Pinpoint Bottlenecks, Equipment Issues, and Design Limitations through Static and Dynamic Process Modeling

- Capabilities of Static and Dynamic Process Simulations
- Case Studies

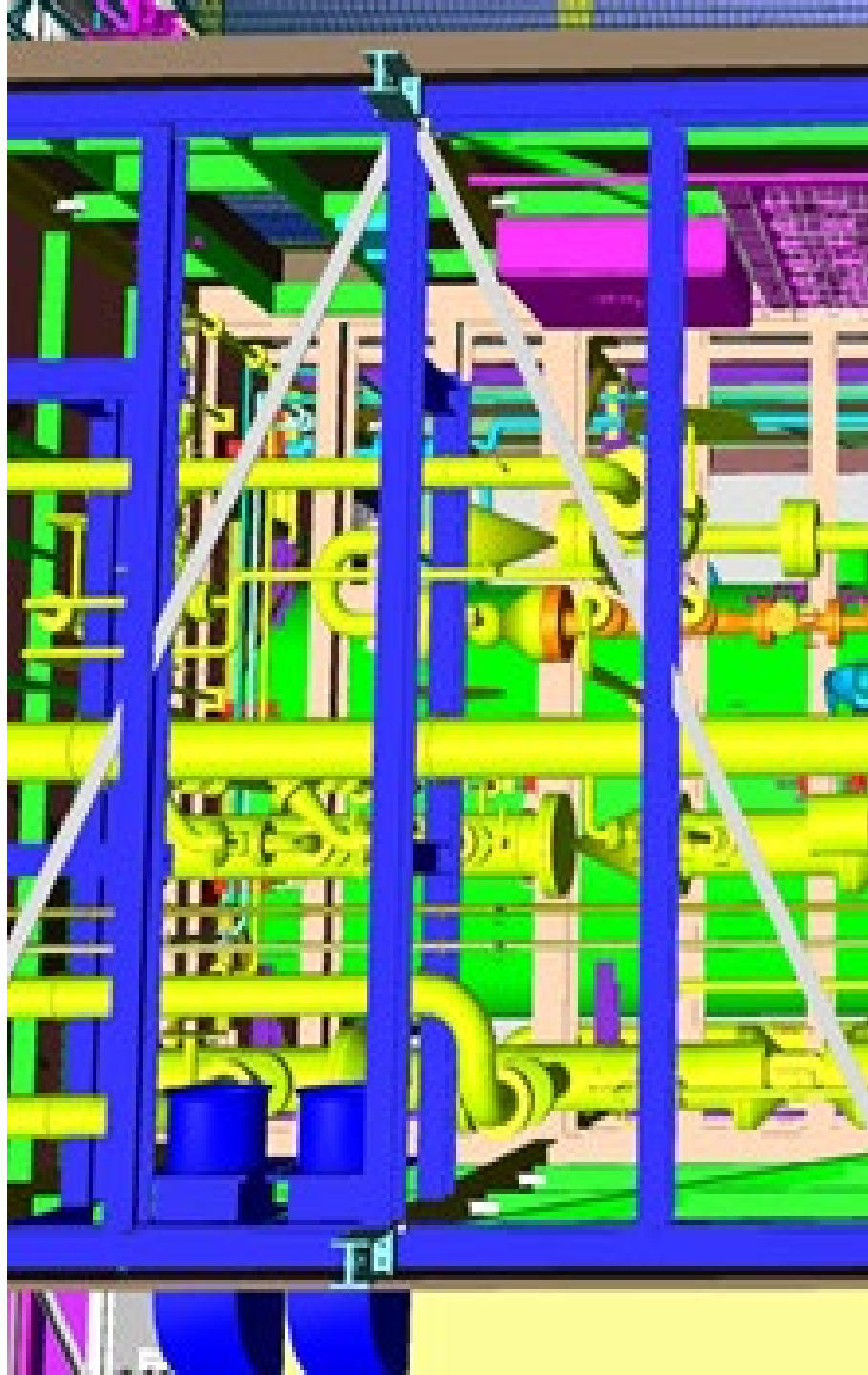
Static/Dynamic Process Simulation

Process Modeling Software

- AVEVA – ProII
- Aspentech – HYSYS (Most common)

Combined Use of Simulation Tools: 13,000 – 15,000 Hours Annually

- 1 hour per day per Process Engineer
- 75% of our group is skillful in process simulation/modeling



Steady State Versus Dynamic State

Steady State

- Snapshot in time to determine when a system is ‘lined-out’ and running in an essentially static mode.
- Used to evaluate distinct step-changes in system operation
- Advantages
  - Quick and easy
  - Uses robust equations of state
  - Reliable and reproducible

Dynamic State

- Change over time evaluation to help predict how a system will react in an upset mode or a ‘test-run’ mode. Think, ‘Real World’
- Advantages
  - Can help determine actual overall relief loads instead of point-in-time
  - Can model real-world operations

Steady-State Simulations

- “Modifying the Basis”
- See Impact of:
  - Changing Feed Rate or Composition
  - Equipment evaluation (e.g. Heat Exchanger)
    - Detailed Heat Exchanger Modeling (EDR)
  - Hydraulic evaluation – Debottlenecking/Sizing
- Example - Distillation Tower Overhead

Dynamic Simulations

- “What If”
- Used to evaluate the following:
  - Peak relief loads in a system
  - Impact of a unit upset in overall operations
  - Evaluation of SIS / Process Safety Times (example later)
- Example - DHDS Overfill and Settle Out

Thank You

www.anvilcorp.com