

Determine the thermal efficiency, the required steam flow rate, and the moisture at the turbine exhaust for a reheat/regenerative cycle which is to produce 200 MW at the turbine coupling if the turbine throttle conditions are **15.5 MPa** and 540 °C; reheat is at 8.0 MPa and 590 °C; one closed feedwater heater is at 3.4 MPa; an open feedwater heater is at 170 kPa; and the condenser pressure is 13 kPa.

The adiabatic turbine and pump efficiencies are **85%**. The terminal temperature difference in the closed feedwater heater is 3°C and the drain for the closed feedwater heater is trapped to the open feedwater heater.

