SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

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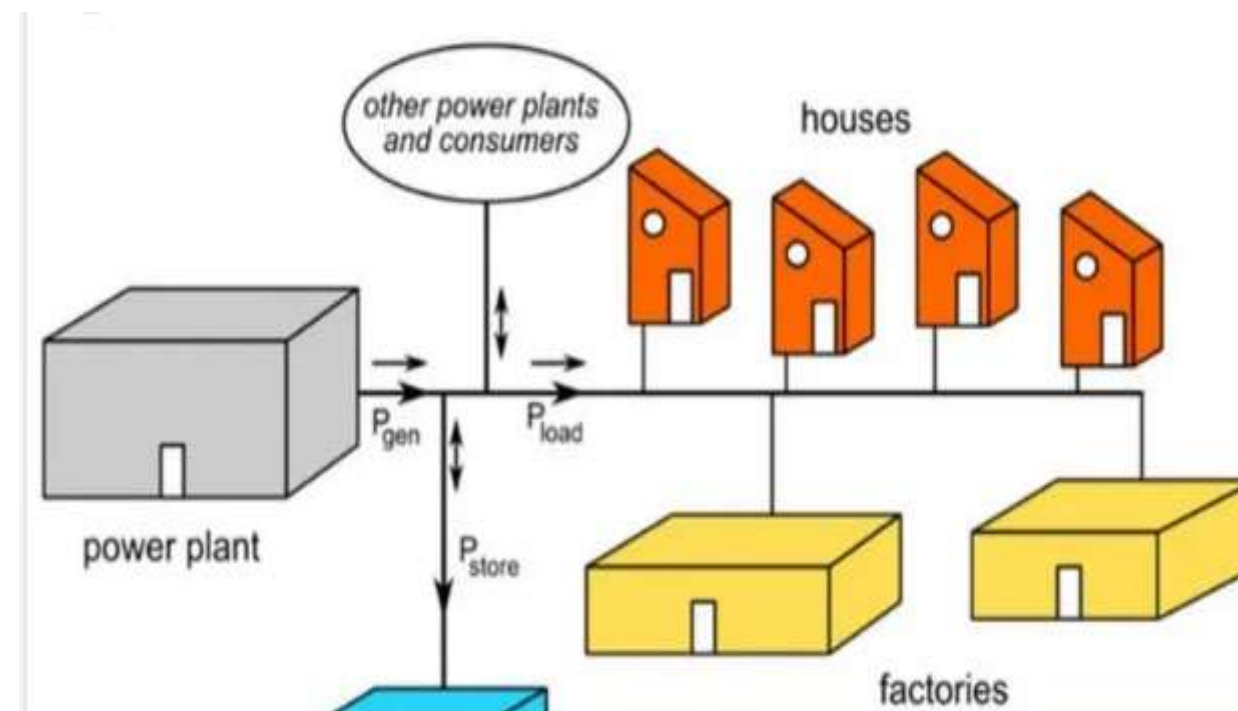
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

UNIT – IV
ECONOMIC DISPATCH AND UNIT COMMITMENT TERMINOLOGIES

CONNECTED LOAD

- The connected load is the sum of the continuous ratings of all the equipment connected to the supply system.

EXAMPLE- CONNECTED LOAD

- If each consumer of the power station has the following connections.

    Five 100-watt lamps

    Two 60 watt fans

    Power socket point of 500 watts

SOLUTION:

Then the CL of one consumer is 5×100 + 2×60 + 500 = 1120 watts.

DEMAND & MAXIMUM DEMAND

- The maximum amount of electrical power that is being consumed at a given time, as opposed to energy (kWh), which is the amount of power used over a period of time.

- Maximum demand refers to the peak or highest electrical power required or demanded, by the Consumer. It is measured over a fixed time period, usually in half an hour interval, for a complete month.

- Maximum Demand= Connected Load * Load Factor / Power Factor

DEMAND FACTOR

- The demand factor is always less than or equal to one. As the amount of demand is a time dependent quantity so is the demand factor.

- Demand factor = Maximum demand / Total connected load

AVERAGE LOAD

- The average of loads occurring on the power station in a given period (day or month or year) is known as average load or average demand.

- It is because higher load factor factor means lesser maximum demand.

- The station capacity is so selected that it must meet the maximum demand.

LOAD FACTOR

- A load factor is the ratio of the average electric load to the peak load over a period of time.

- The load factor is the actual kilowatt-hours delivered on a system in a given period of time

$$Load\ factor = \frac{average\ load}{peak\ load}$$

DIVERSITY FACTOR

- The diversity factor is the ratio of the sum of the individual non-coincident maximum loads of various subdivisions of the system to the maximum demand of the complete system.

$$Diversity\ factor = \frac{(sum\ of\ individual\ maximum\ demands)}{(coincident\ maximum\ demand\ of\ the\ whole\ system)}$$

PLANT CAPACITY FACTOR

- It is the ratio of actual energy produced to the maximum possible energy that could have been produced during a given period.

- The plant capacity factor is also known as the ratio of average demand to plant capacity.

$$\text{Plant capacity factor} = \frac{\text{Actual energy produced (in kWh)}}{\text{Maximum possible energy that could've been produced (based on installed plant capacity)}}$$

$$= \frac{\text{Average demand}}{\text{Installed capacity}}$$

PLANT USE FACTOR

- It is the ratio of kWh generated to the product of plant capacity and the number of hours for which the plant was in operation.

- The utilization factor or use factor is the ratio of the time that a piece of equipment is in use to the total time that it could be in use.

- It is often averaged over time in the definition such that the ratio becomes the amount of energy used divided by the maximum possible to be used

TERMINOLOGIES