Process Simulation with ASPEN Plus

7505 Course Notes

Section 3: Mass-Balance Only Using Elementary Modules with Design Targets (Constraints)

These course materials are applicable to Version 14 of ASPEN Plus

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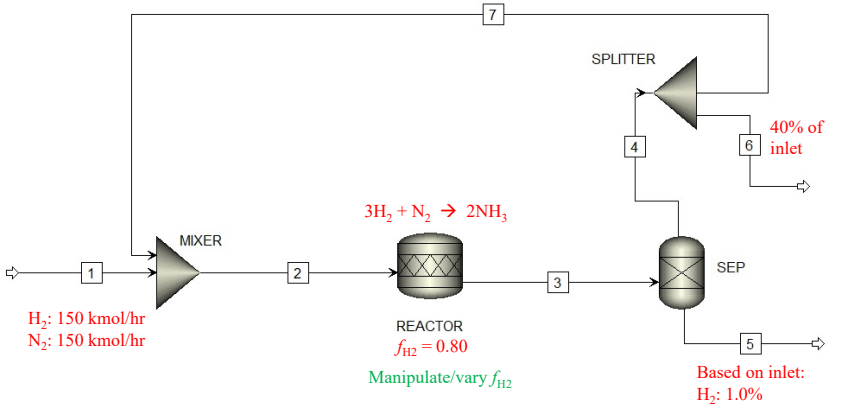
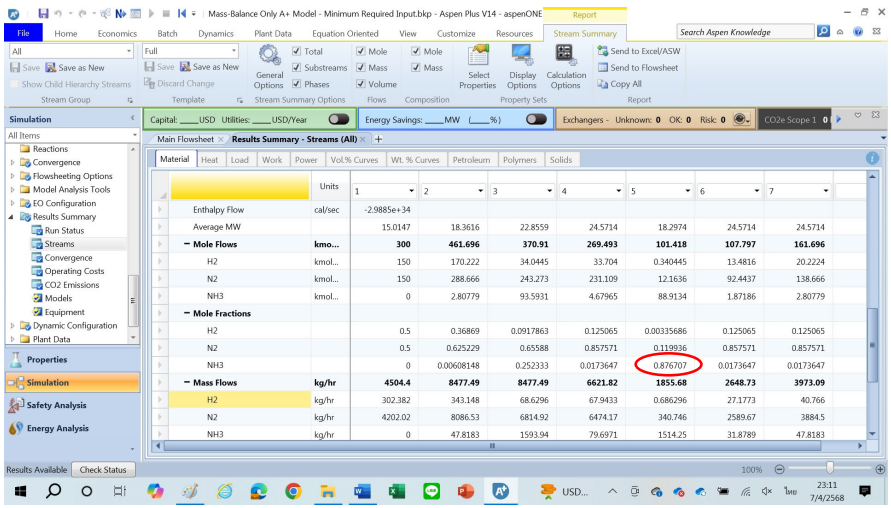
1st Design Target: Mole-Purity of NH_3 in Stream 5 = 88.5%



Thermodynamic Method: IDEAL
(dummy, because we are not doing energy balance)

Mole% NH_3 = 87.67%
Target = 88.50%

Mass-Balance Only: Stream Summary/Table

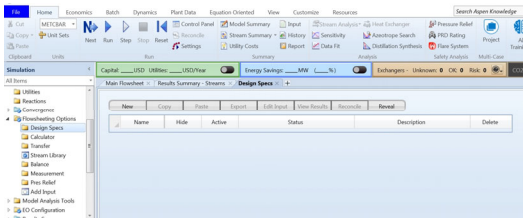


Design-Specification (Design-Spec) in A+

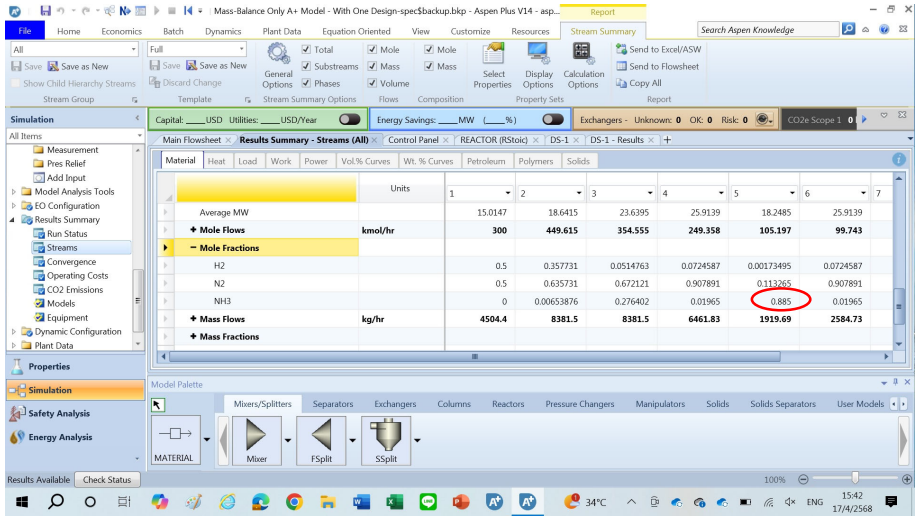
- A user is not allowed to enter the design target value of 88.5% directly into the A+ model.
- A user must use the Design-spec feature to achieve this.
- Design-spec is activated as follows:

  Under the Simulation Environment, access

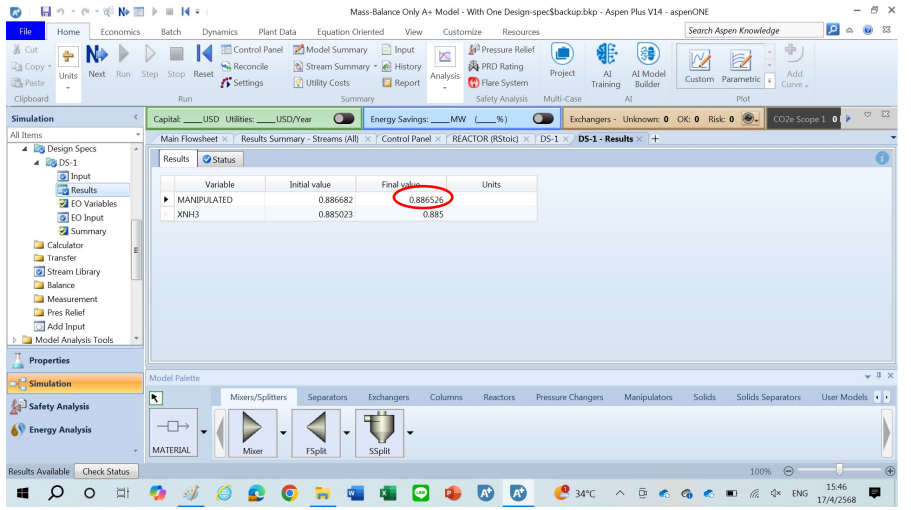
  Flowsheeting Options --> Design Specs



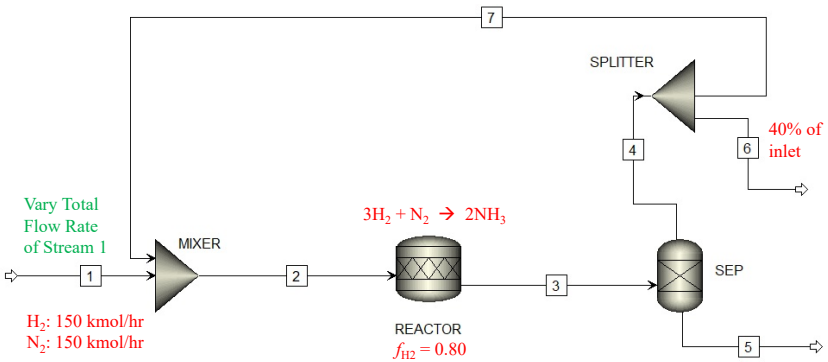
Stream Summary: One Design Target



Design-spec Result: Reactor conversion = 88.65%



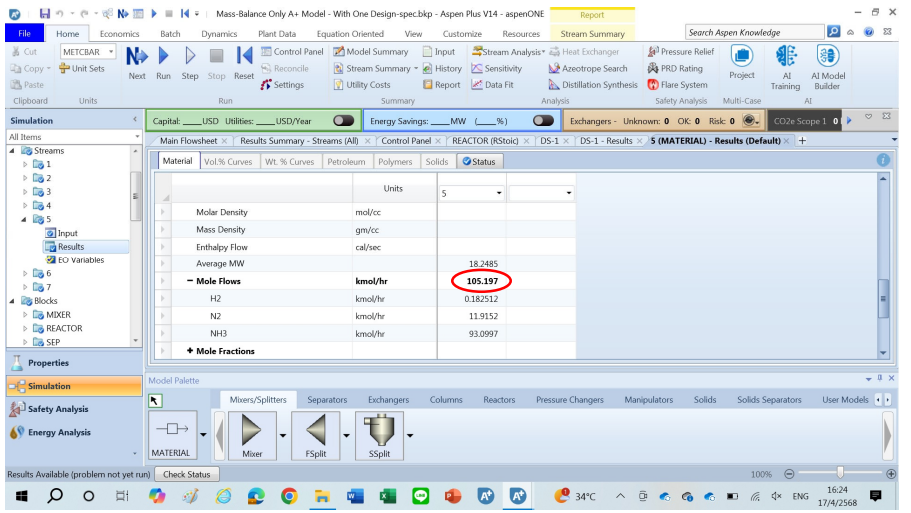
2nd Design Target: Stream 5 Total Molar Flow = 100 kmol/hr



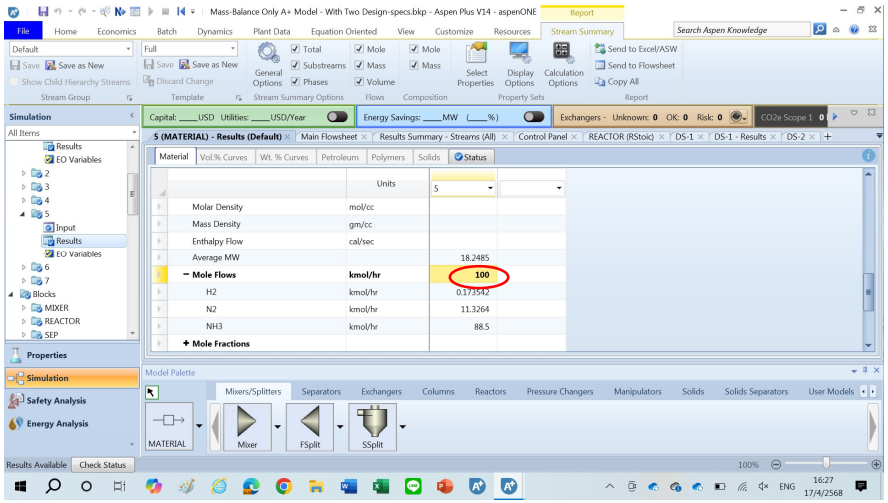
Thermodynamic Method: IDEAL
(dummy, because we are not doing energy balance)

Total Flow Rate = 105.197 kmol/hr
Flow Target = 100 kmol/hr

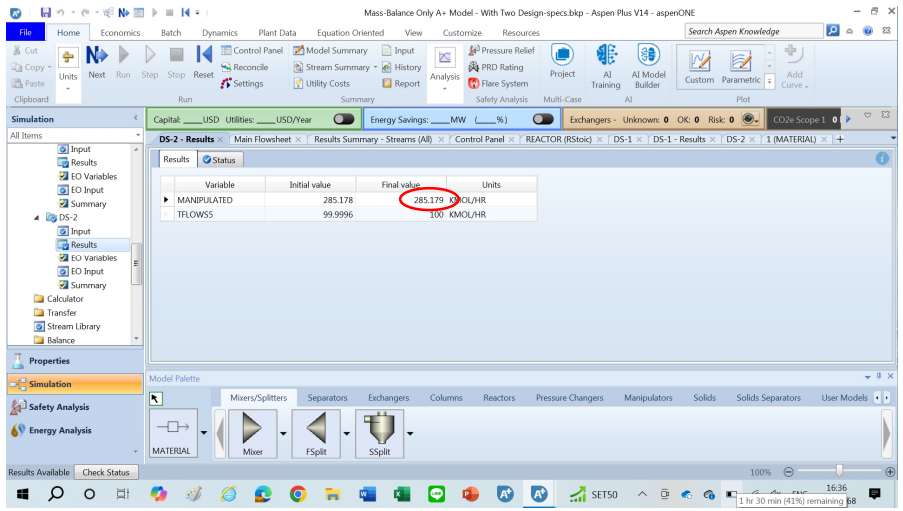
Stream Summary: One Design Target



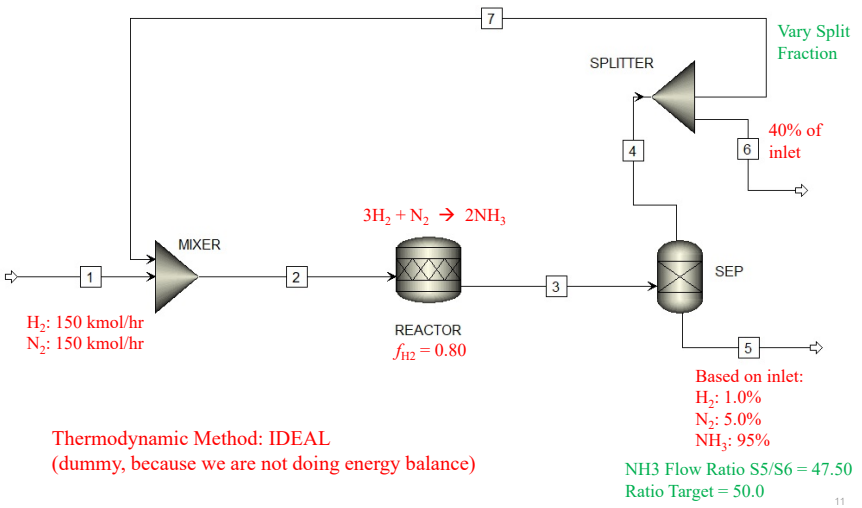
Stream Summary: Two Design Targets



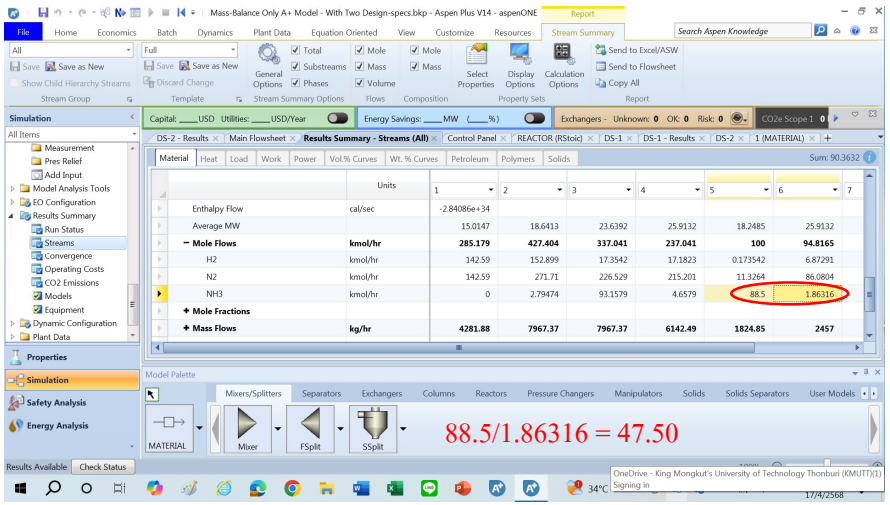
Design-spec Result: Feed Flow Rate = 285.179 kmol/hr



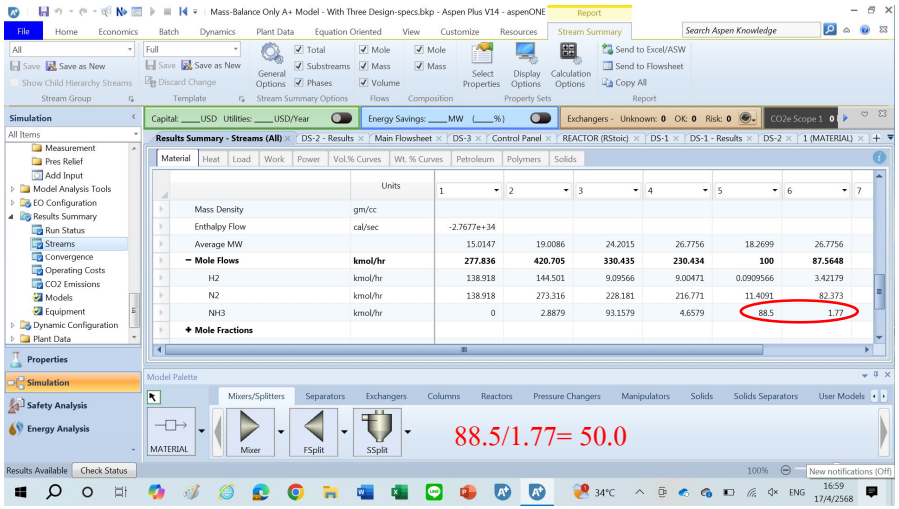
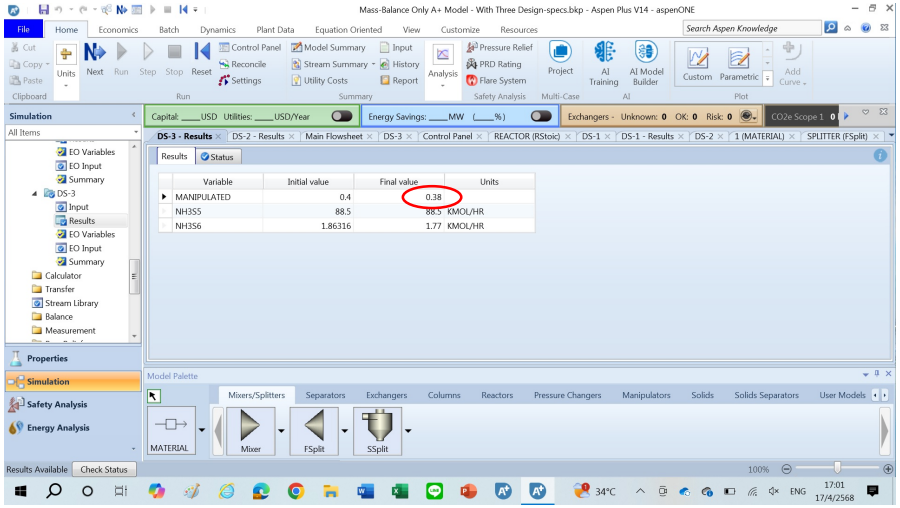
3rd Design Target: NH_3 Molar Flow Ratio S5/S6 = 50.0



Stream Summary: Two Design Targets



Stream Summary: Three Design Targets



Design-spec Result: FSPLIT Split Fraction = 0.38