Advanced PSE+ Stakeholder Summit
Hot Topics Panel

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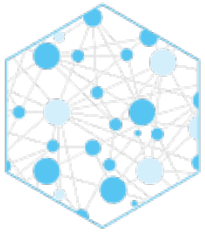
Sep 17, 2024



IDAES®
Institute for the Design of Advanced Energy Systems

U.S. DEPARTMENT OF ENERGY

Hot Topics

- Advanced PSE Partnerships – Expanding Applications and Emerging Prospects

- Today: “Teasers”
- Tomorrow: Workshops: Open Stakeholder Interactive Discussions/Demonstrations

- Accelerating Development and Engineering of Process Technologies
  - Interactive Discussion 1 pm Thursday
  - **Getting the most from Pilot and Demonstration Runs** Using SDOE, FOQUS, IDAES
    - Setting the stage for FEED, FID, Optimum Designs, Performance Guarantees
  - **Rouzbeh Jafari,** Tech Centre Mongstad
  - **Tim Merkel,** Membrane Technology Research
- **Integrating IDAES with Commercial Tools** (Interactive Discussion – 11 am Thursday
  - **Leslie Miller**, OLI (Detailed discussion, 10 am Thursday)
- **Building a “Front End” for IDAES** (Demonstration/Discussion – 9 am Thursday)
  - **Ben Lincoln**, Waikato University
- Status and Directions for **IDAES Visualization and Interface Tools** (Demonstration/Discussion 10 am Thursday)
  - **Dan Gunter**, LBNL

“ADEPT” Development

- “Accelerated Development and Engineering of Process Technology”

- ADEPT steps…
  - **Assess existing data and models**. Identify weaknesses in information.
  - **Create test plans that improve certainty** in key process performance areas.
  - **Operate development program to acquire most valuable information** to accelerate development, optimize further design, assure performance
  - **Utilize the best information to create fully validated models**
  - **Utilize** performance-quantified **models to inform and accelerate TEA, FEED and FID processes, optimize scale-up designs**, minimize over-design and **enable performance guarantees**

“ADEPT” Development

- Key tools
  - FOQUS toolkit (Complex model construction, uncertainty quantification, Sequential Design of Experiments, Surrogate tools…)
  - IDAES Advanced Process Modeling and Optimization system
    - Most advanced model construction and optimization capability
    - Integrated across scales from micro- (process fundamentals) to macro- (grid, market)

- Multitude of validated models for many technologies and components

- Applied to multiple key process technology areas…
  - Carbon capture
  - Advanced energy systems
  - Water treatment
  - Minerals processing