FAQ's

1. **How do you select an AC System based on Load?**

   Load by Nature may be of the following types, (i) Single Large load (e.g.) Theatre, Computer Center and (ii) Multiple small loads (e.g.) Hotel with Rooms, Restaurant, Bar, Lobby etc.

   For the first case we can go in for Direct Expansion (DX) System in which Refrigerant directly flows into the cooling coil. For the second case considering the complex nature of the distribution of cooling media required we can select a Chilled water system in which water cooled by refrigerant pumped into various loads in the Multiple load system. Too large systems use Chillers.

   Of course this has an exception consequent to invent of VRF/VRV System

   Hence selection will depend upon the type or nature of the load.

2. **Explain Load Diversity.**

   Water Chillers can be considered relatively inefficient as there are two heat transfers involved and consequent losses – Refrigerant to water and then water to conditioned space.

   But there is one major advantage in using Water Chillers for Multiple load application. All the loads will not peak simultaneously, consequently we can go in for a Chiller which is of much lower capacity than sum of all the loads in a multiple load system. This is known as Load Diversity. For a typical Hotel project this can be as much as 10 to 20%. Thus if the sum of all the loads is around 100 TR, 85 TR water Chiller will be sufficient.

3. **How does orientation of a building affect the AC load?**

   Much of India lies between the Equator and the Tropic of Cancer, hence the heat from the Sun enters the building essentially from the eastern and western directions. In the morning, the building is relatively cool, having been without the Sun for almost 12 hours and the heat of morning Sun is not felt as much. By noon, you can feel the heat more, since the building and surroundings are saturated with heat and start radiating the same. By 4 p..m. the heat load within your building reaches its peak and Sun seems a far greater source of heat than the morning sun. Therefore, rooms facing west feel the heat much more.

4. **What are the good installation practices for AC's?**

- No leakage of cooled air around the wooden frames of window ac's.
- Care to be taken to seal piping exits, with aequate insulation and reduce bends of the refrigerant piping in non-duct splits ac's.
- Properly designed ducting, with good qualityand proper insulation particularly on the tail end of the ducts are required for ducted systems.
- In central plants monitoring of duct velocity, leakage in ducts and proper balancing of water and air are essential.

5. Explain about Variable Speed Drives and their role in energy efficiency.

Variable speed drives were designed to ensure improvements in efficiency while operating under part-load conditions. With the use of VSD's. Chiller power consumption can drop to such dramatic lows as 0.3 kw/ton. The VSD needs a lot of input data to function effectively. Several operating conditions, such as chilled water temperature, set-point, refrigerant pressures, pre-rotation vane position and actual motor speed are constantly fed into the VSD. Microprocessors then work out the most speed and vane position, thus saving power.