Department of Mechanical Engineering
Academic Year 2021 – 2022 (Odd Semester)

Degree, Semester & Branch: III Semester B.E. EEE -'A' Section
Course Code & Title: ME8792 Power Plant Engineering
Name of the Faculty member (s): Mr.P.Pavithran, AP/Mech

Innovative Practice Description

- **Unit / Topic:** Unit III / Virtual Simulation of Nuclear Power Plant
- **Course Outcome:** Explain the layout, construction and working of the components inside nuclear power plants
- **Topic Learning Outcome:**
  - ✓ TLO 9 Explain the differences between Nuclear fission and fusion processes
  - ✓ TLO 10 Draw the layout of different types of Nuclear power plant
  - ✓ TLO 11 Illustrate the working of different types of Nuclear power plant
  - ✓ TLO 12 Enumerate safety measures for Nuclear power plants
- **Activity Chosen:** Virtual laboratory
- **Justification:**
  - ✓ Apply basic engineering concept in Nuclear power plant
  - ✓ Explain the working of Diesel and Gas turbine power plant
- **Time Allotted for the Activity:** 50 minutes
- **Details of the Implementation:**

Totally 30 students were actively participated for this online virtual simulation practice. A nuclear power plant (sometimes abbreviated as NPP) is a thermal power station in which the heat source is a nuclear reactor. As is typical of thermal power stations, heat is used to generate steam that drives a steam turbine connected to a generator that produces electricity. As of 2022, the International Atomic Energy Agency reported there were 439 nuclear power reactors in operation in 32 countries around the world.

Nuclear plants are very often used for base load since their operations, maintenance, and fuel costs are at the lower end of the spectrum of costs. However, building a nuclear power plant often spans five to ten years, which can accrue to significant financial costs, depending on how the initial investments are financed.

- **CO – PO / PSO mapping:**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C206.3	3											

- **PO / PSO mapped:**

CO	PSO1	PSO2	PSO3
C206.3	1		

- **Images / Screenshot of the practice:**

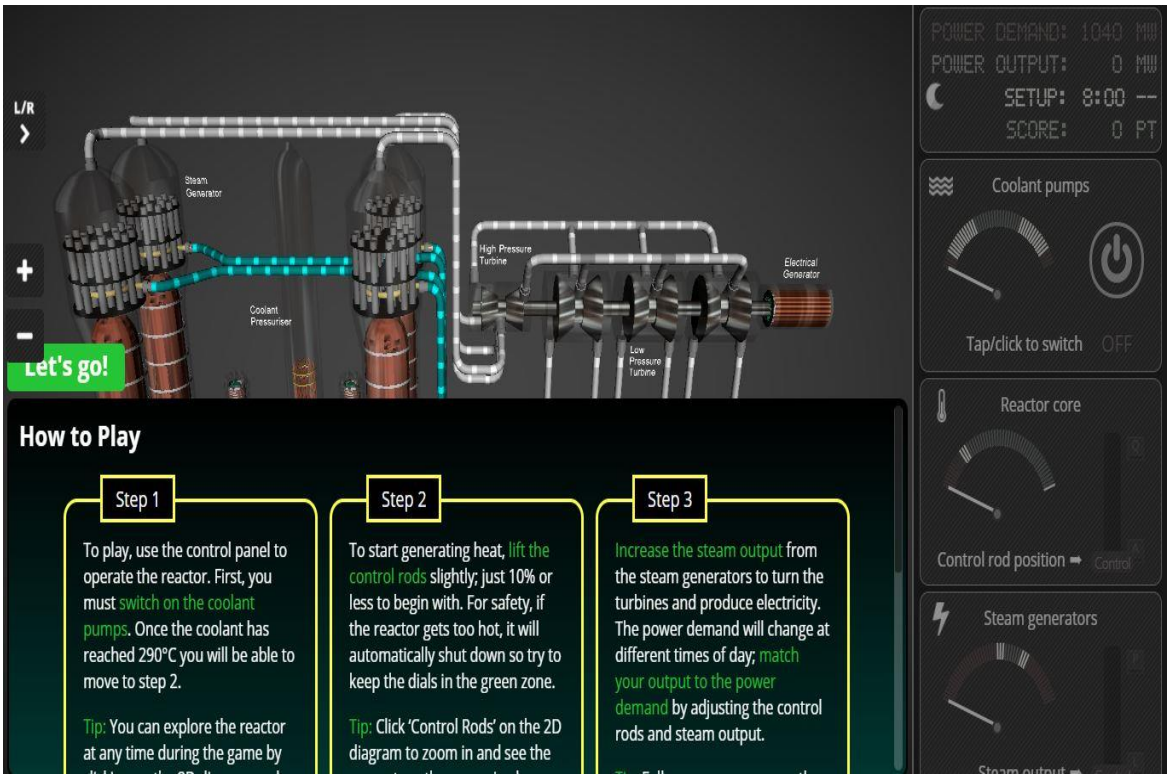

Figure1. "Illustrate the typical layout of nuclear power plant"

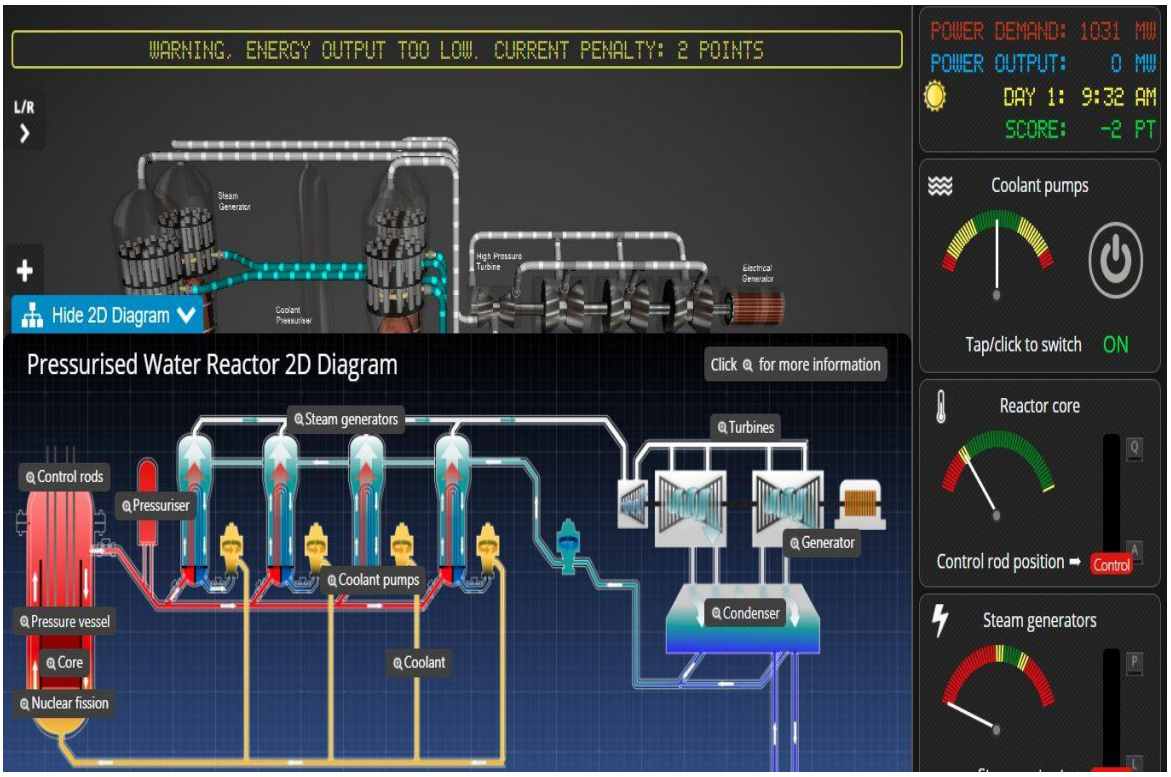

Figure2. "Illustrate the working of PWR

- **Reflective Critique:**
  - ***Feedback of practice from students and other stakeholders:***
    The overall feedback from the students were really good and students felt that it is very easy understand the real time operation of nuclear power plant

  - ***Benefit of the practice:***
    After completing this hands on session in virtual laboratory, the students were able to understand the operation of nuclear power plant very clearly. This virtual simulation enables the students to better understanding of their real time operation of nuclear power plant by adjusting the control rods, fuel inputs and coolants used.

  - ***Challenges faced in implementation:***
    The warning and annunciation of fuel input provision can be included in simulation, for better clarity

References:

- http://lotus.itservices.manchester.ac.uk:8080/

Signature of Faculty Member **HOD**