Next-Generation Process Systems Engineering Multi-Scale Modeling & Optimization

IDAES
Institute for the Design of Advanced Energy Systems

OBJECTIVES

Be the premier resource for the identification, synthesis, optimization, and analysis of innovative advanced energy systems at scales ranging from process to system to market.

IDAES and its capabilities will be deployed to improve the efficiency and reliability of the existing fleet of coal-fired power plants while accelerating the development of a broad range of advanced fossil energy systems. Capabilities include:

- **Flexible design approaches, which enable optimization over broad ranges of potential plant operation**
- **New approaches for utilizing process intensification concepts to enable the identification and scale up of step change technologies that are smaller, more modular and more cost effective**
- **Support for development, scale up, and deployment of new energy technologies**

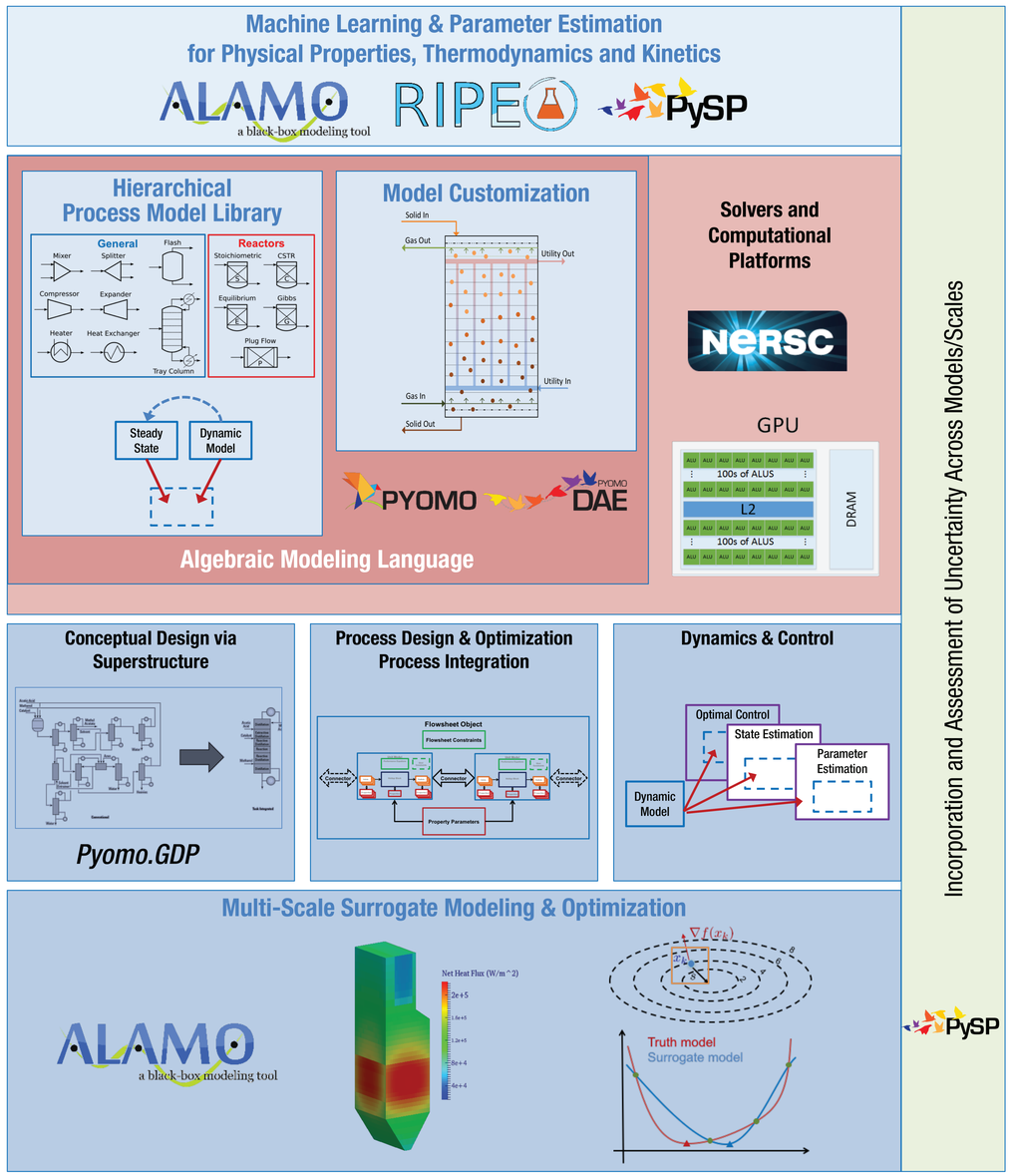
ACCOMPLISHMENTS

- **Modular framework and model library that supports large-scale optimization of advanced energy systems**
- **Machine learning-based parameter estimation tools**
- **Roadmap to support the existing fleet of coal-fired power plants**
- **Industry Stakeholder Advisory Board**
- **Collaborations with General Electric and Ohio State University/B&W on chemical looping technologies**

IMPORTANCE

- **Accelerates innovation by identifying and optimizing complete systems in the context of the full energy portfolio**
- **Increases grid reliability by identifying new operational strategies and promising opportunities for retrofitting the existing fleet**

COMPONENTS OF THE IDAES TOOLSET



FWP-1022423

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FY17 FUNDING

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BERKELEY LAB
Sandia National Laboratories
Carnegie Mellon University
WestVirginiaUniversity.

U.S. DEPARTMENT OF ENERGY | NETL NATIONAL ENERGY TECHNOLOGY LABORATORY