In this project, you are teamed with 2 of your classmates to design a simple steam power plant. The plant runs on natural gas and produces 100 MW of power. Design a simple Rankine cycle that can produce the required output. The plant is situated near the sea with an average temperature of 16 ºC.

Decide on your operating pressures and temperatures and discuss your rationale for your selection. Calculate;
i)   the condition (for example, temperature, pressure, enthalpy) at each point in the cycle
ii) the required steam mass flow rate
iii) the thermal efficiency of your plant
iv) the rate of gas consumption for your plant
v)   the cooling water mass flow rate if the seawater temperature rise is limited to 4 ºC due to environmental protection requirements.

This project should be treated as confidential, hence each member of the group should not release any information gathered or collected for this project as well as any assumption you made to anyone other than the group members.

The group should submit a group report.
The source of information and the assumption (if any) should be stated clearly in your report and presentation.
The evaluation will be based on originality, correct assumption and clear explanation/calculation method as well as accuracy.

Deliverables

You will hand in a report in softcopy (.docx and .pdf formats).
Hand in your work on a CD containing all relevant files.