

IES

Integrated Energy Systems

AspenTech Tools Overview

FORCE Overview and Training

April 4-6, 2023

Amey Shigrekar

Research Engineer

Hydrogen & Thermal Systems (B833)

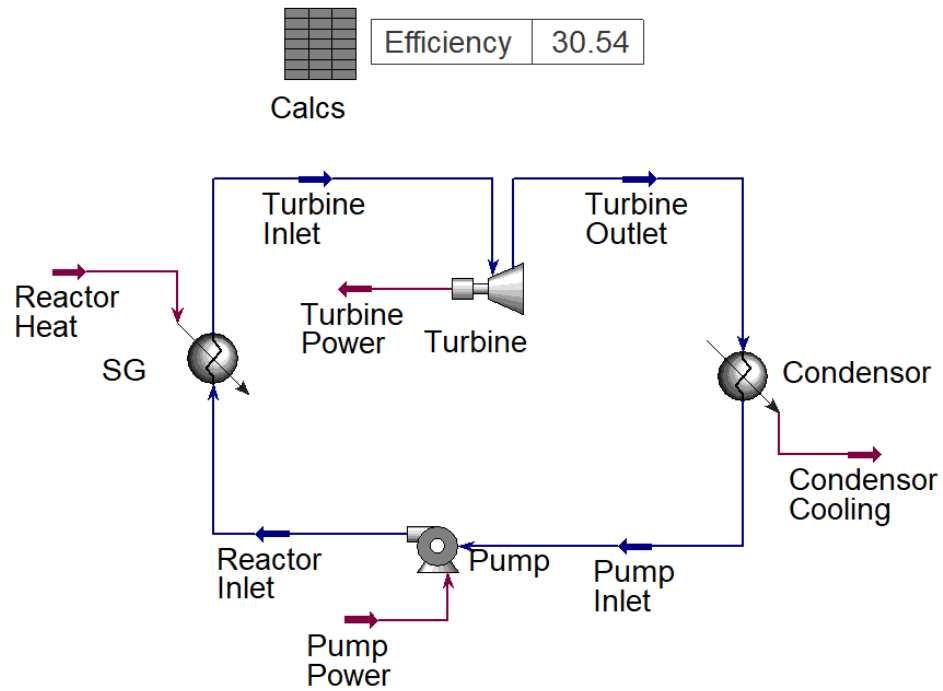
Focus

- Aspen HYSYS
- Aspen Exchanger Design and Rating (EDR)
- Aspen Process Economic Analyzer (APEA)

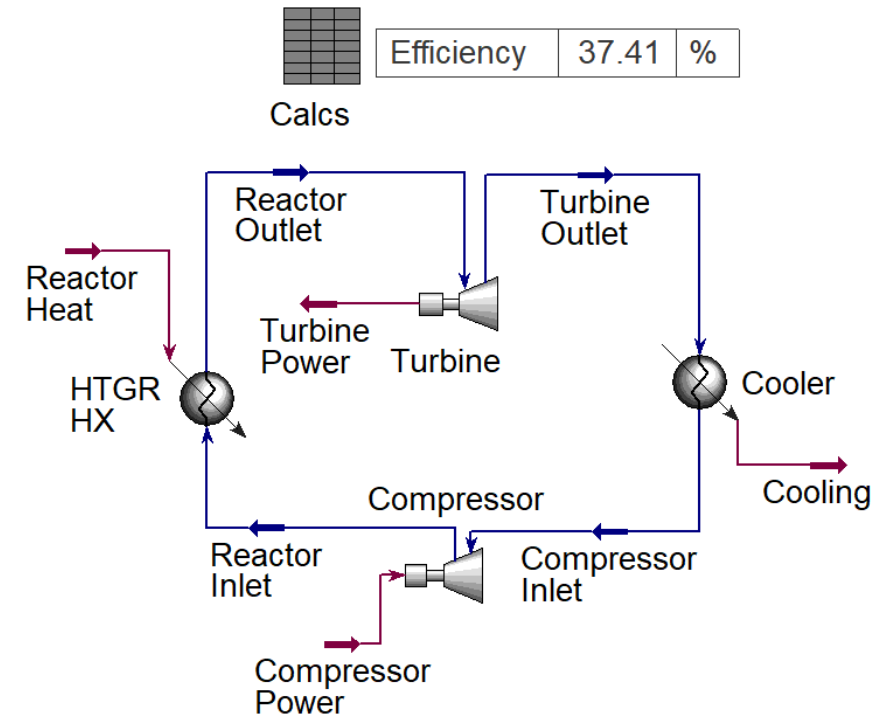
Aspen HYSYS

- Process engineering simulation software
 - Design and optimization of several systems
 - Steady-state as well as dynamic modeling
 - User-friendly interface
- Model examples include
 - Balance of plants
 - High temperature steam electrolysis
 - Steam methane reforming
 - Ammonia production
 - Thermal delivery loops

Balance of Plants

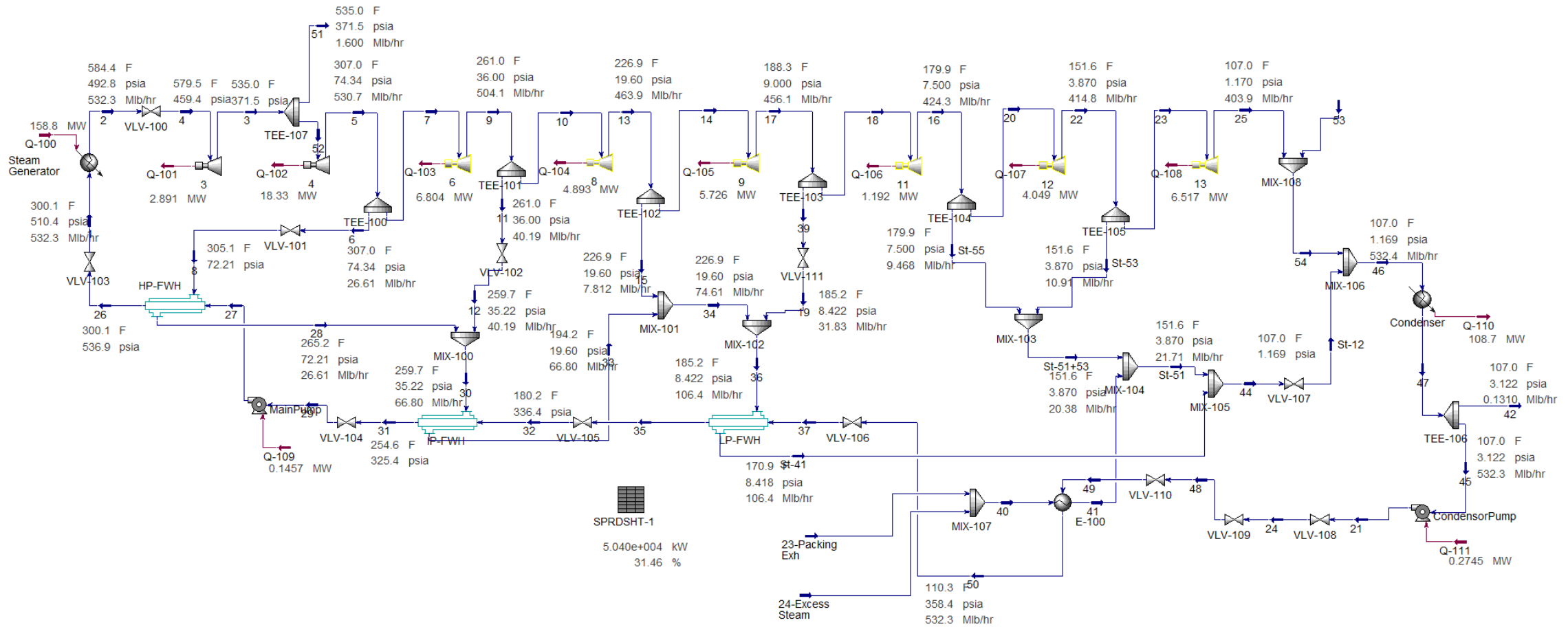


Simple Rankine Cycle



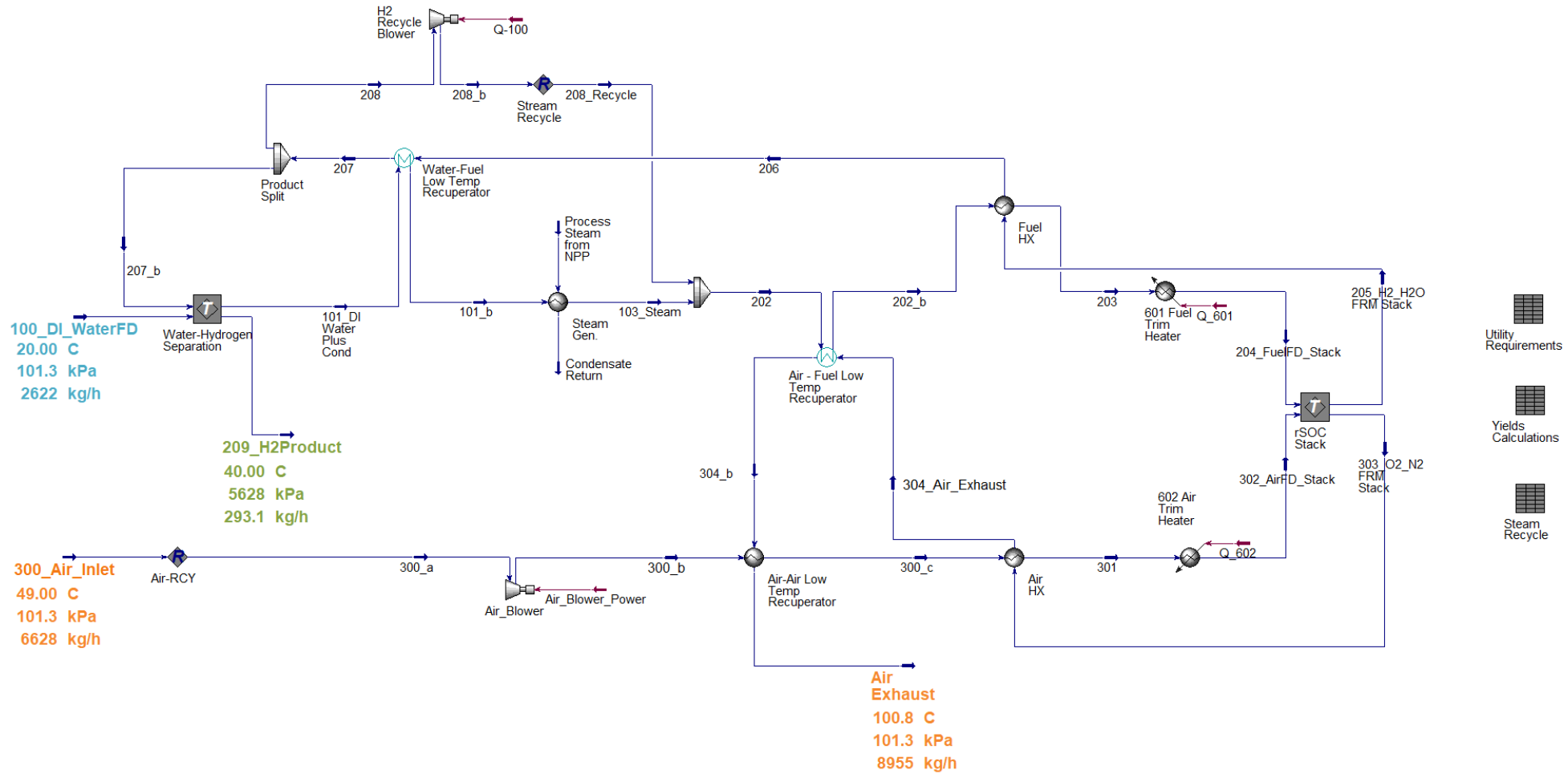
Simple Brayton Cycle

Balance of Plants



Detailed Rankine Cycle

High Temperature Steam Electrolysis



- Utility Requirements
- Yields Calculations
- Steam Recycle

Balance of Plant for HTSE

Aspen EDR

- Heat exchanger design and rating tool
 - Optimal heat exchanger design
- Aspen EDR allows you to find an optimal heat exchanger design
 - Shell & Tube, plate, plate-fin, air-cooled, etc.
- Provides heat exchanger design data
 - Heat exchanger arrangement, tube layout, pressure drop, fouling, etc.
- Provide you heat exchanger costing data
 - Material dependent

Aspen Process Economic Analyzer

- Generates capital cost estimates and operating cost estimates.
- Integration with Aspen HYSYS allows for faster cost analysis.
- Allows for project lifecycle cashflow analysis.

Demo!