Advanced PSE+ Stakeholder Summit
Hot Topics Panel

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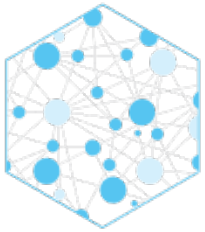

IDAES®
Institute for the Design of Advanced Energy Systems

U.S. DEPARTMENT OF ENERGY

Day 2 Introduction

- Deeper Dives
- Demonstrations and Interactive Discussions
- Partner Engagement Opportunities
- Poster Continuation

- Plenary – Dive in Deeper into IDAES –Main Room
- Breakout 1 – Hot Topics Workshops – City Center A
- Breakout 2 – NAWI WaterTap Deeper Dive – Marquis A
- Breakout 3 – CCSI2 Partner Dialogues – Ballroom Salon 6
- Breakout 4 – PrOMMiS Partner Dialogues – Ballroom Salon 1

Hot Topics Workshops

Improving Usability and Access

- **830 am**
  - **Building a "Front End" for IDAES** Demonstration/Discussion
- **930 am**
  - Status and Directions for **IDAES Visualization and Interface Tools** Demonstration/Discussion

Integrating IDAES with Commercial Tools

- **11 am**

Accelerating Development and Engineering of Process Technologies

- **1 pm**
  - **Getting the most from Pilot and Demonstration Programs** Using SDOE, FOQUS, IDAES
    - Setting the stage for FEED, FID, Optimum Designs, Performance Guarantees

Improving Optimization Math

- **230 pm**

Getting the Most from Pilot and Demonstration Programs

- Maximizing information gain and use at all stages of development
- Creating models with…
  - most representative of data,
  - with lowest uncertainty
  - most capable of forward design optimization, FEED and FID support
  - greatest ability to support performance guarantees
- Significant experience in carbon capture programs ready to be propagated
  - Applicable to all forms of process technology development

“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