



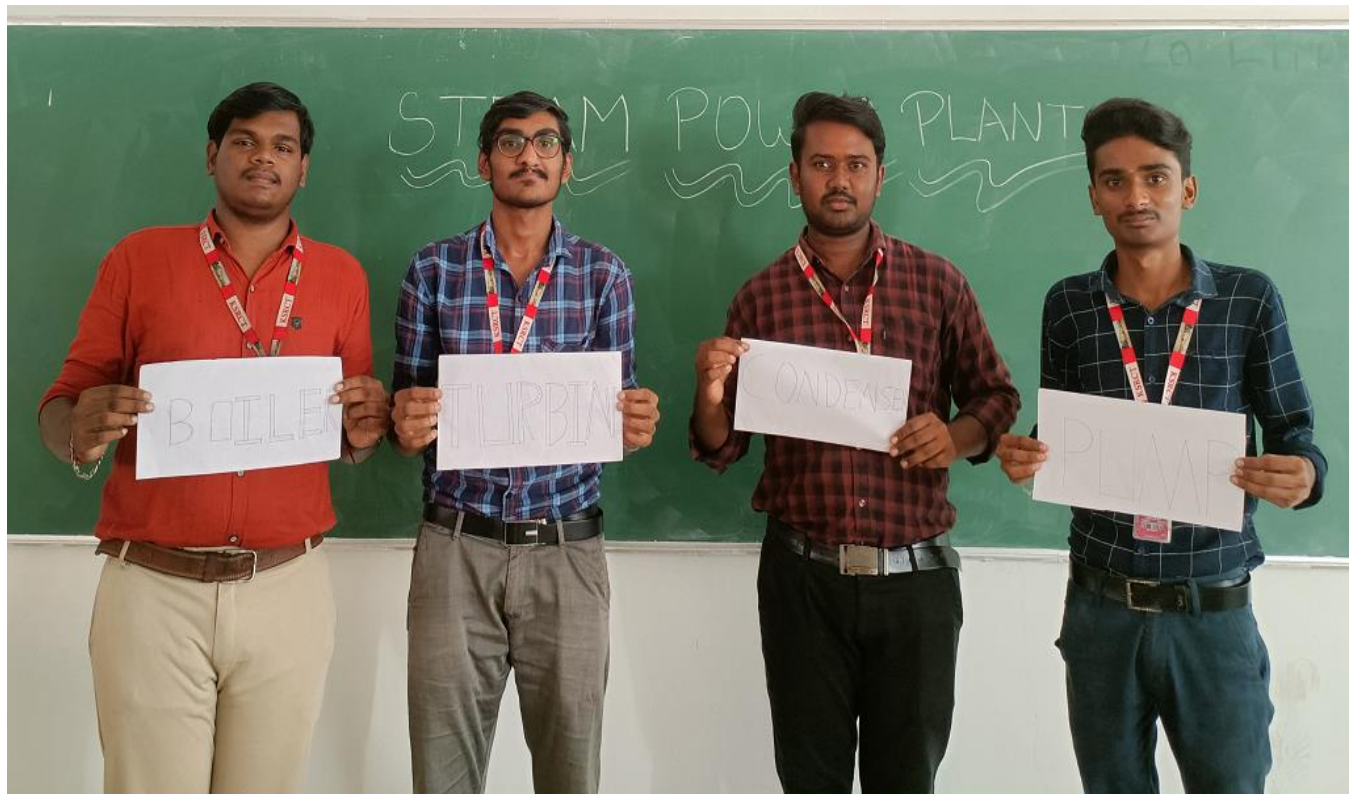
K S RANGASAMY COLLEGE OF TECHNOLOGY
Tiruchengode – 637215
(An Autonomous Institution, Affiliated to Anna University, Chennai)
DEPARTMENT OF MECHANICAL ENGINEERING



Date: 21.10.2022

ROLE PLAY

Degree/Branch : B.E. (Mechanical Engineering)
Semester/Year : III/II
Subject Code : 50 ME 004
Subject Name : Thermodynamics
Topic of Role Play : Steam Power Plant (Ideal Rankine Cycle)



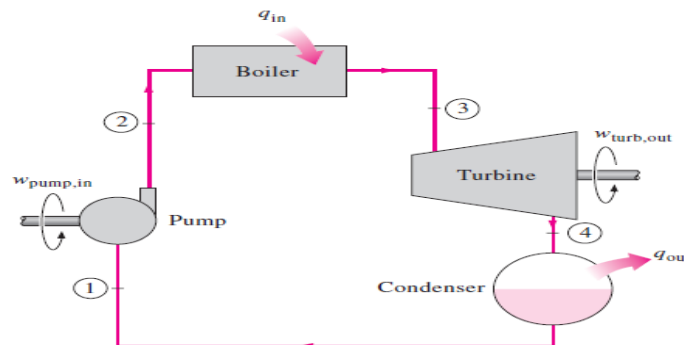
Prakash R
Course Instructor

Prakash R
AP/Mech



ROLE PLAY

The Students discussed the following in the Role Play,
Components of Steam Power Plant



Pump

Water enters the pump at state 1 as saturated liquid and is compressed isentropically to the operating pressure of the boiler. The water temperature increases during this isentropic compression process due to a slight decrease in the specific volume of water.

Boiler

Water enters the boiler as a compressed liquid at state 2 and leaves as a superheated vapor at state 3. The boiler is basically a large heat exchanger where the heat originating from combustion gases, nuclear reactors, or other sources is transferred to the water essentially at constant pressure.

Turbine

The superheated vapor at state 3 enters the turbine, where it expands isentropically and produces work by rotating the shaft connected to an electric generator. The pressure and the temperature of steam drop during this process to the values at state 4, where steam enters the condenser.

Condenser

Steam is condensed at constant pressure in the condenser, which is basically a large heat exchanger, by rejecting heat to a cooling medium such as a lake, a river, or the atmosphere. Steam leaves the condenser as saturated liquid and enters the pump, completing the cycle.

Course Instructor

Prakash R
AP/Mech