

# AMAC-20 FANS, BLOWERS AND COMPRESSOR IN AIR CONDITIONING SYSTEMS

## UNIT-1 PRINCIPLES OF TURBO MACHINERY

- 1.1 Introduction to turbo machines
- 1.2 Transfer of energy to fluids
- 1.3 Performance characteristics-fan laws
- 1.4 Dimensionless parameters
- 1.5 Specific speed-selection of centrifugal, axial, mixed flow, Axial flow machines

## UNIT-2 CENTRIFUGAL BLOWERS

- 2.1 Centrifugal Blowers: Theoretical characteristic curves ,
- 2.2 Eulers characteristics and Eulers velocity triangles, losses and hydraulic efficiency,
- 2.3 Flow through impeller casing inlet nozzle volute , diffusers,
- 2.4 Leakage disc friction mechanical losses multivane impellers of impulse type, cross flow fans.

## UNIT-3 AXIAL FLOW FANS

- 3.1 Axial flow fans: Rotor design airfoil theory, vortex theory, cascade effects,
- 3.2 Degree of reaction, blade twist stage design,
- 3.3 Surge and stall, stator and casing, mixed flow impellers.

## UNIT-4 COMPRESSORS

- 4.1 Reciprocating compressors,
- 4.2 Constructional details
- 4.3 Open, hermetic and semi sealed, effect of cylinder cooling, heating and friction,
- 4.4 Dynamic compressor, centrifugal compressor,
- 4.5 Velocity triangles, performance characteristics, part load operation, Capacity control.

## UNIT-5 DESIGN AND APPLICATIONS

- 5.1 Special design and applications of compressors for air conditioning plants,
- 5.2 Multi stage refrigeration.

### References Books:

1. Austin H. Church, Centrifugal pumps and blowers, John Wiley and Sons, 1980.
2. Royce N. Brown, Compressors: Selection And Sizing, Elsevier, 2005.
3. Dixon, Fluid Mechanics, Thermodynamics of turbomachinery Pergamon Press, 1984.
4. Tony Giampaolo, Compressor Hand Book Principles and Practice, The Fairmont Press, 2010.