A Lancashine boiler generates 2400 kg of dry steam per hour at a pressure of 11 bar the grate area is 3 m², and 90 kg of coal is burnt per m² of grate area per hour. The calorific value of coal is 33180 kJ/kg and the temperature of feed water is 17.5° C. Determine (i) Actual evaporation per kg of coal (ii) Equivalent evaporation from and at 100° C (iii) efficiency of the boiler. Total Mass of the fuel = 270 kg/hr

Answers:

(m_a) = 8.889 kg/kg of fuel

m_e = 10.659 kg/kg of coal

(η_b) 86.93%