Scheme-3 Reactor-1

Part-2, Case-1

ta = 900 sec, tm = 1200 sec
k1 = 0.1, k2 = 0.01

NBt/NAt = 1.66088

Exponent a = 1
Exponent b = 1
Exponent c = 0.5
Exponent d = 1.5

WA = 200
WB = 82.9581
NBt = 4.42443
Vt = 2.14148
Vat = 1.04148
Tot.Solv. = 2
SolA/(SolR+SolA) = 0.5

NA0 = 2.66667
NB0 = 0

Total input = 282.958 kg
Total output = 282.96 kg

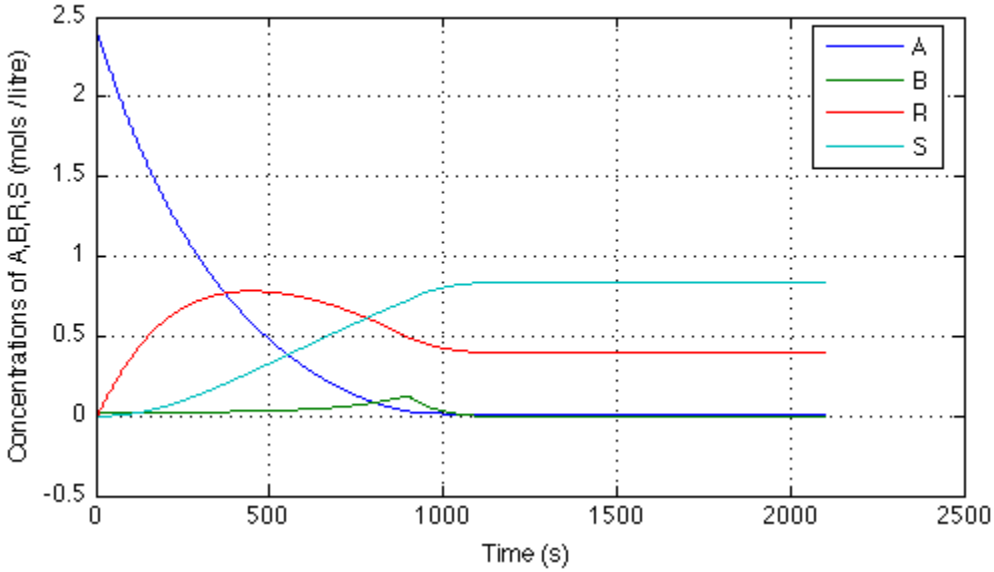
Chemical Balance Error = 0.00178589 kg (% 6.31152e-06)

Solver: Explicit Runge-Kutta (4,5) Variable step (Dormand-Prince Pair)
Error tolerance: 0.1%

Final Concentrations with Step Size limited to 0.0001
NA (final) = 0.0272896
NB (final) = -1.26437e-14
NR (final) = 0.854322
NS (final) = 1.78505

Final Concentrations with Step Size limited to 0.001
NA (final) = 0.0272895
NB (final) = 1.27826e-12
NR (final) = 0.854322
NS (final) = 1.78506

Time when NB (final) < 0: 1130.16s



$V(t) = \min(V_t, t^*V_{at} / t_a + V_t - V_{at})$