

AMAC-27 ENERGY CONSERVATION IN HVACR SYSTEMS

UNIT-1 FIRST AND SECOND LAW ANALYSIS

- 1.1 Thermodynamics of Energy conservation
- 1.2 Second law -Exergy-Irreversibility and efficiency
- 1.3 Analysis of Refrigeration and Air conditioning cycles,
- 1.4 Heat pumps.

UNIT-2 ENERGY CONSERVATION TECHNIQUES

- 2.1 Principle of Energy audit,
- 2.2 Identifying avenues for Energy conservation,
- 2.3 Conservation through periodic maintenance of HVAC systems,
- 2.4 Predictive and Preventive maintenance,
- 2.5 Thermal insulation.

UNIT-3 REFRIGERATION AND AIR CONDITIONING EQUIPMENTS

- 3.1 Energy conservation in Air Handling units-Fans,
- 3.2 Air conditioning apparatus-Unitary equipment's,
- 3.3 Refrigeration Equipments
- 3.4 Reciprocating Refrigeration Machine,
- 3.5 Centrifugal Refrigeration Machine,
- 3.6 Absorption Refrigeration Machine,
- 3.7 Heat Rejection Equipments, and Energy Efficient motors.

UNIT-4 HEATING AND VENTILATING SYSTEMS

- 4.1 Energy conservation feasibility analysis
- 4.2 Conventional ventilating systems, constant volume induction system,
- 4.3 Multizone unit system,
- 4.4 Variable volume induction system, constant temperature system.
- 4.5 Heat Pipe Applications in Air conditioning systems.

UNIT-5 HEAT CONVERSION SYSTEMS

- 5.1 Theory of Heat transformers-Heat Pumps,
- 5.2 Two temperature level,
- 5.3 Three Temperature level- Vapour compression, Heat pump.

References Books:

1. George Alefeld and Rein hard Radermacher , Heat conversion systems , CRC press , 1994
2. Carrier Air conditioning Co., Hand Book of Air conditioning System Design , McGraw-Hill , 1985.
3. Plant Engineers and Manager's Guide to Energy Conservation, Fair Mount Press, 2008.
4. ASHRAE Hand Book–Equipment, 2005