Plant Use Factor

It is defined as the ratio of energy produced in a given time to the maximum possible energy that could have been produced during the actual number of hours the plant was in operation. Expressing the definition mathematically, Plant use factor = E C t □ □ . . . (7.5)

where, t□ = Actual number of hours the plant has been in operation.

Types of Loads

Residential Load

This type of load includes domestic lights, power needed for domestic appliances such as radios, television, water heaters, refrigerators, electric cookers and small motors for pumping water.

Commercial Load

It includes lighting for shops, advertisements and electrical appliances used in shops and restaurants, etc.

Industrial Load

It consists of load demand of various industries. Municipal Load It consists of street lighting, power required for water supply and drainage purposes.

Irrigation Load

This type of load includes electrical power needed for pumps driven by electric motors to supply water to fields. Traction Load It includes terms, cars, trolley, buses and railways

Load Curve

A load curve (or load graph) is a graphic record showing the power demands for every instant during a certain time interval. Such a record may cover 1 hour, in which case it would be an hourly load graph; 24 hours, in which case it would be a daily load graph; a month in which case it would be a monthly load graph; or a year (7860 hours), in which case it would be a yearly load graph. The following points are worth noting :

(i) The area under the load curve represents the energy generated in the period considered.

(ii) The area under the curve divided by the total number of hours gives the average load on the power station.

(iii) The peak load indicated by the load curve/graph represents the maximum demand of the power station.

Significance of Load Curves

Load curves give full information about the incoming and help to decide the installed capacity of the power station and to decide the economical sizes of various generating units.

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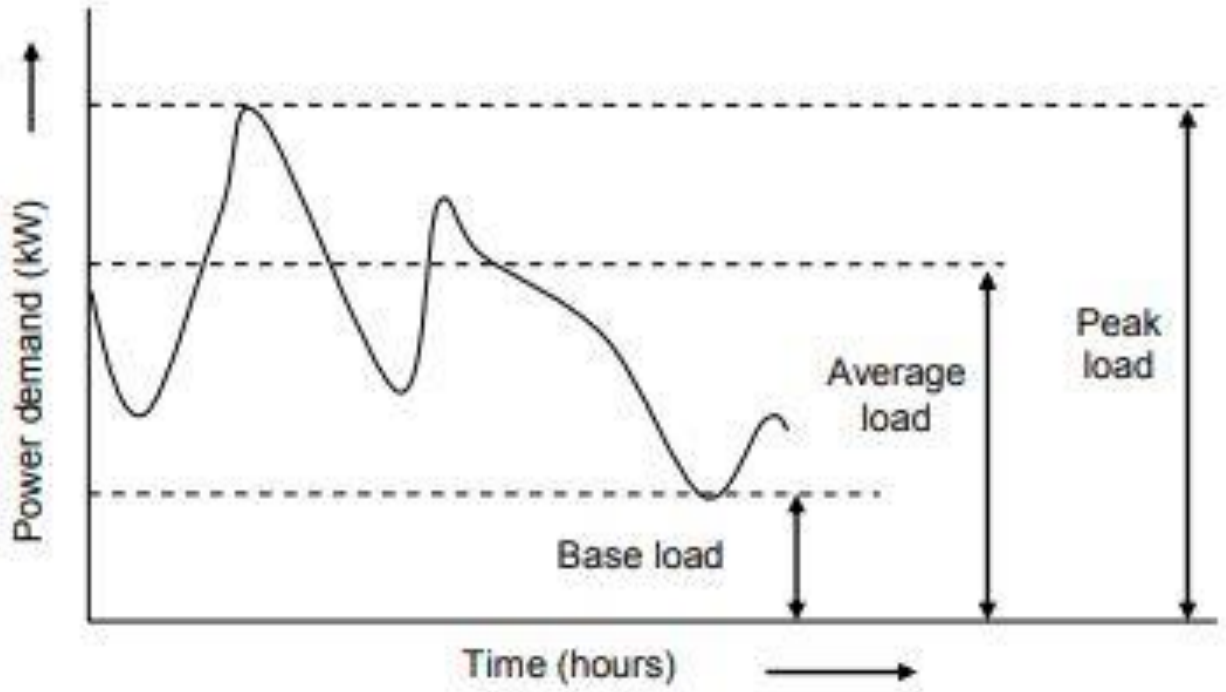
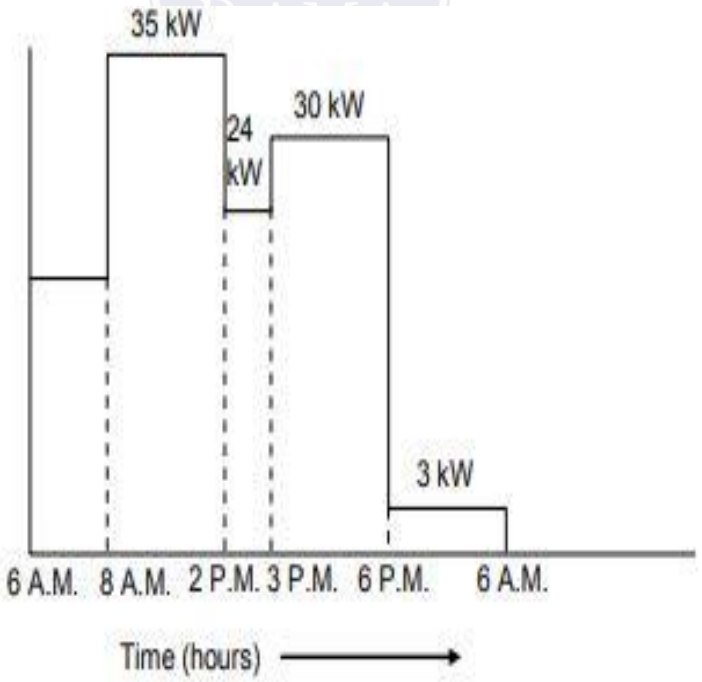
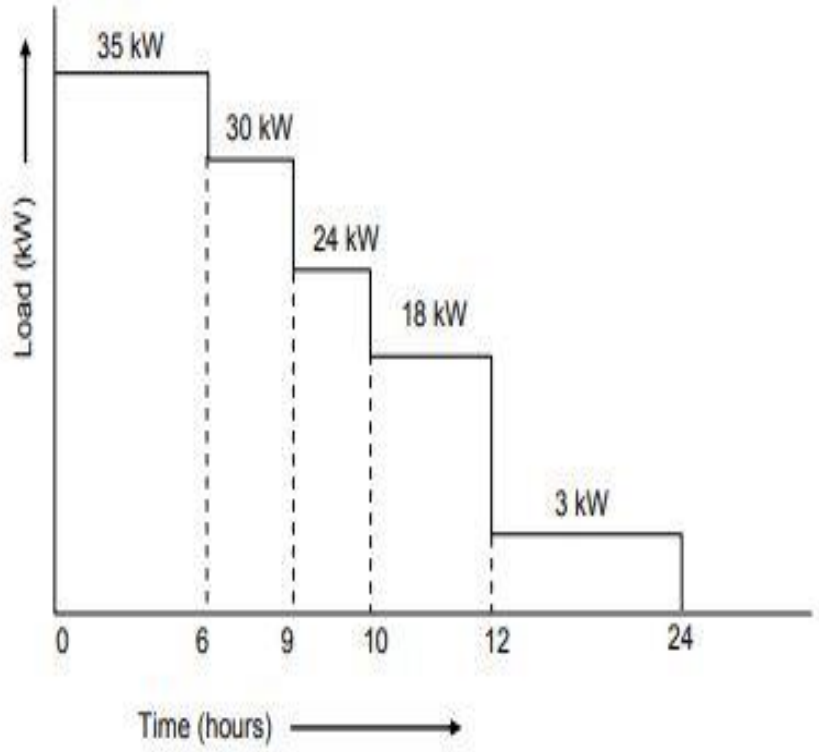
These curves also help to estimate the generating cost and to decide the operating schedule of the power station, i.e. the sequence in which different units should be run.



Load Duration Curve

A load duration curve represents re-arrangements of all the load elements of chronological load curve in order of descending magnitude. This curve is derived from the chronological load curve. Figure shows a typical daily load curve for a power station. It may be observed that the maximum load on power station is 35 kW from 8 AM to 2 PM. This is plotted in Figure. Similarly, other loads of the load curve are plotted in descending order in the same figure. This is called load duration curve





The following points are worth noting : Plant Economy (a) The area under the load duration curve and the corresponding chronological load curve is equal and represents total energy delivered by the generating station. (b) Load duration curve gives a clear analysis of generating power economically. Proper selection of base load power plants and peak load power plants becomes easier.