

ME340A

Refrigeration and Air Conditioning

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Supplementary Questions/ Activities:

1. Visit a bicycle shop and observe the air compressor. Check the operating pressure, delivery mechanism, instrumentation, cooling method, HP/LP units, if it's a two-stage compressor, lubricating oil system, foundation, valves, intercoolers (if present).
2. Find out how a hydraulic pump used in an earth mover works.
3. What is a 'roots blower'?
4. Find out what is a 'Super critical' power plant.
5. How can you produce ice with a vacuum pump?
6. What is flashing/ mechanical boiling?
7. Why can't two isotherms pass from a single point on a P-V diagram? Explain.
8. Why is heat transfer in a finite temperature difference an irreversible process?
9. What is a metastable state (with respect to liquid vapor and solid liquid phase change)?
10. Explain the importance of specific Gibbs Free Energy in the context of phase change process.
11. Draw a vapor compression refrigeration system and an Ideal Otto Cycle (assume that the working gas/material is the same) on the same PV diagram.
12. How does a 'Dunking Duck' work? Explain the operation from a thermodynamic point of view.