SUBJECT: POWER SYSTEM OPERATION AND CONTROL

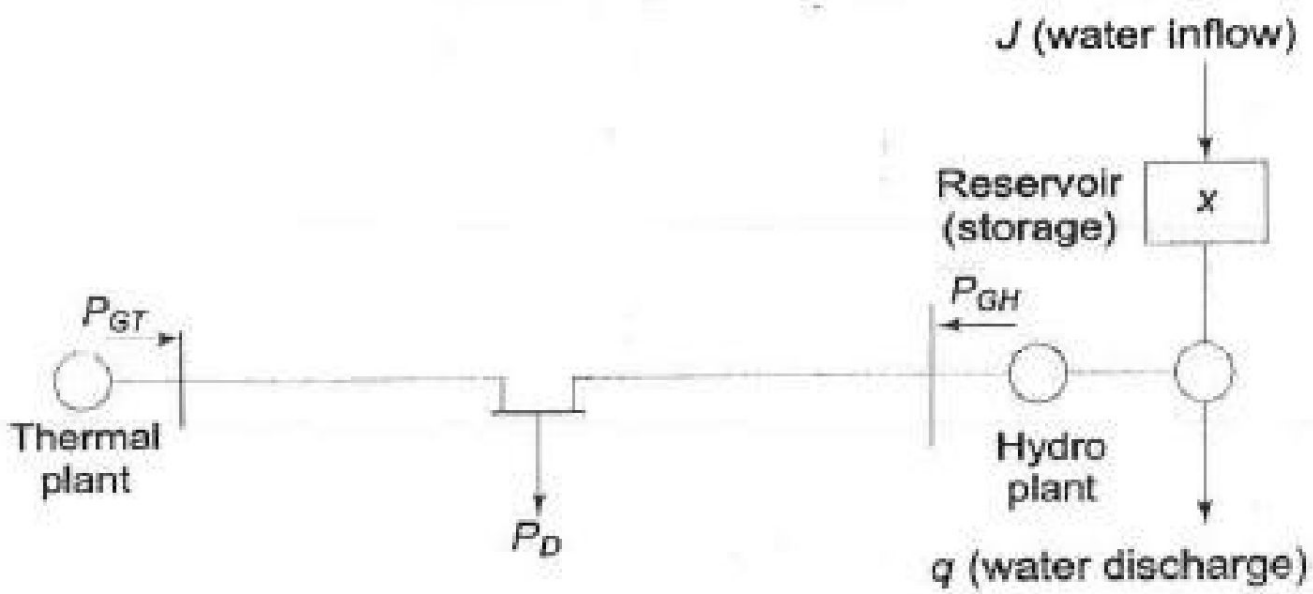
SUBJECT CODE: EE 403

SEMESTER: VII

What is Hydrothermal Coordination

Is the optimal **coordination** of hydro and thermal plants to meet the system load demand at minimum possible operational cost of the thermal plants while satisfying the system constraints.

Fundamental hydrothermal system



Advantages of Operation of Hydrothermal Combinations

- Flexibility:
- Greater Economy
- Security of Supply:
- Better Energy Conservation:
- Reserve Capacity Maintenance:

What is base load and peak load plant?

Load is the amount of power in the electrical grid. **Base load** is the level that it typically does not go below, that is, the basic amount of electricity that is always required. **Peak load** is the daily fluctuation of electricity use. It is usually lowest in the wee hours of the morning and highest in the early evening

Which plants supply the peak load for the base power plants?

A list of the most popular peak load power plants, which work in combination with base load power plants, are:

- ✔ Gas.
- ✔ Solar.
- ✔ Wind turbines.
- ✔ Diesel generators[JX1]

Can a hydropower plant be a base load plant as well as a peak load plant?

Hydropower and geothermal power **can** also be used for **base load** electricity generation if those resources are regionally available. ... The **peak** power generation is usually attributed to the systems that **can** be easily stopped and started. Possibilities are natural gas and oil **plants**, hydro-facilities

What is the base load of a power plant?

A **base load power plant** is a **power station** that usually provides a continuous supply of electricity throughout the year with some minimum **power generation** requirement. **Base load power plants** will only be turned off during periodic maintenance, upgrading, overhaul or service

What is the difference between base load and peak load?

Understanding **Peak Load** and **Base Load** Electricity

Also known as **peak demand** or **peak load** contribution, it is typically a shorter period when electricity is in high **demand**. **Base load**, on the other hand, is the minimum amount of electrical **demand** needed over a 24-hour time period

How is peak load calculated?

The load factor can be calculated by using the following Load Factor formula.

- **Load** Factor = Average **Load/Peak Load**.
- **Load** Factor = Average **Load** X 24Hours / Peak **Load** X 24 Hours.
- **Load** Factor for Daily = Total kilowatt-hour throughout 24Hr of the Day / **Peak Load** in Kilowatt X 24Hr

How do you calculate base load?

Base load calculation: Find the two lowest total consumption numbers from column 2. Add them together and divide by 2. This is your approximate **Base load**. Place that number in each cell in column 3, except the last cell (total cell).

Why are base load plants loaded heavily?

The **base load plants** are **plants** which are **loaded** very **heavily**. Operating cost of such **plants** are very important. A high capital cost is permissible if low operating costs can be maintained (e.g. new, large coal and nuclear power stations). ... The **base load plant** should be run at high **load** factor.

What is base load in gas turbine?

Base load is the minimum level of demand on an electrical supply system over 24 h. **Base load** power sources are those plants that can generate dependable power to consistently meet demand.

What does peak demand mean?

Peak demand, **peak load** or on-**peak** are terms used in energy **demand** management describing a period in which electrical power is expected to be provided for a sustained period at a significantly higher than average supply level. **Peak demand** fluctuations may occur on daily, monthly, seasonal and yearly cycles

What is baseload capacity?

Baseload power refers to the minimum amount of electric power needed to be supplied to the electrical grid at any given time. ... Power plants that provide **baseload** power often run year round - therefore having a high **capacity** factor - and use non-renewable fuel

Which kind of power plants are always operated on base load with high load factor?

Hydroelectric **power plants** can **operate** as **base load**, **load** following or peaking **power plants**. They have the ability to start within minutes, and in some cases seconds.

What is long term hydrothermal scheduling?

The **long-term hydrothermal scheduling** problem is concerned with minimization of total cost of fuel spent in thermal plants through effective utilization of the water inflow to the various hydro reservoirs during the year of interest.

What is hydro thermal coordination?

Hydrothermal coordination (HTC) means determination of **thermal** power and **hydro** power such that total system generation cost is minimum while satisfying the system constraints. ... It is basically non-linear programming problem involving non-linear objective function and a mixture of linear and non-linear constraints.

What is hydro thermal scheduling?

Hydrothermal scheduling is an important issue in the field of power system economics. The aim of the short-term **hydrothermal scheduling** is to optimize the hourly output of power generation for different **hydrothermal** units for certain intervals of time to minimize the total cost of generations.

What is optimal scheduling of hydrothermal system?

OPTIMAL SCHEDULING OF HYDROTHERMAL SYSTEM

- Operation of the **system** having both hydro and thermal power plants is a complex method.
- We perform static optimization when the plant is thermal power plant
- But hydro thermal **scheduling** is a dynamic optimization due to the water constraint i.e. water availability.