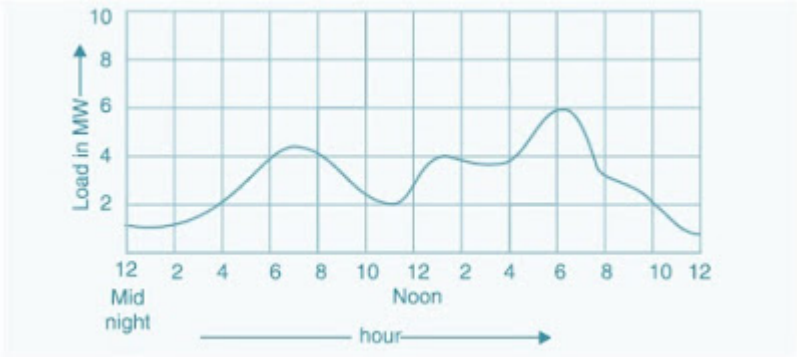
Load Curve and Load Duration Curve | Electrical Concepts

Load curve is the variation of load with time on a Power Station. As the load on a Power Station never remain constant rather it varies time to time, these variations in load is plotted on half hourly or hourly basis for the whole day. The curve thus obtained is known as Daily Load Curve.

Therefore, by having a look at the Load Curve, we can check the peak load on a Power Station and its variation. From the figure below, it is quite clear that the peak load (6 MW) on a particular Power Station is at 6 P.M.



The monthly load curve can be plotted using the daily load curve for a particular month. For this purpose the average load for different time for the whole month is calculated and the value thus obtained is plotted against time to get the Monthly Load Curve. Monthly Load Curve is used to fix the rate of energy.

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In the same manner Yearly Load Curve can be obtained using the 12 monthly load curves. The Yearly Load Curve is used for calculation the Annual Load Factor.

Importance of Load Curve:

- From the daily load curve we can have insight of load at different time for a day.
- The area under the daily load curve gives the total units of electric energy generated.

  Units Generated / day = Area under the daily Load Curve in kW

- The peak point on the daily load curve gives the highest demand on the Power Station for that day.
- The average load per day on the Power Station can be calculated using the daily load curve.
- **Average load = Area under the daily Load Curve (kWh)/ 24 hrs.**
- Load curve helps in deciding the size and number of Generating Units.

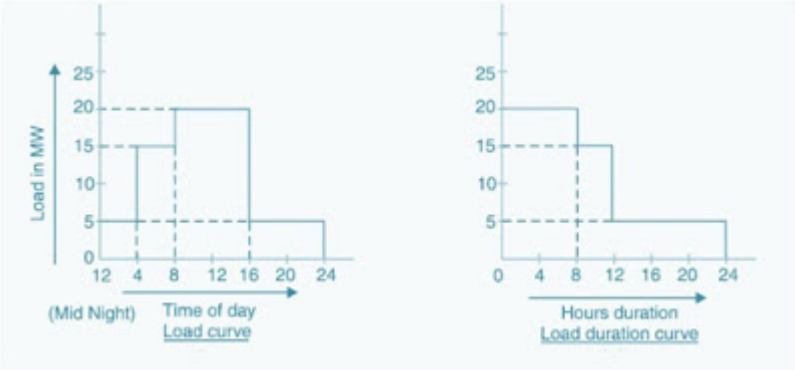
- Load Factor = Avg. Load / maximum Load = Avg. Load x24 / 24xmaximum Load

  = Area under daily Load Curve/Area of Rectangle having Daily Load Curve

- Load curve helps in the preparing the operation schedule of the generating units.

Load Duration Curve:

Load Duration Curve is the plot of Load versus time duration for which that load was persisting. Load Duration Curve is obtained from the Daily Load Curve as shown in figure below.



From the above Load Duration Curve, it is clear that 20 MW of Load is persisting for a period of 8 hours, 15 MW of Load for 4 hours and so on.

It is also quite clear that, the area under the load duration curve is equal to the daily load curve and gives the number of units (kWh) generated for a given day. The load duration curve can be extended for any period of time i.e. it can be drawn for a month or for year too.