

A Presentation on Cogeneration in Industries



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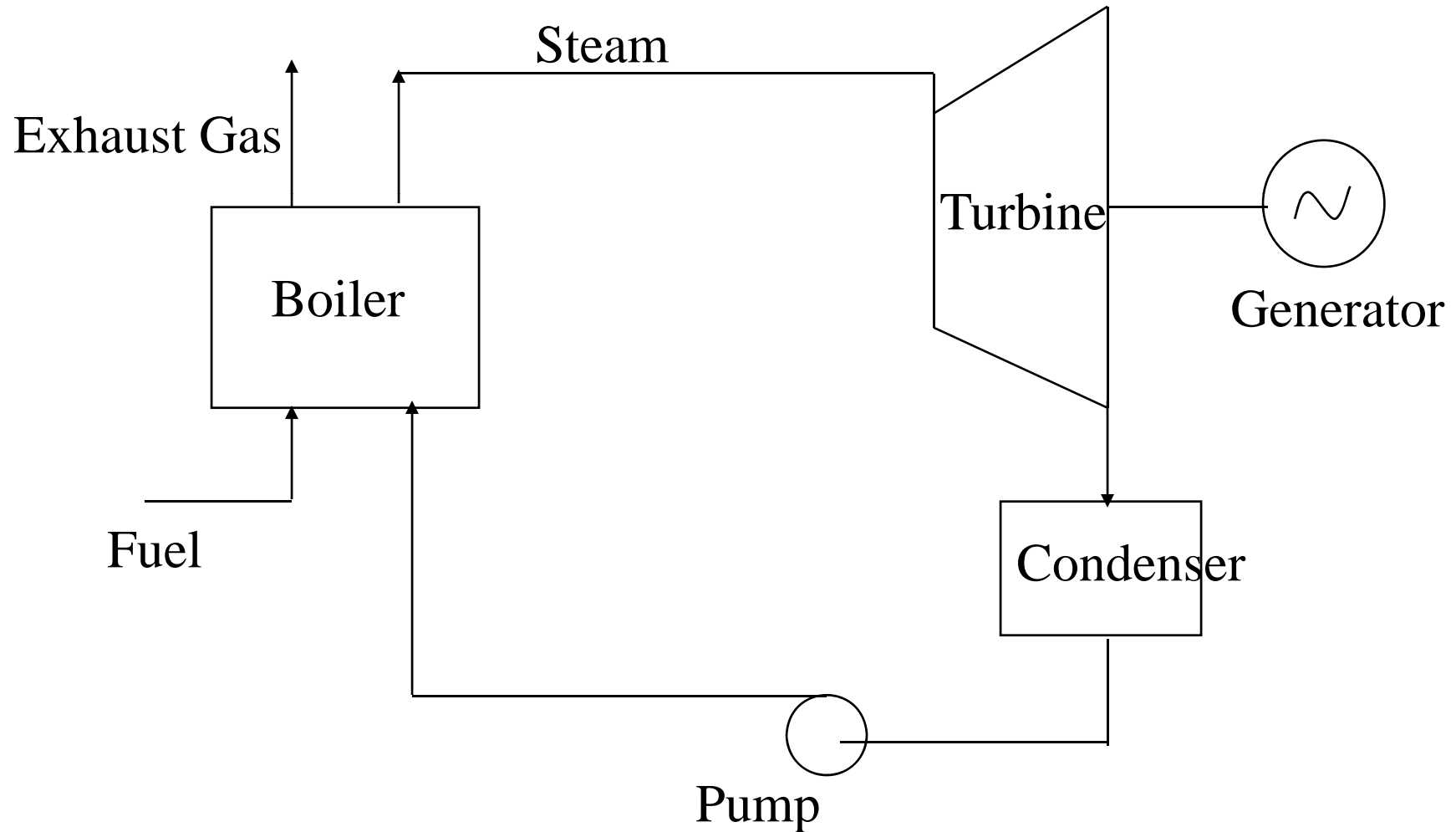
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Generation of Electricity

⌘ Sources

- ☑ Hydro
- ☑ Thermal
- ☑ Nuclear
- ☑ Wind
- ☑ Solar

Thermal Power Generation Cycle (coal based)

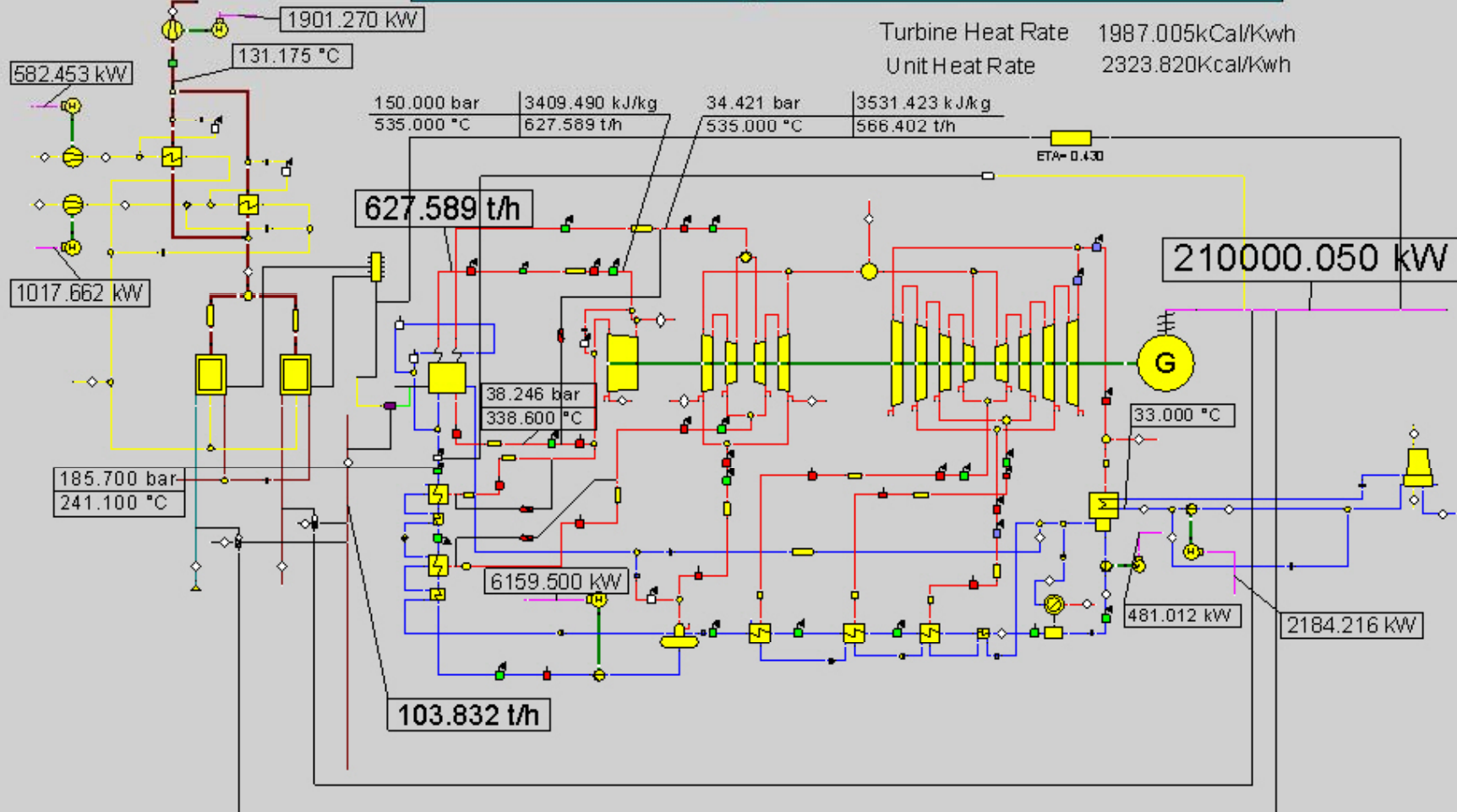


Typical Thermal Power Plant

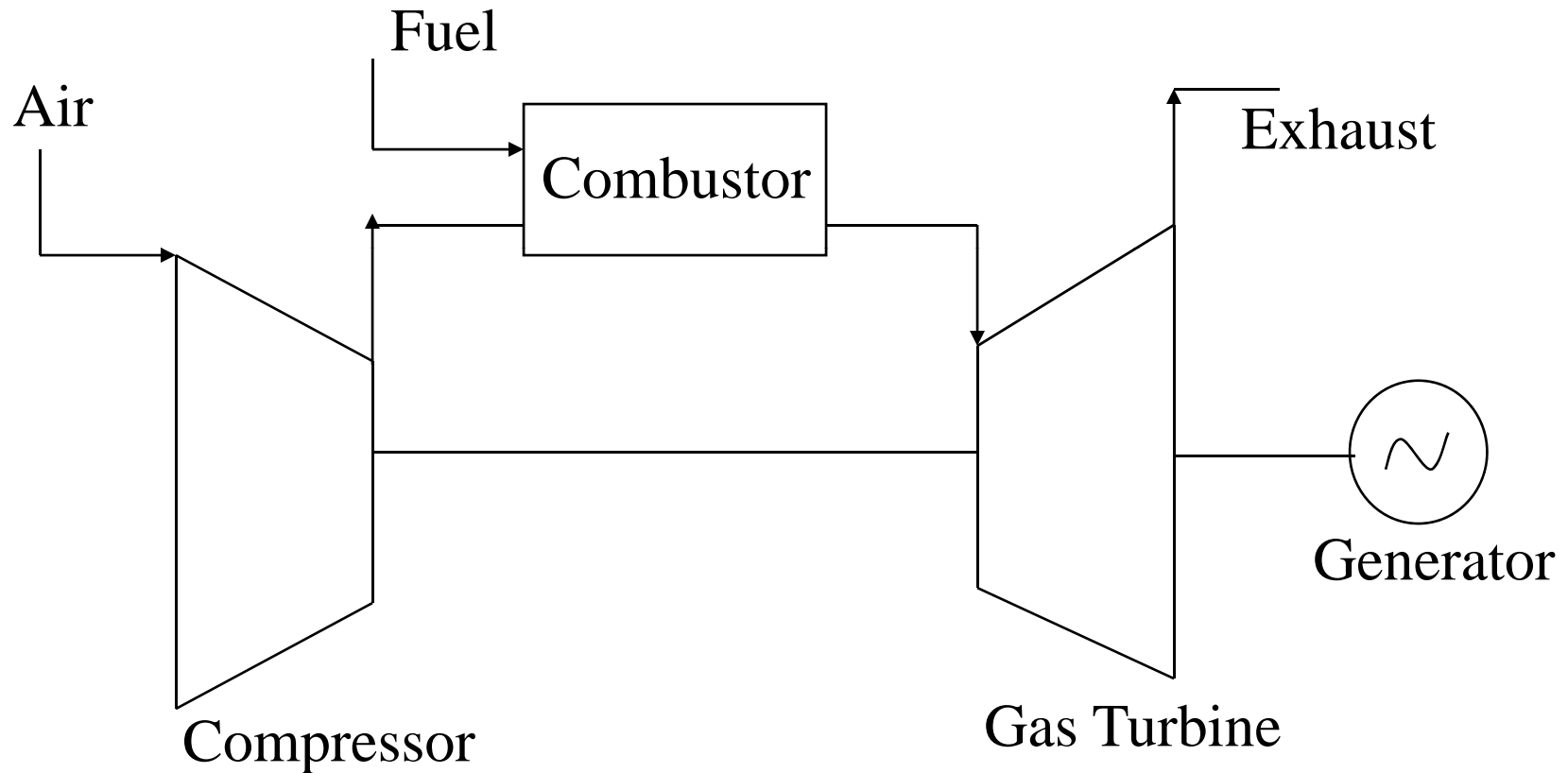


Design Profile - 210 MW

Turbine Heat Rate 1987.005kCal/Kwh
 Unit Heat Rate 2323.820Kcal/Kwh



Thermal Power Generation Cycle (Gas Turbine)



Cogeneration



- ⌘ Cogeneration is simultaneous production of electrical energy and useful thermal energy
- ⌘ Cogeneration systems include dual-purpose power plants, waste heat utilization systems and total energy systems.

Cogeneration Types

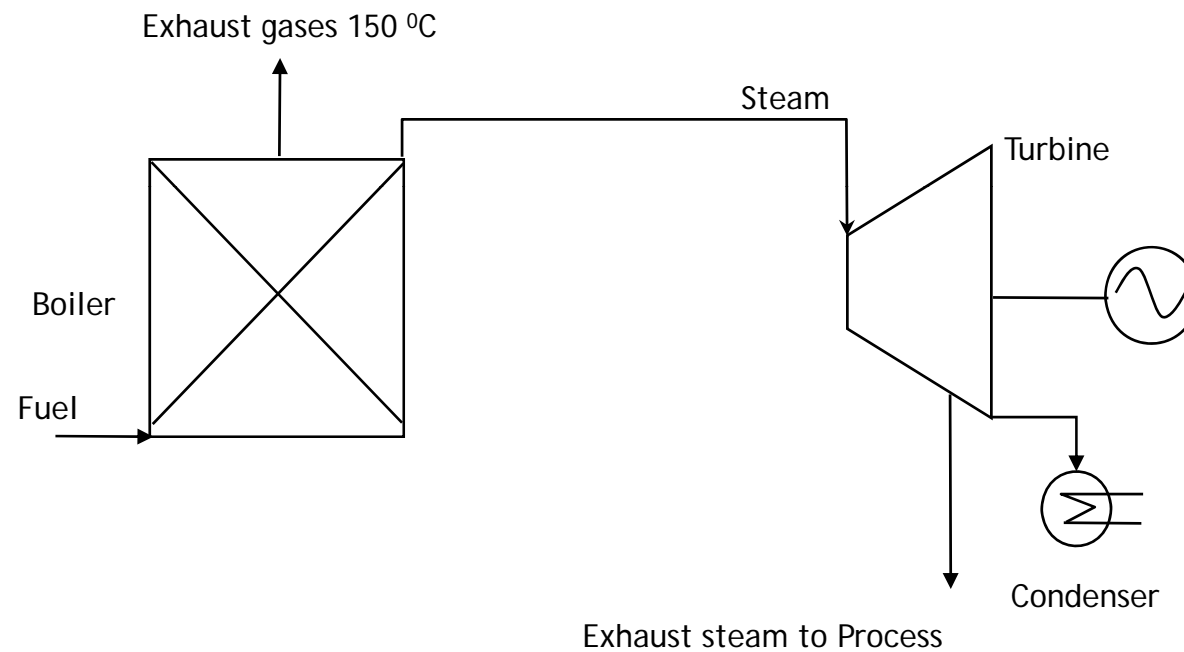
⌘ Topping System

- ☑ Electricity is produced first and the thermal energy exhausted is captured for further use in the process

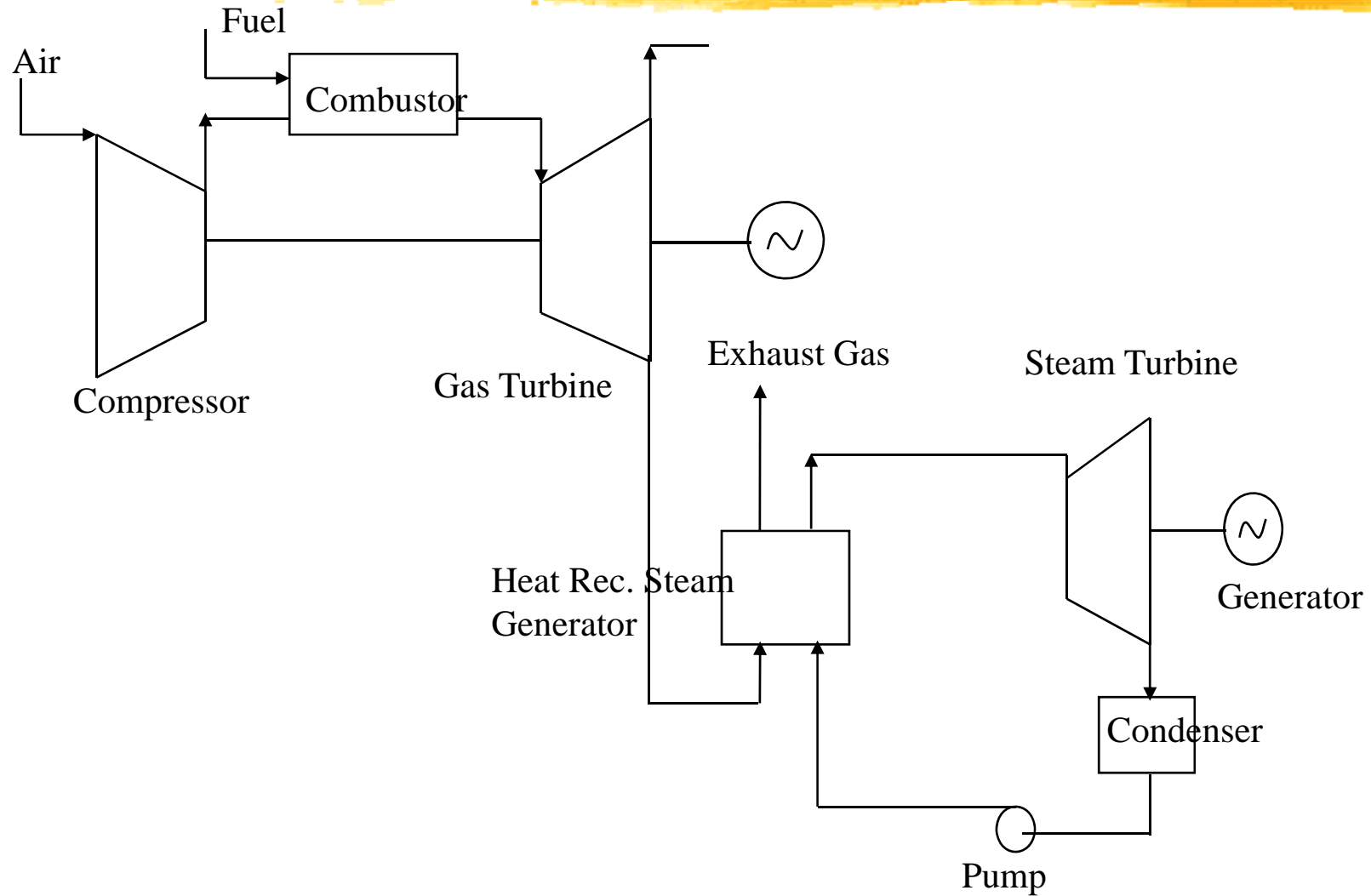
⌘ Bottoming System

- ☑ Usable thermal energy is extracted from a waste stream (after it has been used in a process) to produce power, usually for driving a turbine to generate electricity

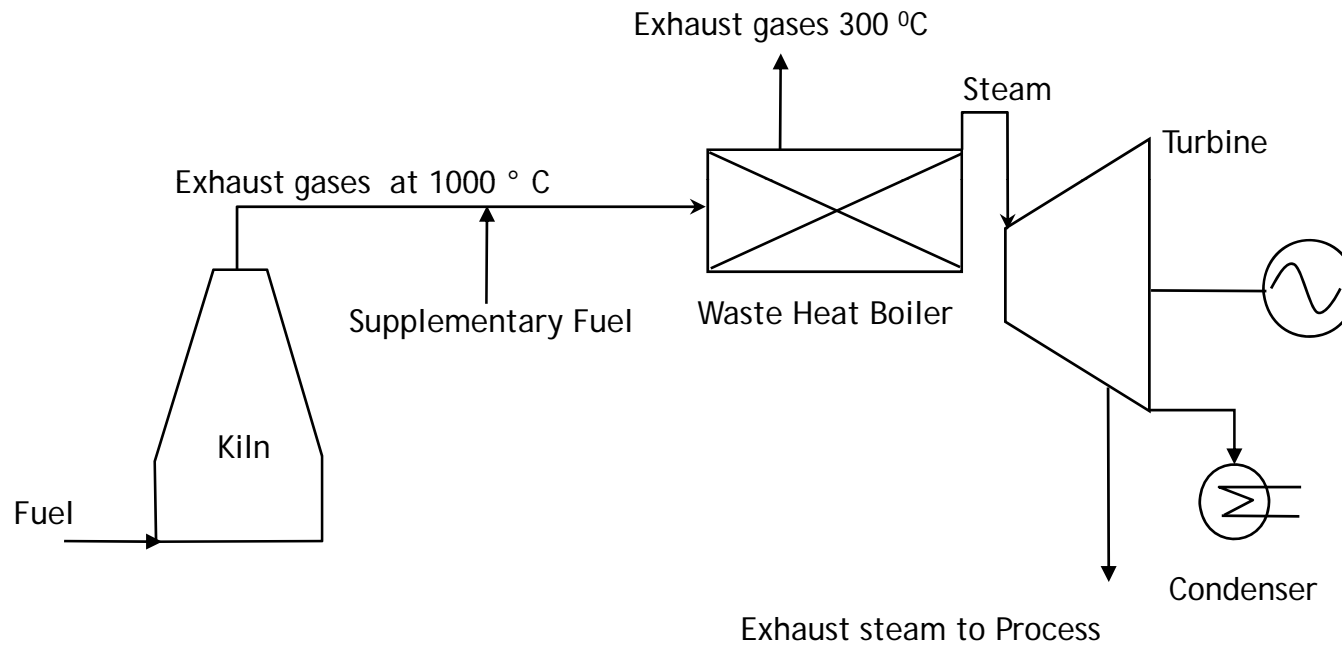
Topping System



Bottoming System



Bottoming System



Efficiencies of Generation Cycles

Type of Generation	Efficiency
⌘ Thermal Plants (Coal Based)	30 to 40%
⌘ Thermal Plants (Gas Turbine)	25 to 30%
⌘ Combined Cycle	55 to 60%
⌘ Co – Generation	60 to 70%

Advantages of Co-gen in the present Power Sector Scenario

- ⌘ Act as a Booster station
- ⌘ Self reliance
- ⌘ It can maintain grid stability
- ⌘ Pollution reduction & Environmental friendly
- ⌘ Helps to meet the national target of 10% of power generation thro' co-gen route by 2010
- ⌘ It offers cheap power in the long term
- ⌘ GHG Mitigation

Potential Sectors

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- ⌘ Sugar industries
- ⌘ Textile industries
- ⌘ Chemical and Pharmaceutical industries
- ⌘ Paper industry
- ⌘ Refineries
- ⌘ Fertilizers

Factors to be considered



- ⌘ Steam Power ratio
- ⌘ Type of process
- ⌘ Fuel Availability
- ⌘ Load profile