Rajiv Gandhi Institute of Petroleum Technology (RGIPT), Jais
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Engineering Thermodynamics (CH-161)

Tutorial-2

Q1. Determine the internal energy of water at 200 kPa and 300 ℃.

Q2. Determine the temperature of water at 500 kPa with enthalpy of 2890 kJ/kg.

Q3. A rigid tank contains 10 kg of water at 90 ℃ with the quality of 0.2. Determine the pressure in the tank and the volume of the tank.

Q4. Water is heated in a cylinder-pistol assembly with piston cross-sectional area of 1 m^2 in the following three different situation:

(a) There is no piston, and the cylinder is open to surrounding.
(b) The piston is massless
(c) The piston with a mass of 10 kg

If the initial temperature and mass of water is same (25 ℃ and 1 kg) in all three cases and the water is heated at same rate (1 J/s) and for same time of 100 s. Under which condition the maximum temperature will be reached and its value. Consider atmospheric pressure as 1 atm.

Q5. A rigid vessel contains saturated water vapours at 200℃. Heat is transferred to the system until temperature reaches 300℃. What is the final pressure?