

Explanation: Single-stage compression requires higher work input compared to multi-stage compression due to compressing the air to a higher pressure in one stage.

3. Which factor affects the compression process by causing inefficiencies due to the volume of air left in the cylinder after compression?

- a) Clearance
- b) Temperature

- c) Pressure
- d) Humidity

Answer: a) Clearance

Explanation: Clearance is the volume in the cylinder that remains filled with compressed air at the end of the compression stroke. This residual volume reduces the efficiency of compression.

4. What is the indicator diagram used to represent in reciprocating compressors?

- a) Electrical power consumption
- b) Mechanical efficiency
- c) Volumetric efficiency
- d) Temperature distribution

Answer: c) Volumetric efficiency

Explanation: The indicator diagram in reciprocating compressors represents the volumetric efficiency, which is the ratio of the actual volume of air drawn into the cylinder to the theoretical volume.

5. Which compression process assumes no heat transfer and is reversible?

- a) Isentropic
- b) Isothermal
- c) Adiabatic
- d) Polytropic

Answer: a) Isentropic

Explanation: Isentropic compression assumes no heat transfer with the surroundings and is reversible, idealizing the compression process.

6. What type of efficiency measures how well a compressor converts input power into useful work output?

- a) Volumetric efficiency
- b) Mechanical efficiency
- c) Isentropic efficiency
- d) Thermal efficiency

Answer: b) Mechanical efficiency

Explanation: Mechanical efficiency measures the effectiveness of a compressor in converting input power into useful work output, considering losses due to friction and other factors.

7. In multi-stage compression, what is typically used to reduce the temperature of the air between stages?

- a) Supercooling
- b) Inter-cooling
- c) Pre-cooling
- d) Post-cooling

Answer: b) Inter-cooling

Explanation: Inter-cooling involves cooling the air between stages of compression to reduce its temperature and increase efficiency in multi-stage compression systems.

8. What condition is necessary for achieving the minimum work done during compression?

- a) Maximum clearance
- b) Minimum clearance
- c) Maximum temperature
- d) Minimum temperature

Answer: b) Minimum clearance

Explanation: Minimum clearance reduces the volume of air left in the cylinder after compression, minimizing the work required to compress the air further.

9. Which classification of compressors utilizes a rotating impeller to compress air?

- a) Reciprocating compressors
- b) Centrifugal compressors
- c) Diaphragm compressors
- d) Axial compressors

Answer: b) Centrifugal compressors

Explanation: Centrifugal compressors use a rotating impeller to accelerate air and then convert its kinetic energy into pressure.

10. How do rotary compressors differ from reciprocating compressors in terms of their mode of operation?

- a) Rotary compressors use linear motion
- b) Rotary compressors use rotary motion
- c) Rotary compressors use oscillating motion
- d) Rotary compressors use centrifugal motion

Answer: b) Rotary compressors use rotary motion

Explanation: Unlike reciprocating compressors, rotary compressors use rotary motion to compress air, typically through the rotation of screws, vanes, or lobes.

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