Transient Flow Examples

6. A rigid, insulated tank is initially evacuated is connected through a valve to a supply line that carries steam at 1 MPa and 350 ^{o}C. Now the valve is opened, and steam is allowed to flow slowly into the tank until the pressure reaches 1 MPa, at which point the valve is closed. Determine the final temperature of the steam in the tank.
7. An insulated 1.7 m^3 rigid tank contains air at 515 kPa and 52 ^{o}C. A valve connected to the tank is now opened, and air is allowed to escape until the pressure inside drops to 206 kPa. The air temperature during this process is maintained constant by an electric resistance heater placed in the tank. Determine the electrical work done during this process.