


Types of Cogeneration



Type	Remarks
Power & Steam Balanced	Complete Power & Steam demand of the process met
Power Based	Complete Power demand met, steam / heat is only incidental
Steam Based	Complete Steam demand of process met, power is only incidental
Heat Based	Heat used in Process, power is only incidental

One must decide the basis of Cogeneration Plant:

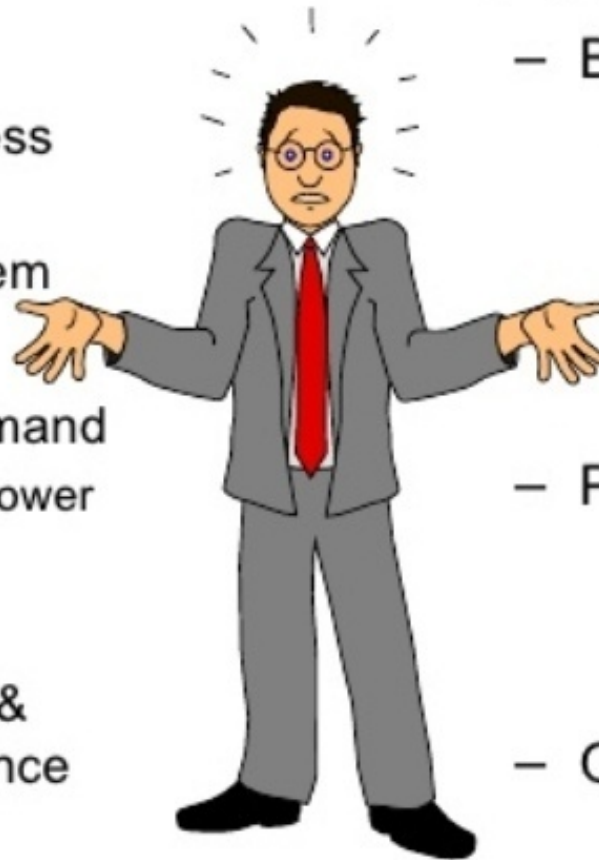
- ✓ Power based
- ✓ Steam based

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Options - Issues

- Steam based

- Boiler Design
 - Basically for Process Heating
 - Type of firing system
- Process Demand
 - Fluctuations in demand
 - Fluctuation in Power Output
- O&M of the Plant
 - Simple to operate & low cost maintenance



- Power based

- Boiler Design
 - Higher Pressure & Temperature
 - Continuous Operation
 - Designed for Power Generation
- Process Demand
 - Takes care of both steam & power demand
- O&M of the Plant
 - Power plant operation

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Options for Cogeneration Plants

- Steam Turbine based
 - High pressure & temperature steam
- Diesel / Gas Engine based
 - Waste Heat Boiler for Steam Generation
- Gas Turbine based
 - Waste Heat Boiler (HRSG) for Steam Generation

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Selection Criteria for Cogen Options

- Steam to Power Ratio
 - What is your Steam / Power Ratio?
 - A low ratio means low attractiveness
 - A high ratio gives high attractiveness
- Fuel Options
 - Even though a steam / power ratio may suggest most appropriate cycle to adopt
 - Non-availability of fuel may force you to adopt a less appropriate cycle
- Plant Location
 - Nearness to fuel source and water availability often decides the type of cogeneration cycle to be adopted

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Selection Criteria for Cogen Options

$$\text{Steam to Power Ratio (S/P)} = \frac{\text{Steam in TPH}}{\text{Power in MW}}$$

- If steam required for process is 10 TPH
- Power required is 2 MW
- Then the steam / power ratio = 5

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