



Use of CO in BP: A work in progress

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Overview



- Current use of CO
- Perceived benefits
- Future plans
- Future requirements of CAPE-OPEN

Current Use



- Use is limited
- Aromatics & Acetyls (remainder of Petrochemicals Segment)
 - HTRI
 - 🟢 Works well
 - CPA equation of state (IVC-SEP)
 - 🟢 Successful technology transfer
 - 🚫 Difficult to apply to one phase only
 - ChemSep non-equilibrium distillation
 - 🔄 It works, but
 - 🚫 Workflow not obvious
 - 🚫 Built-in alternative easier to use
 - but no comment here on technical capability!

Current Use (2)



- Exploration & Production
 - Multiflash 3.6 in Aspen HYSYS
 - ➡ Just starting
 - ⬆ Allows access to most up-to-date version
 - ⬆ Allows access to all methods in Multiflash
 - ⬇ Mismatch in capabilities
 - E.g. maximum number of phases is different
 - But not a fault with the CO interface per se
- Refining
 - Prototyping for Refinery Reactors SIG interfaces

Perceived Benefits



- Lower development and maintenance costs
- PME & PMC vendors should not have to work together
- Access to latest versions of components
- Access to a much wider range of components
- Future proofing

Future Plans



- Exploration & Production
 - Integration of facility & subsurface models
 - Initially steady-state Sequential Modular (SM)
 - Moving to steady-state Equation Oriented (EO)
 - Eventually dynamic EO
 - Detailed equipment models
 - E.g. Separators, compressors, pumps etc.
 - Why is Mafi-Trench turbo-expander model only available as a HYSYS extension?
 - New thermodynamic models for high pressure reservoir fluids

Future Plans (2)



- Refining
 - Proprietary refinery reactor models
 - Initially steady-state Sequential Modular (SM)
 - Moving to steady-state Equation Oriented (EO)
 - One model development platform/architecture
 - Several PME or PME-like platforms for different uses:
 - Unit monitoring
 - Unit optimization (de-bottlenecking)
 - Real Time Optimization
 - Operator Training
 - Process Wide Optimization
 - Enterprise Wide Optimization (planning/scheduling)

Future Requirements of CAPE-OPEN



- Extensions to the current standards
 - Refinery reactors extensions
 - Steady-state EO extension to Unit interface
 - (eventually) Dynamic EO extension to Unit interface
- CAPE-OPEN implementations by PME vendors
 - Robust
 - Fully maintained
 - Documented
- Detailed models (PMC) from relevant equipment vendors
- Ability to integrate disparate environments, e.g.
 - Subsurface model into facility model
 - Facility model into subsurface model