Loads and Load Curves

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- Demand factor

$$\text{Demand factor} = \frac{\text{Maximum demand}}{\text{Connected load}}$$

$$\text{Demand factor} < 1$$

- Load factor

$$\text{Load factor} = \frac{\text{Average load}}{\text{Peak load}}$$

- Group diversity factor

$$\text{Group diversity factor} = \frac{\text{Sum of individaul maximum demand}}{\text{Maximum demand of the group}}$$

$$\text{Group diversity factor} > 1$$

- Peak diversity factor

$$\text{Peak diversity factor} = \frac{\text{Maximum demand of a consumer group}}{\left(\begin{array}{c}\text{Demand of the consumer group at the} \\ \text{time of system peak demand}\end{array}\right)}$$

- Capacity factor

$$\text{Capacity factor} = \frac{\text{Average annual load}}{\text{Rated plant capacity}}$$

$$\text{Capacity factor} = \frac{\text{Maximum load}}{\text{Plant capacity}} \times \text{Load factor}$$

$$\text{Capacity factor} = \text{Load factor} \times \text{Utilisation factor}$$

- Utilisation factor

$$\text{Utilisation factor} = \frac{\text{Maximum load}}{\text{Rated plant capacity}}$$

Remember:

- Plant capacity factor is also known as plant factor.
- A graph showing the variation of the system load during the 24 hours of the day is known as the system chronological load curve.
- The area under a chronological load curve gives the energy consumed during the 24 hours.
- Load duration curve is a rearrangement of all the load elements of a chronological curve in a descending order
- Mass curve is plotted with energy as ordinate and time as abscissa.
- A mass curve is used in the study of variations between the rate of water flow and the electrical load and determination of the necessary storage.

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