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BETA (β) FOR MECHANICAL ENGINEERS


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



BY RK SIR


 Which of the following techniques is NOT a type of magnetic particle testing method?


- A. Prod technique
- B. Plate technique
- C. Coil technique
- D. Yoke technique


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- 9 Year Teaching Experience
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- More 1 Lakh student Taught
- Highest selection ratio
- Known for concepts





Flooding of a river is an example of _____ flow.

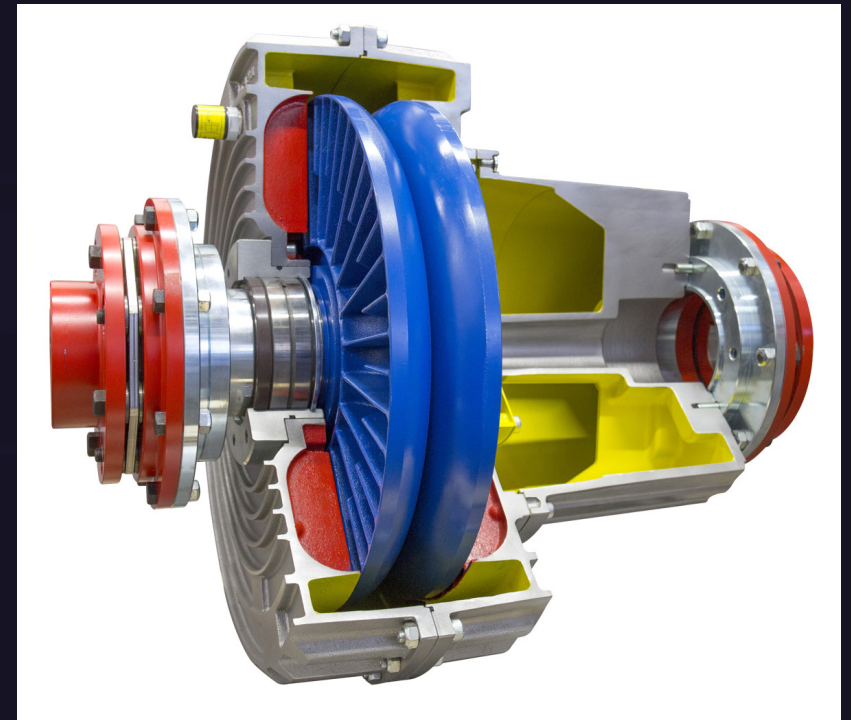
- (a) steady and uniform
- (b) steady and non-uniform
- (c) unsteady and non-uniform
- (d) unsteady and uniform





In hydraulic coupling, slip is around ____ for motors having low to moderate locked rotor torque.

- (a) 6-7%
- (b) 8-10%
- (c) 2-3%
- (d) 12-15%



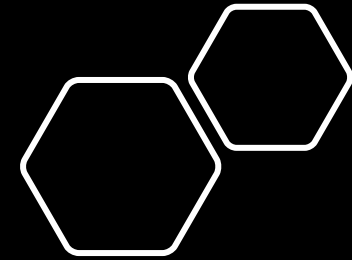
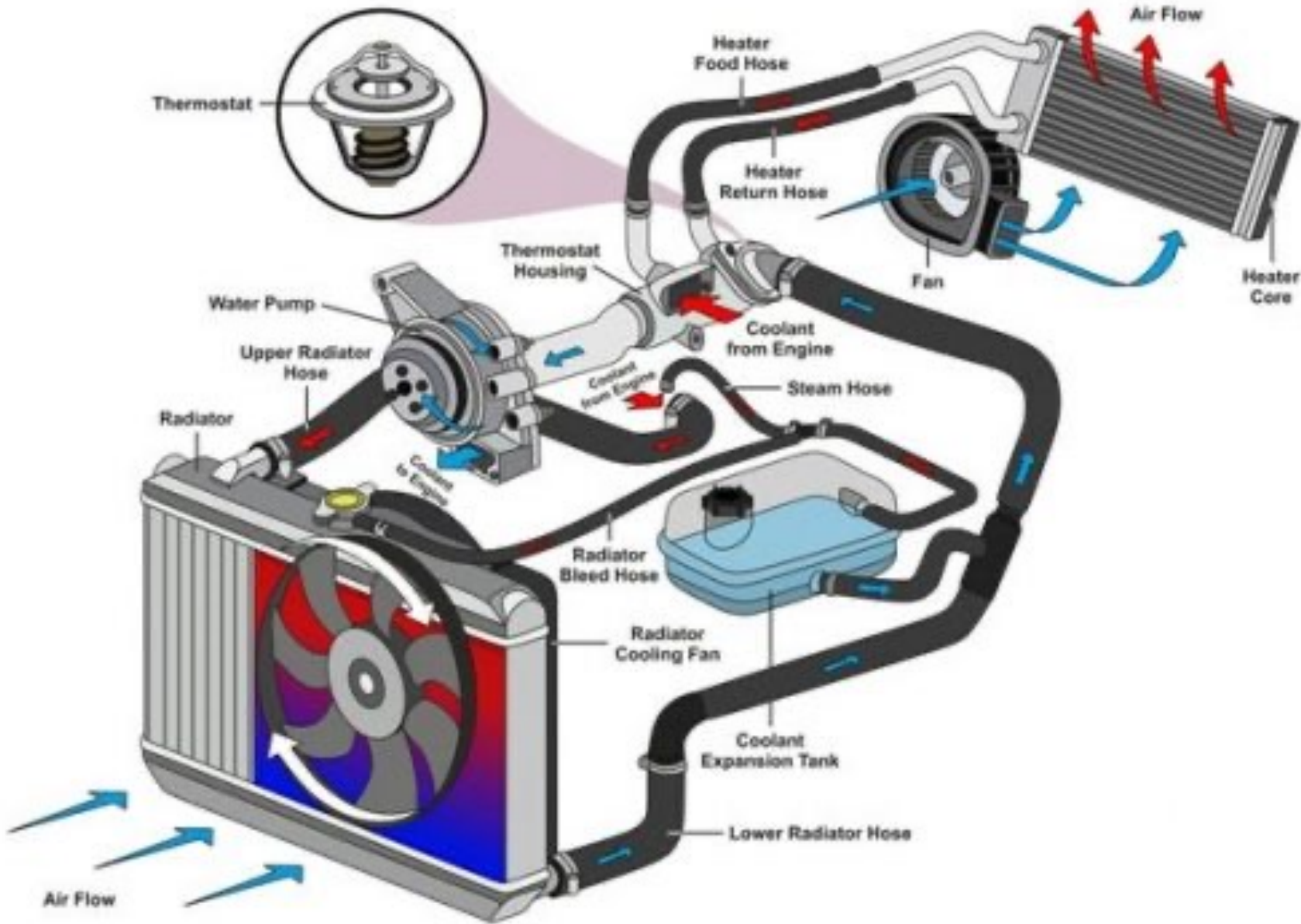
Ans (c)

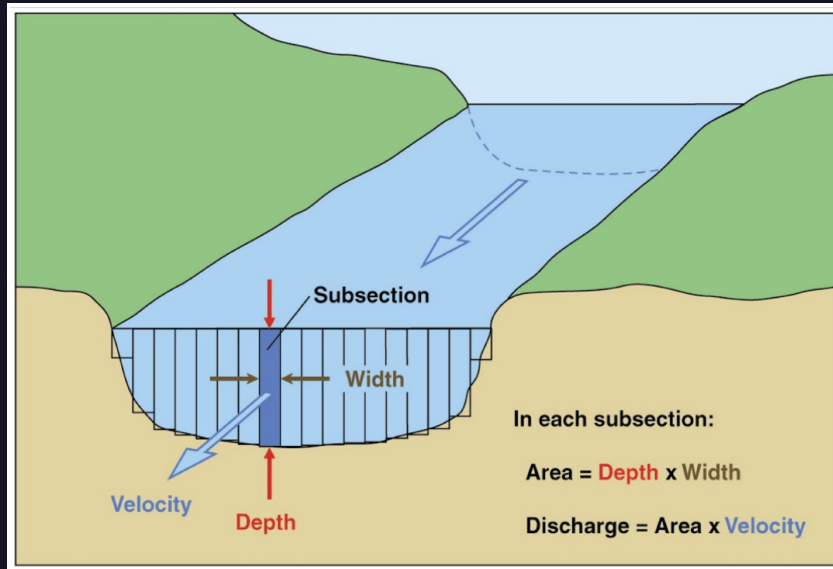


A water cooling system consists of a fan used to draw _____ .

- (a) coolant
- (b) water from the pump
- (c) lubrication oil
- (d) air through the radiator

Automotive Cooling System





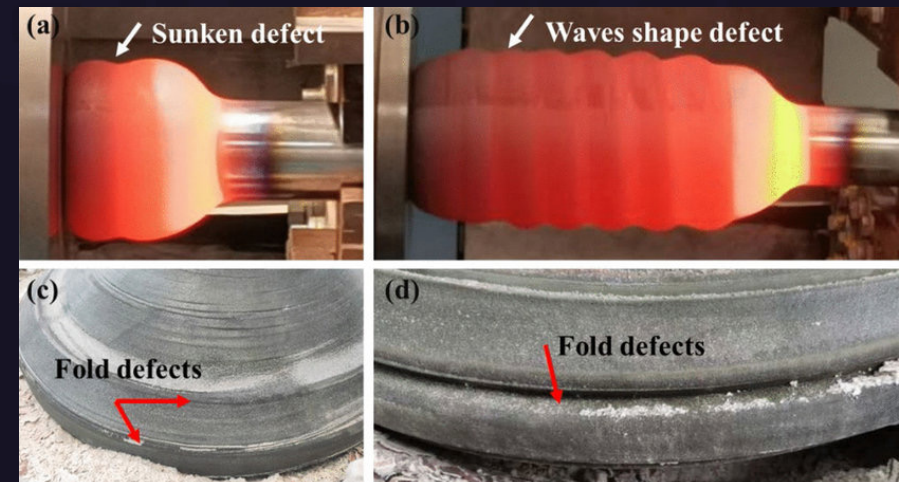
Volumetric flow rate of river waters is measured directly using _____ .

- (a) ultrasonic flow meters
- (b) weirs
- (c) vane meter
- (d) ultraviolet flow meters



In _____ process, the cross-section of the bar is increased at the cost of reducing its length.

- (a) Spinning
- (b) Reaming
- (c) Drawing down
- (d) Upsetting

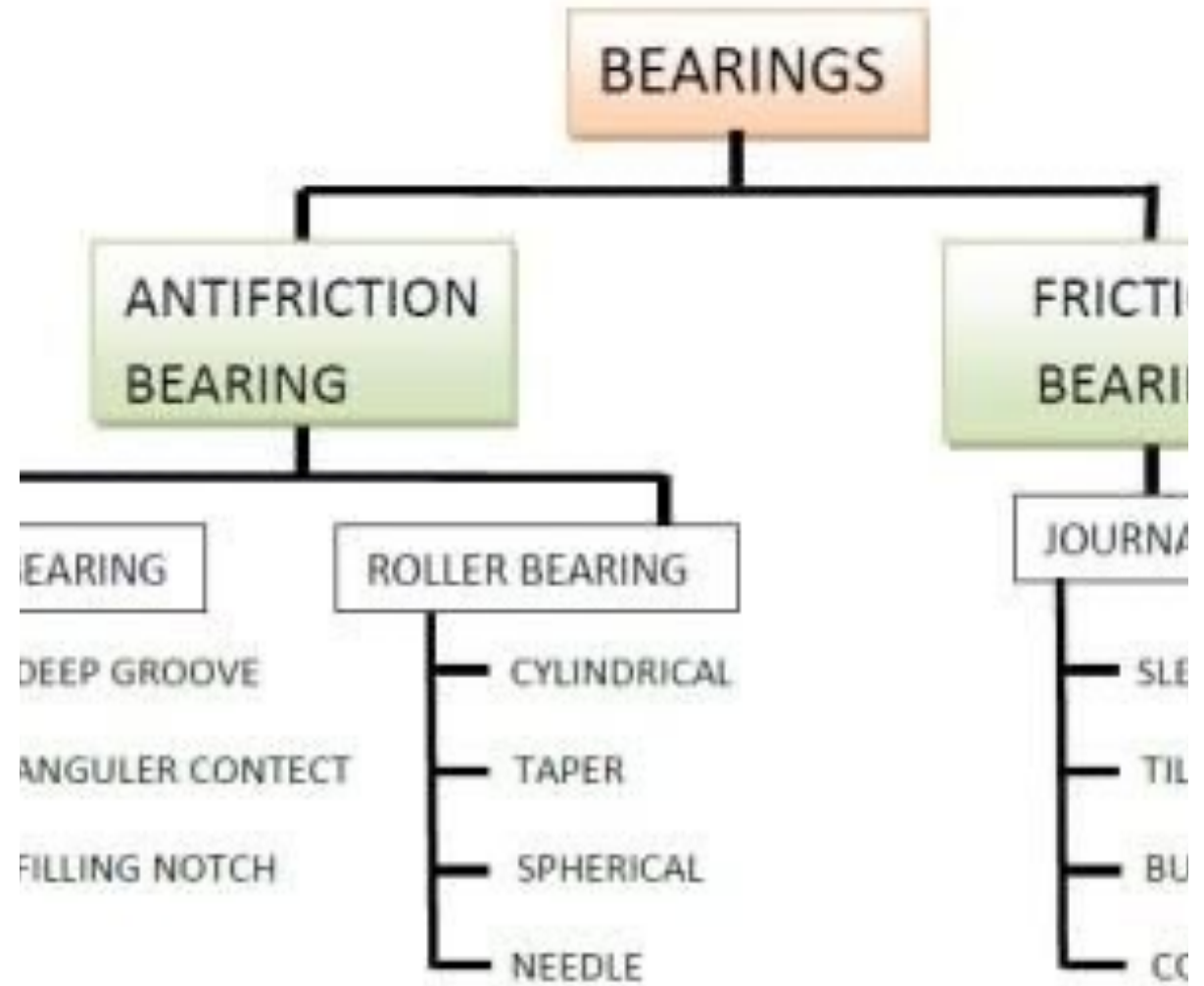


Ans (d)



_____ is a type of anti-frictional bearing.

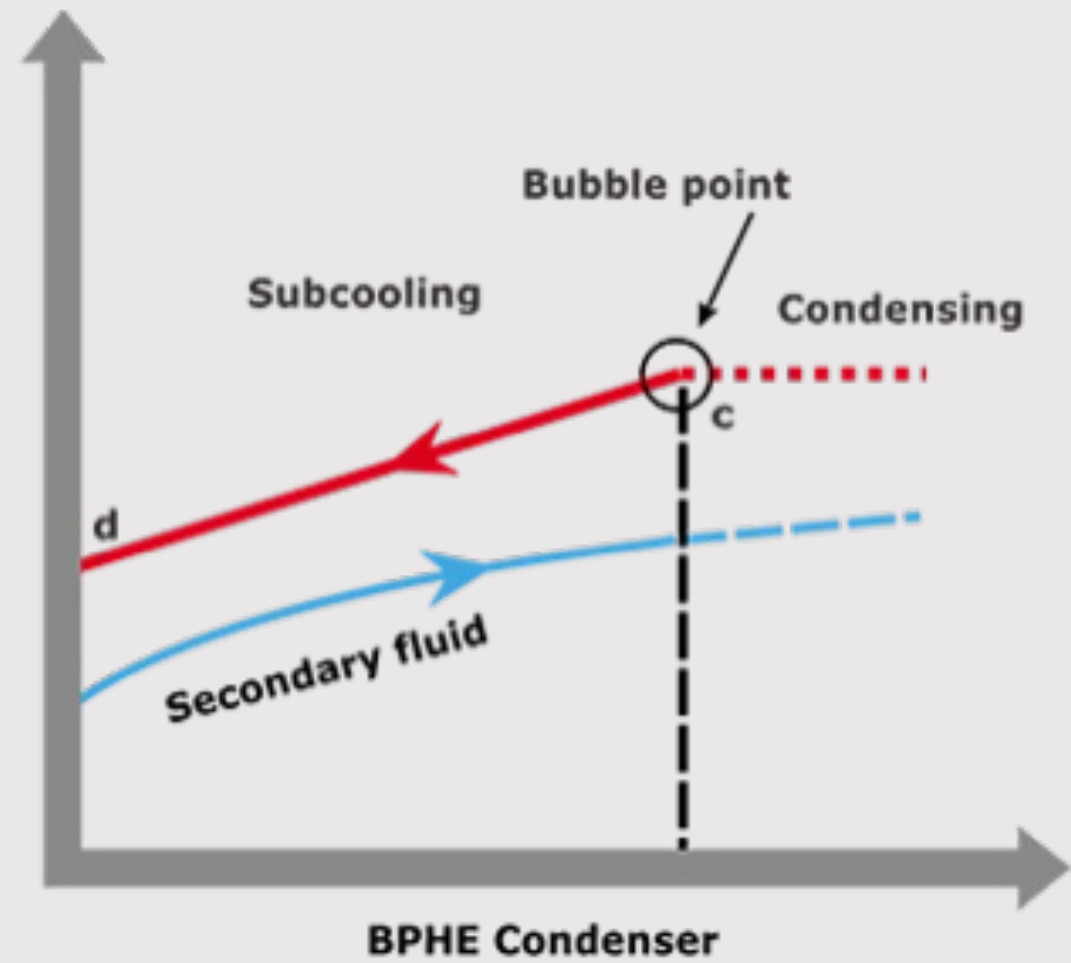
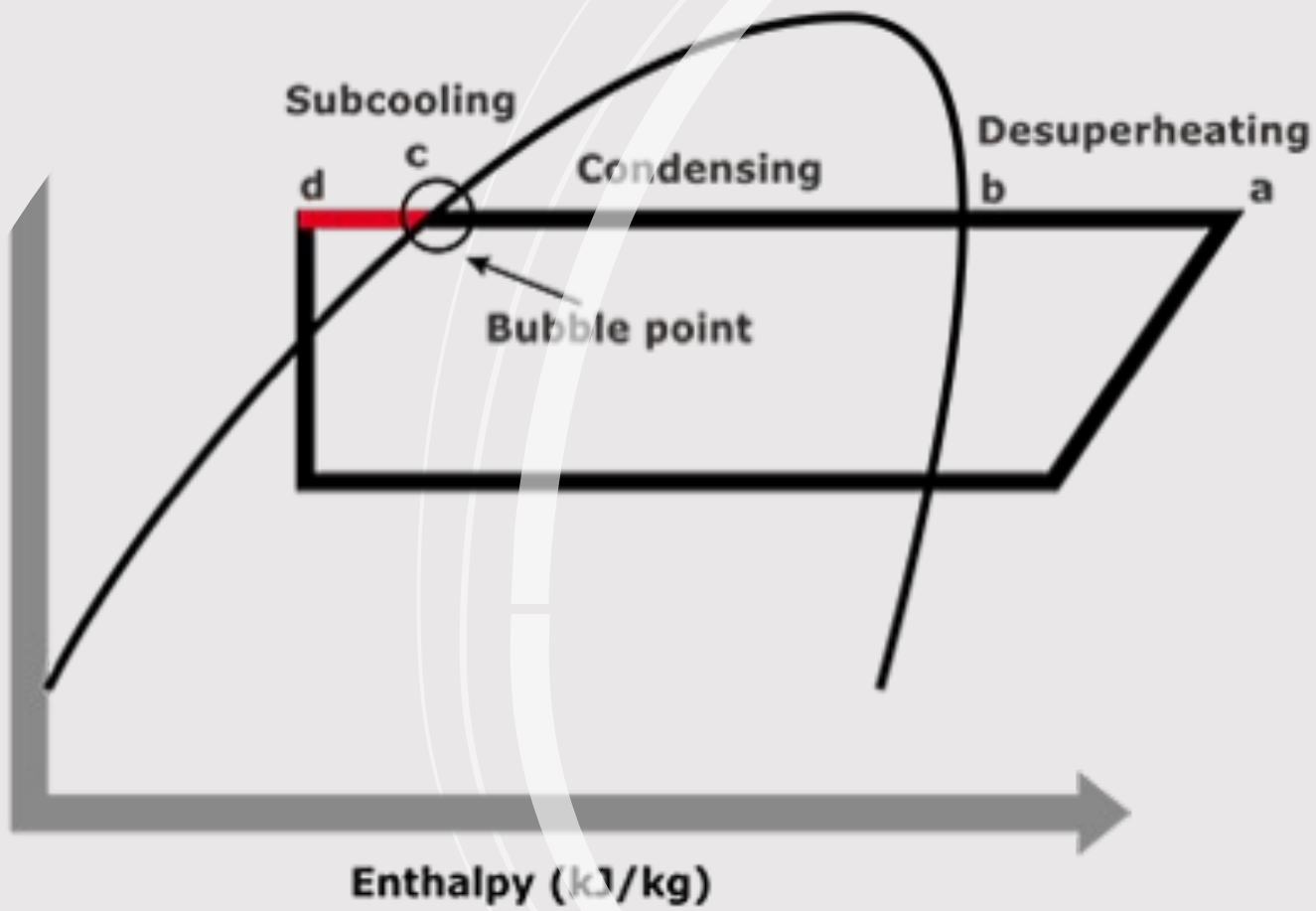
- (a) Pedestal bearing
- (b) Hydrostatic bearing
- (c) Collar bearing
- (d) Needle bearing





The process of cooling the refrigerant in vapour compression refrigeration system, known as sub-cooling, is done before:

- (a) compression
- (b) condensation
- (c) throttling
- (d) evaporation





Which of the following statements about a principal plane is true?

- (a) Shear stress can have any value.
- (b) It has no normal stress.
- (c) It has maximum shear stress.
- (d) No shear stress is present.

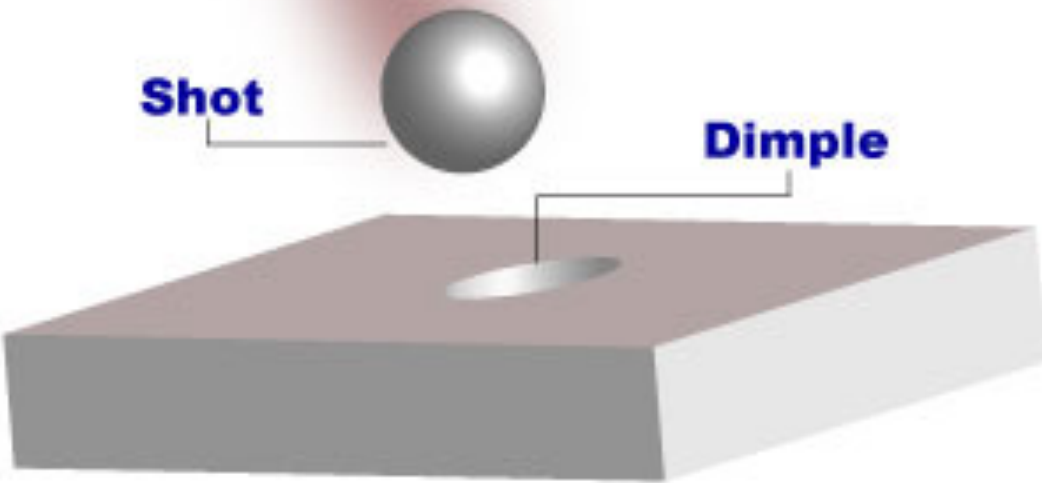


_____ process induces compressive residual stresses on a component to nullify the tensile residual stresses within a steel structure.

- (a) Welding
- (b) Brazing
- (c) Shot peening
- (d) Heat treatment

HOW SHOT PEENING WORKS

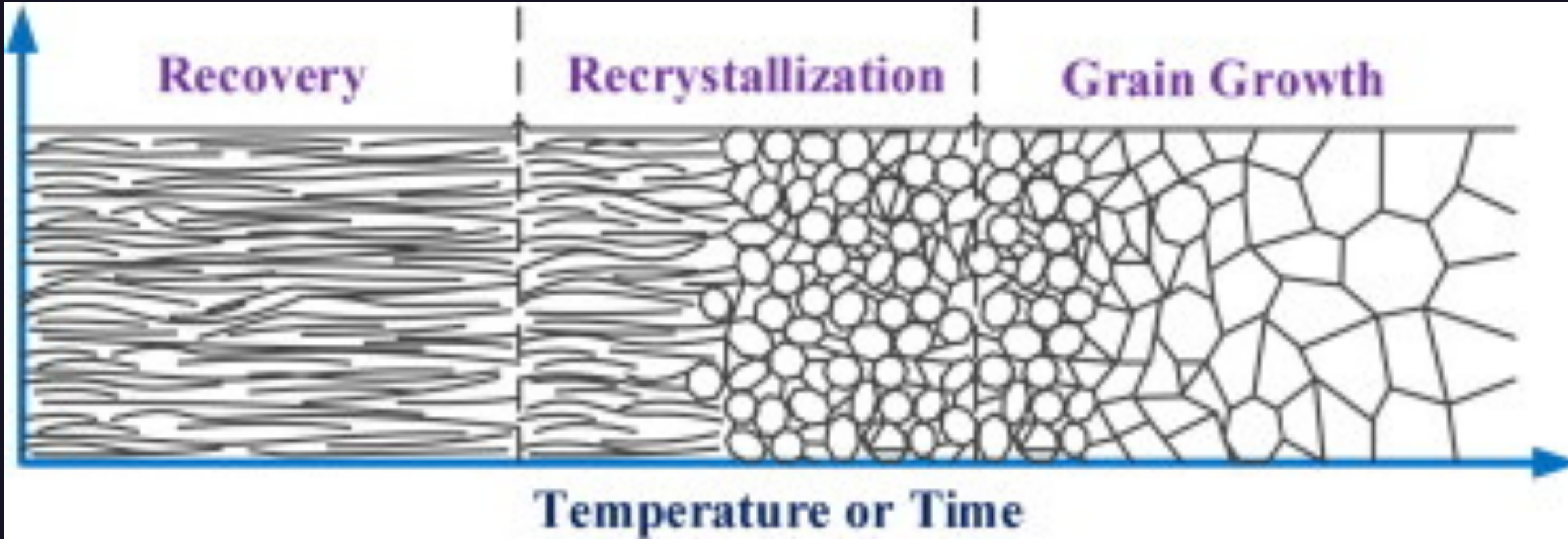
The shot acts like a peen hammer, dimpling the surface and causing compression stresses under the dimple. The surface compression stress strengthens the metal.





Which of the following processes generally does **NOT** occur during the heat treatment of steels?

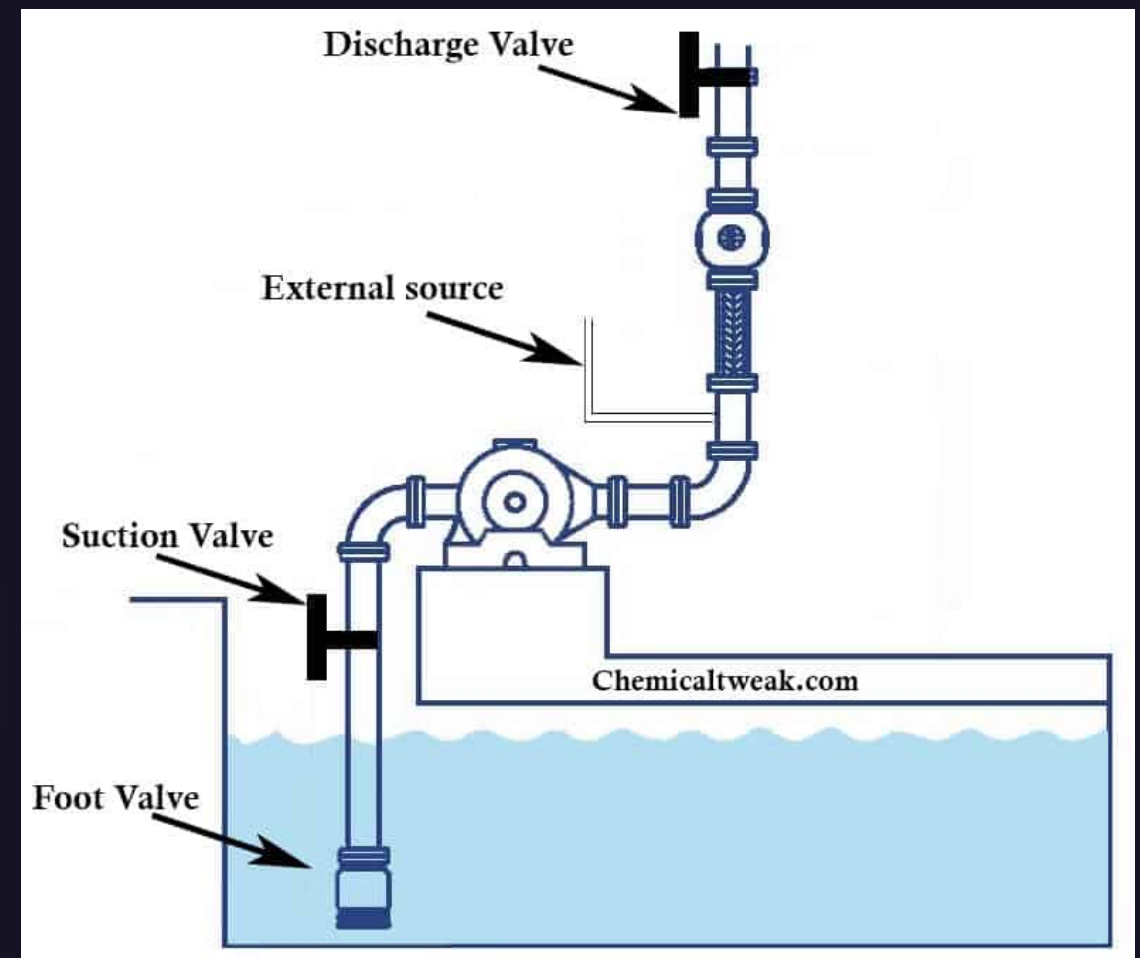
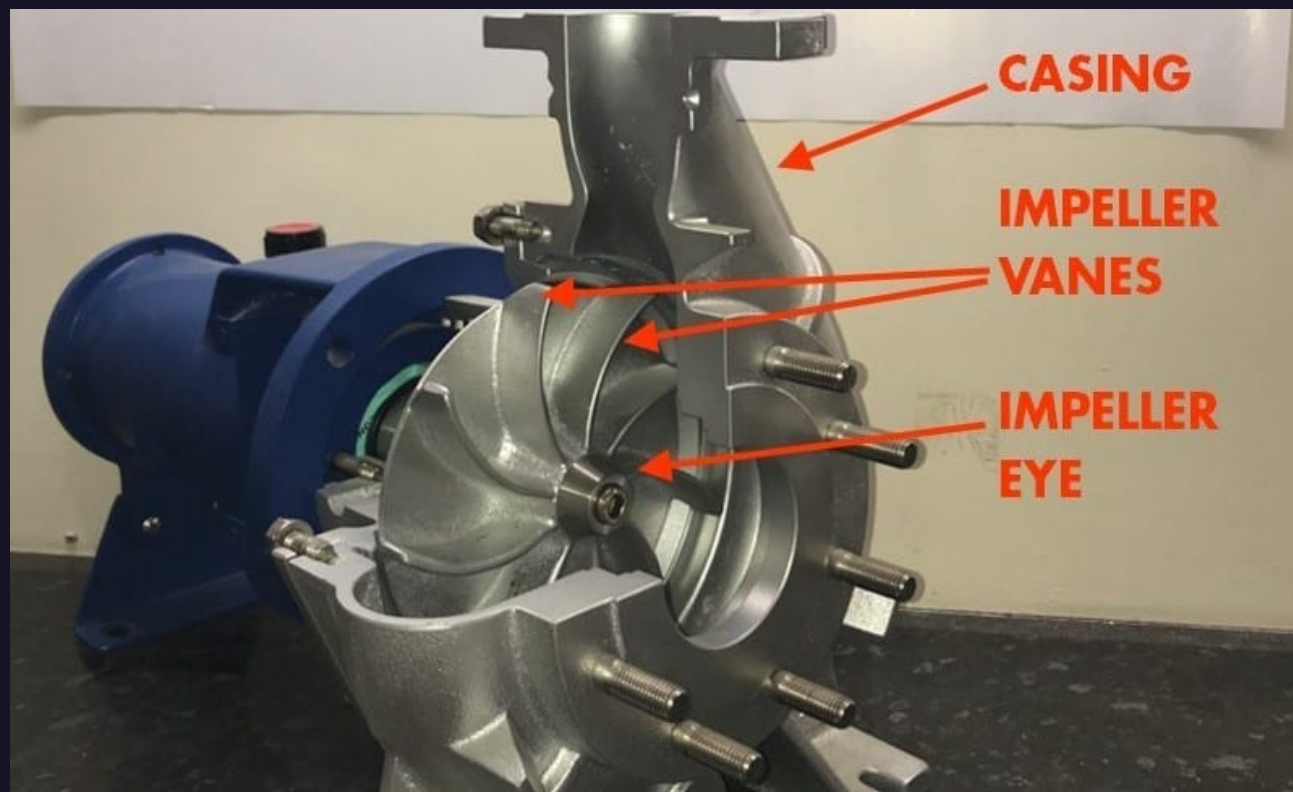
- (a) Grain growth
- (b) Recrystallisation
- (c) Recovery
- (d) Rework





During the starting of a centrifugal pump, the delivery valve is _____ .

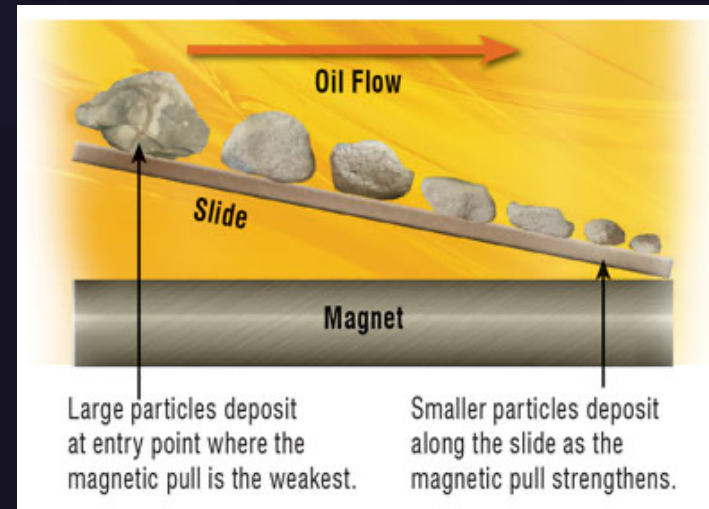
- (a) fully open
- (b) fully closed
- (c) slightly open
- (d) half-open





_____ technique uses wear particles analysis using lubricating oil for predicting the impending failures of machine components.

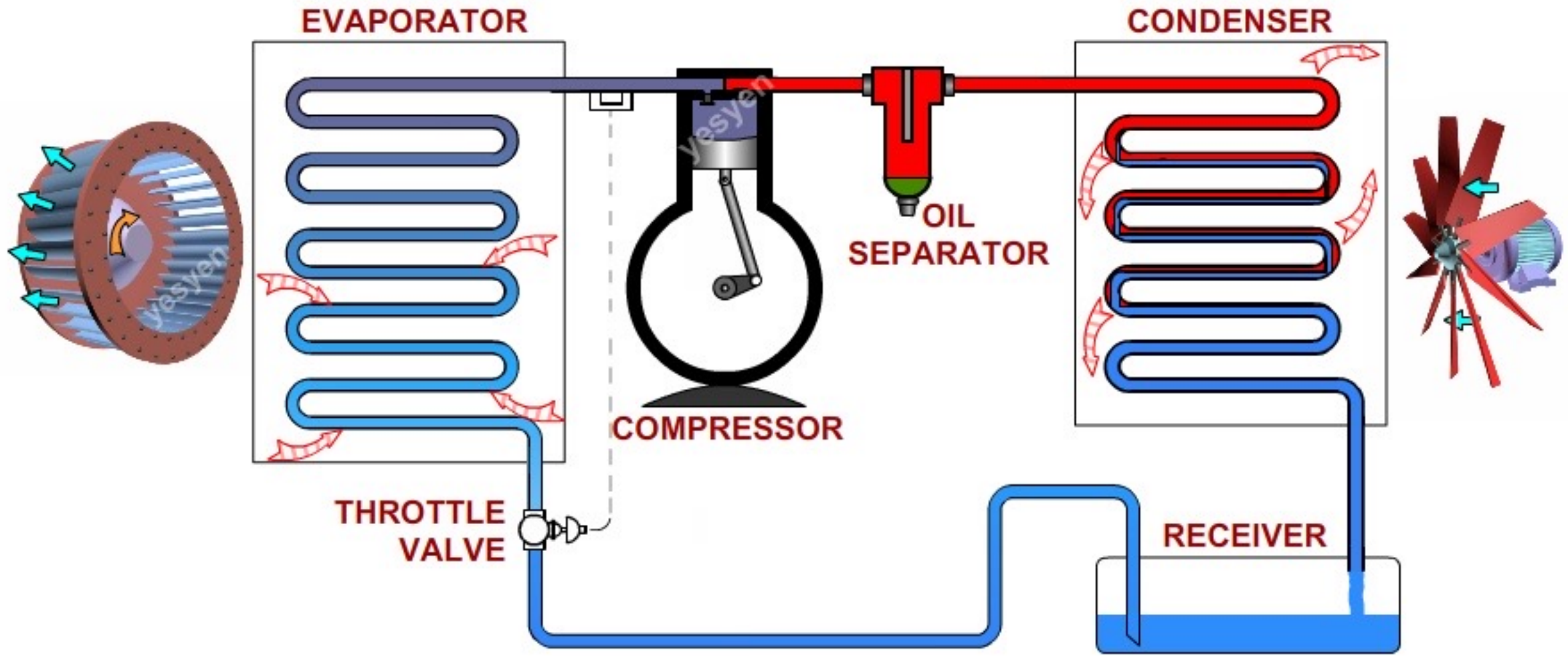
- (a) Spectrograph
- (b) Waveform analysis
- (c) Envelope analysis
- (d) Ferrography





_____ pan of the vapor compression cycle produces refrigeration effect.

- (a) condenser
- (b) compressor
- (c) throttle valve
- (d) evaporator





In a steam nozzle, heat supplied to steam during the expansion process equals _____ .

- (a) zero
- (b) heat drop
- (c) work done
- (d) change in kinetic energy

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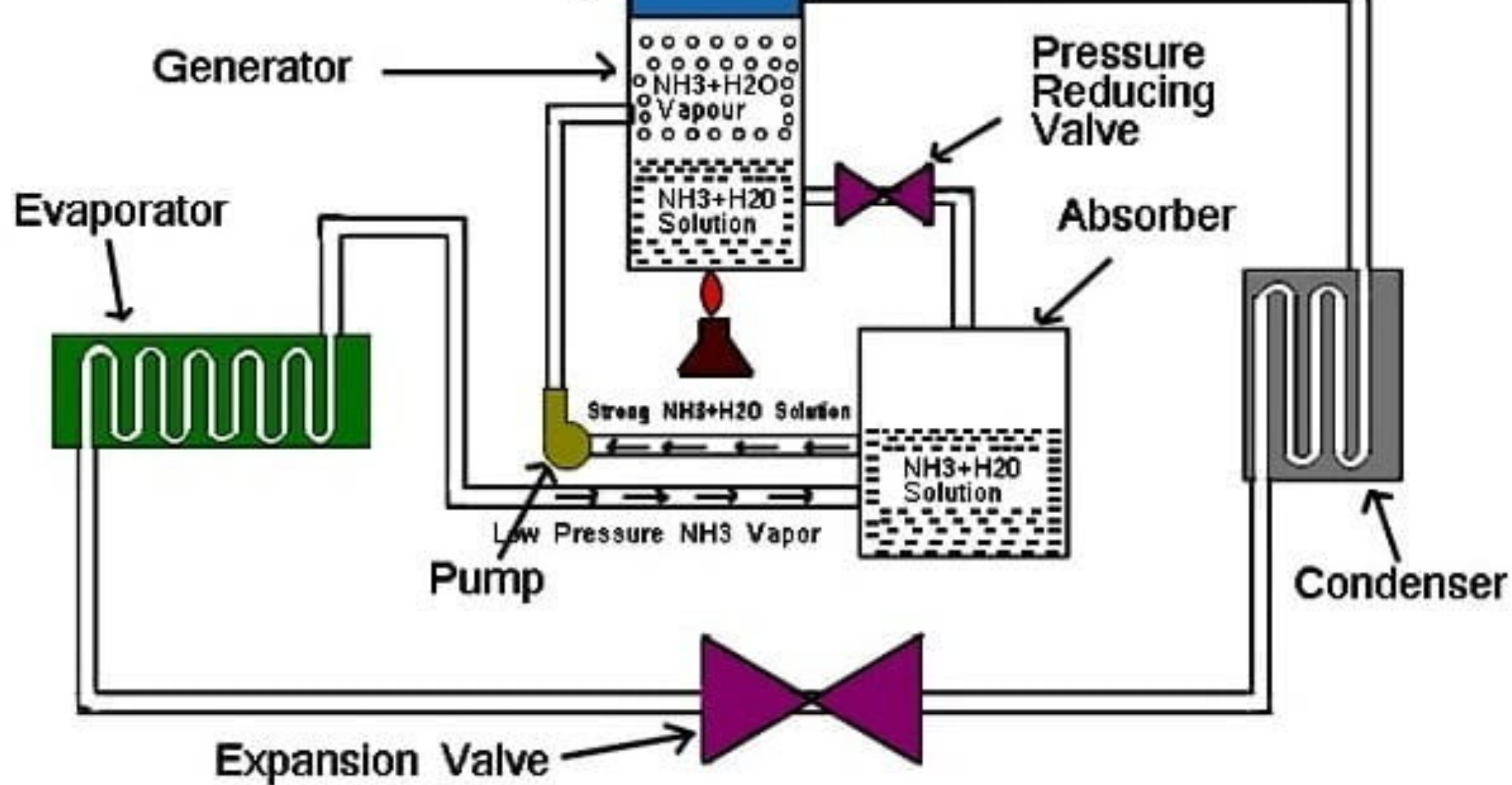
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Heat rejection in vapour absorption refrigerator occurs in:

- (a) generator only
- (b) condenser and absorber
- (c) absorber only
- (d) condenser only

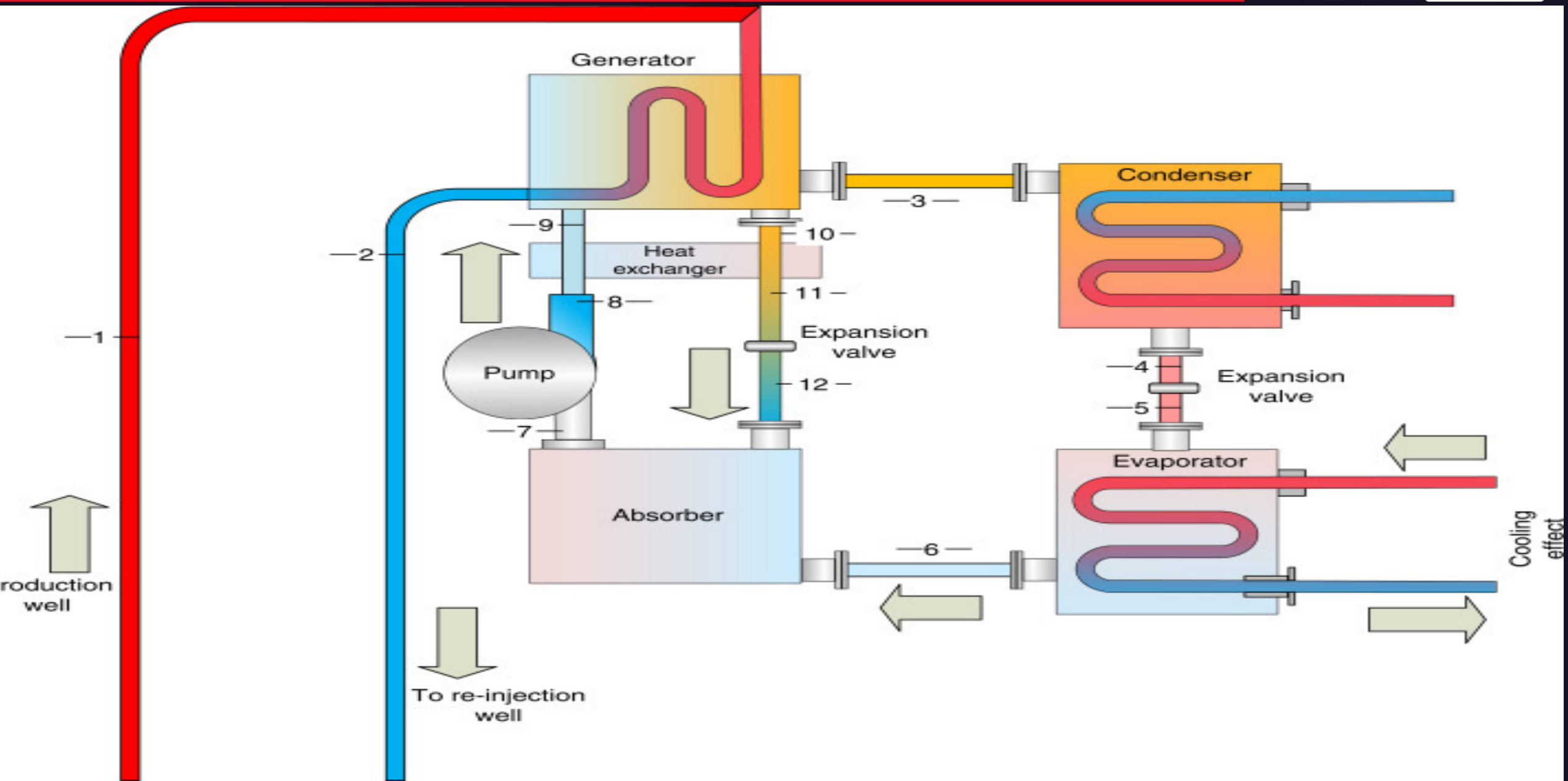


Vapour Absorption Refrigeration System



In a Li-Br water absorption cycle _____ is used as a refrigerant.

- (a) ammonia
- (b) lithium-bromide
- (c) water
- (d) all



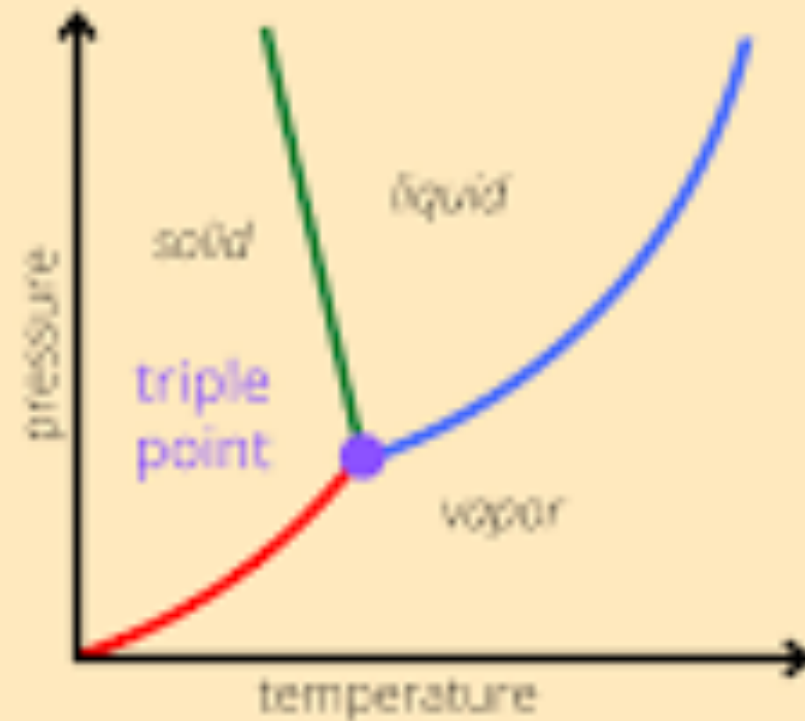


The degrees of freedom for a pure substance at the triple point is _____ .

- (a) 2
- (b) 1
- (c) 0
- (d) 3

Triple Point

The triple point is the temperature and pressure where three phases coexist in equilibrium.



For example, the triple point of water is 273.16 K (0.01 °C or 32.02 °F) and 611.73 Pa.



The octane rating is a measure of the ability of the _____ to resist detonation during combustion.

- (a) cylinder
- (b) Air mixture
- (c) piston
- (d) Fuel



An after-cooler provided in reciprocating compressors performs the function of ____ .

- (a) reducing the volume of compressed air
- (b) reducing temperature of compressed air
- (c) removal of impurities from compressed air
- (d) removal of moisture from compressed air





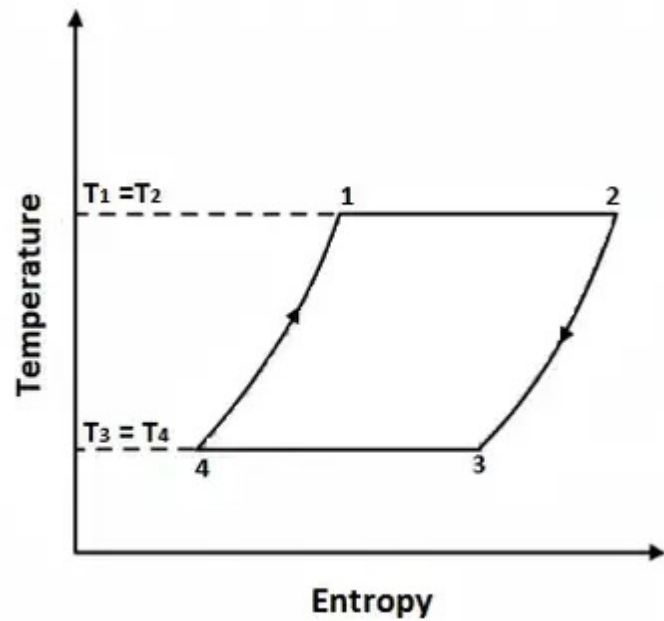
Which of the following cycles incorporates two isothermal processes?

- (a) Otto cycle
- (b) Carnot cycle
- (c) Dual cycle
- (d) Diesel cycle



_____ is a gas-power cycle which consists of two isothermals connected by two constant volume processes.

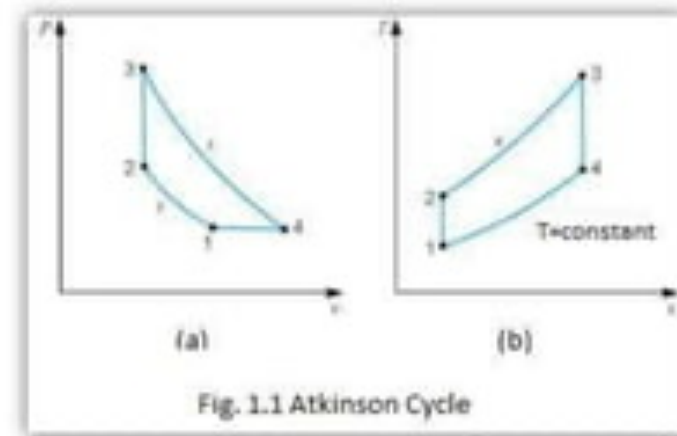
- (a) Atkinson cycle
- (b) Brayton cycle
- (c) Ericsson cycle
- (d) Stirling cycle



T-s Diagram of a Stirling Cycle

Atkinson Cycle

- Fig. 1.1, shows the Atkinson cycle plotted on p-V and T-s diagram.





Which of the following metals contains chromium as its major alloying element?

- (a) Copper
- (b) Stainless steel
- (c) Titanium
- (d) Carbon steels



Which of the following instruments is used for measuring ultra-high vacuum? X

- (a) Manometer
- (b) McLeod gauge
- (c) Cathode ray oscilloscope
- (d) Bourdon tube



Ans (b)



The anti-knock value of a gasoline engine is defined in terms of a/an _____ .

- (a) Crook number
- (b) Octane number
- (c) Cetane number
- (d) Knock number



Inside a boiler surface, scales are formed due to the presence of _____ in the boiler feed water.

- (a) insoluble compounds
- (b) oils
- (c) dissolved gases
- (d) Ca and Mg salts



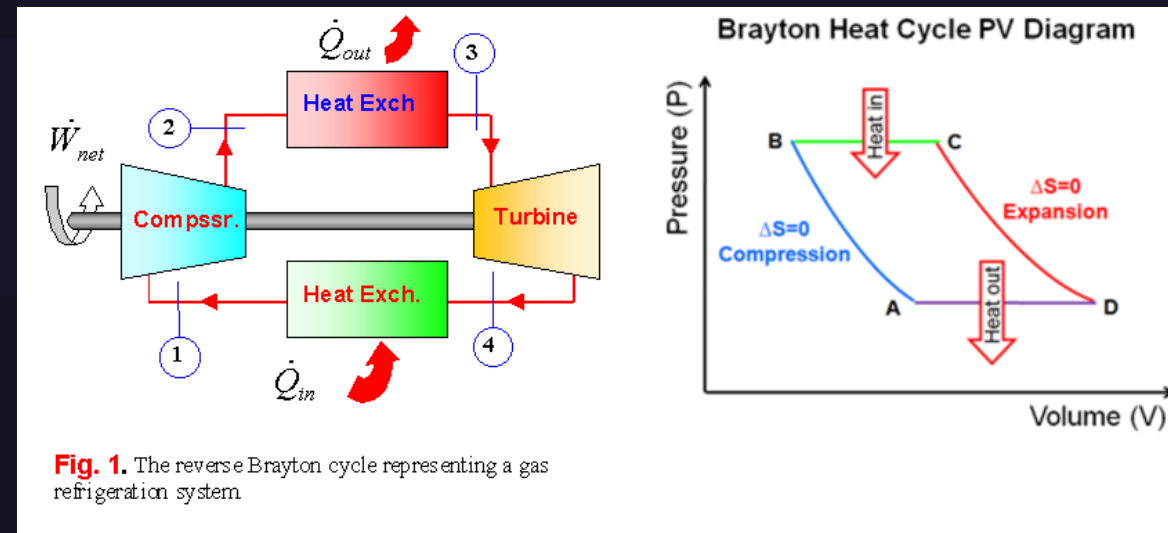
_____ boiler involves circulation of water by natural convection.

- (a) Velox
- (b) Babcock-Wilcox
- (c) LaMont
- (d) Benson



_____ use(s) air refrigeration cycle.

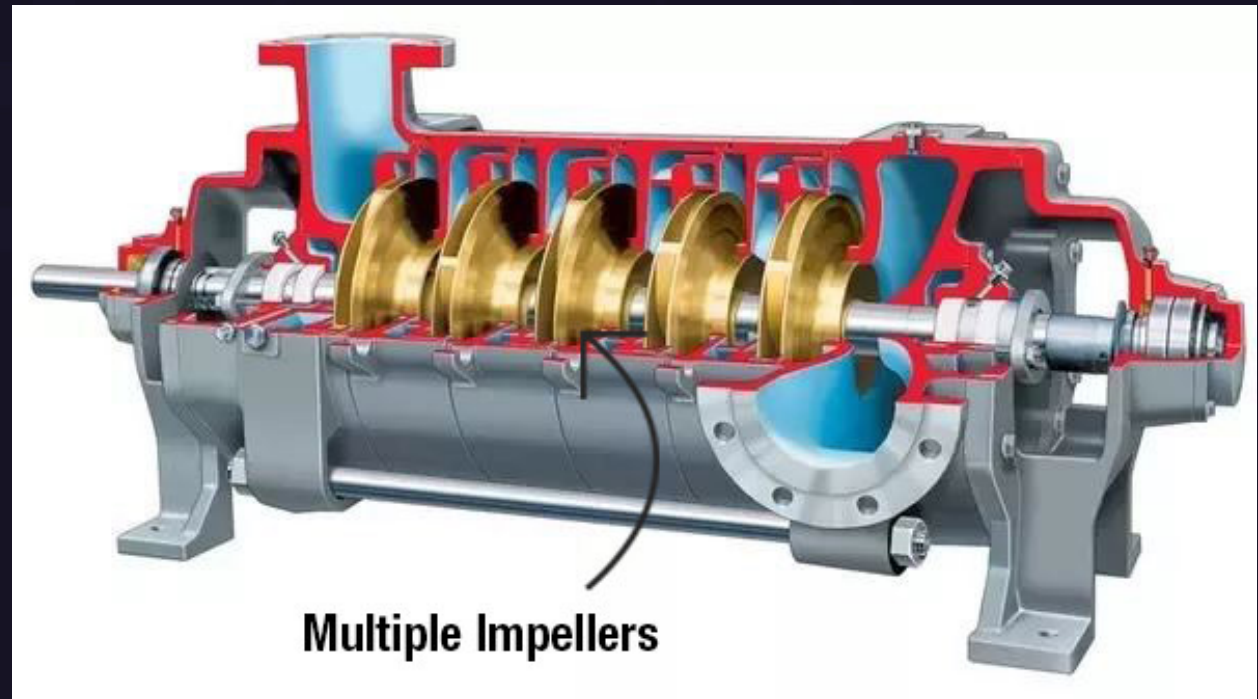
- (a) Cryogenic chambers
- (b) Aircraft air-conditioning system
- (c) Commercial refrigeration
- (d) Gas chambers





Multi-stage centrifugal pumps are employed to obtain _____ .

- (a) pumping of viscous fluids
- (b) Higher discharge
- (c) higher head
- (d) higher head and discharge



Ans (c)