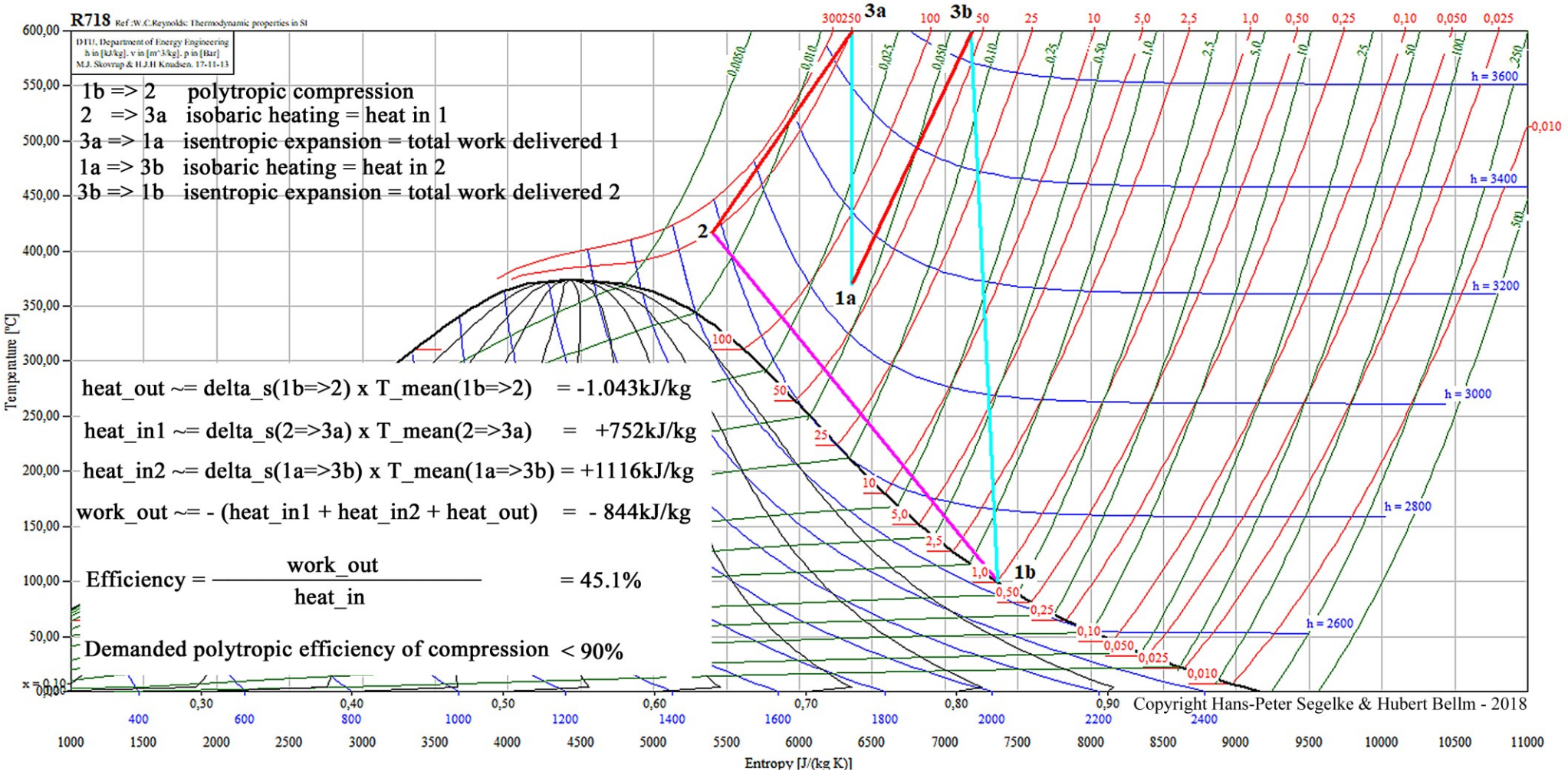
R718 Ref :W.C.Reynolds: Thermodynamic properties in SI
DTU, Department of Energy Engineering
h in [kJ/kg], v in [m^3/kg], p in [Bar]
M.J. Skovrup & H.J.H Knudsen. 17-11-13
1b => 2 polytropic compression
2 => 3a isobaric heating = heat in 1
3a => 1a isentropic expansion = total work delivered 1
1a => 3b isobaric heating = heat in 2
3b => 1b isentropic expansion = total work delivered 2
heat_out ~= delta_s(1b=>2) x T_mean(1b=>2) = -1.043kJ/kg
heat_in1 ~= delta_s(2=>3a) x T_mean(2=>3a) = +752kJ/kg
heat_in2 ~= delta_s(1a=>3b) x T_mean(1a=>3b) = +1116kJ/kg
work_out ~= - (heat_in1 + heat_in2 + heat_out) = - 844kJ/kg
Efficiency = work_out / heat_in = 45.1%
Demanded polytropic efficiency of compression < 90%
3a
3b
2
1a
1b
h = 3600
h = 3400
h = 3200
h = 3000
h = 2800
h = 2600
Temperature [°C]
Entropy [J/(kg K)]
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