

# Applying the Digital Twin to Power Boilers

Power



Dynamic simulation with Mimic Simulation Software provides a high-performance solution for operator training and control system optimization. This Digital Twin technology delivers the complete environment for control system optimization and is an effective tool for teaching process and control engineers the control and operation of power boilers.

## Power Boiler Modeling

Solutions for boiler processes include dynamic models of the following process areas:

- Steam and Mud Drums
- Economizers, Superheaters, Attemperators, or Desuperheaters
- Steam Header
- Deaerator
- Furnace
- Natural Gas, Oil, or Solid Fuel System
- Air System (ID Fan, FD Fan, and Scrubber)

## Application Capabilities

- Dynamic, real-time mass and energy balances
- Vapor-liquid equilibrium
- Enhanced drum level modeling to provide a realistic dynamic response of shrink-swell phenomena
- Configurable compressibility and enthalpy correction factors to account for non-idealities
- Configurable to multiple fuel types including natural gas, process or waste gas, coal, biomass, etc.

## Mimic Simulation Software



Train operators on infrequent and dangerous process occurrences



Test control system enhancements



Transfer knowledge from seasoned to inexperienced operators

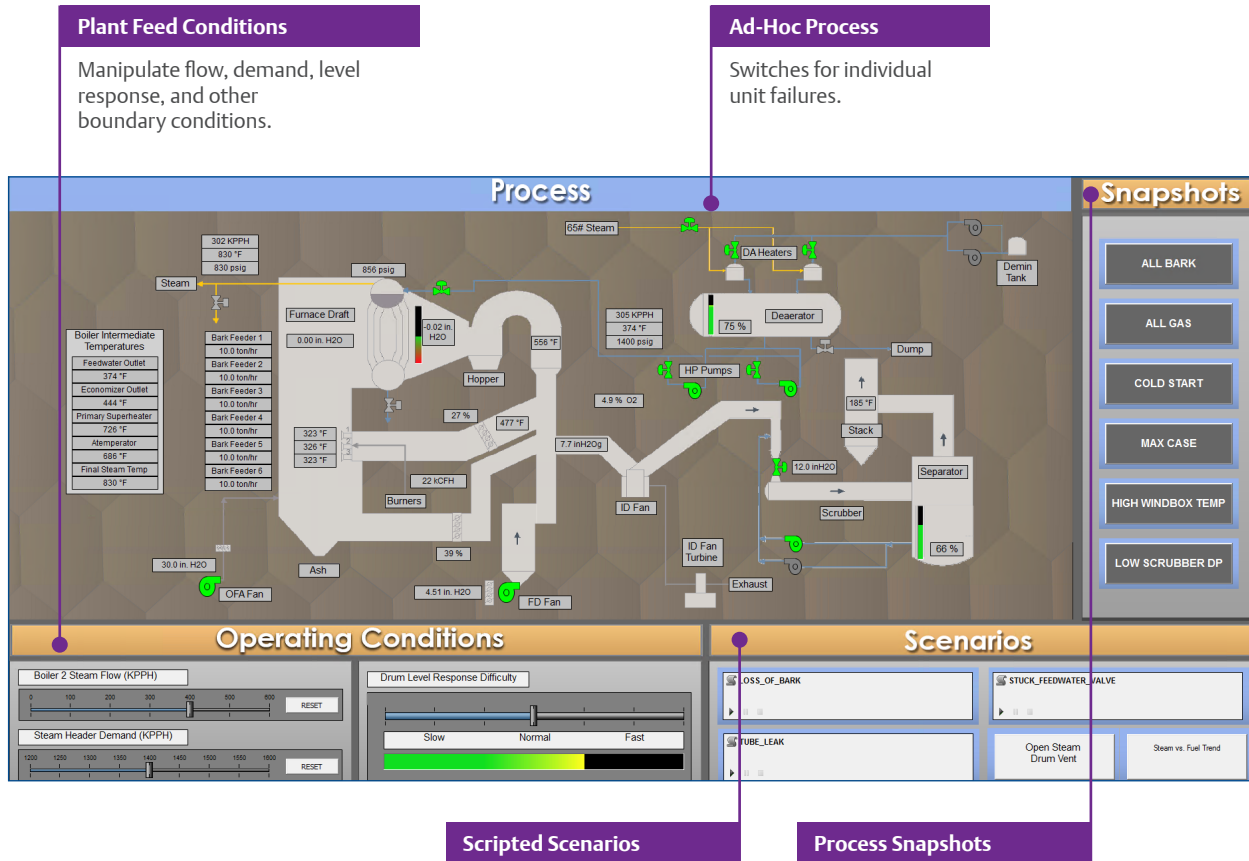


Increase overall plant safety

## Instructor Station

Instructor controls in Mimic and instructor screens in Mimic Component Studio allow your training team to prepare for working with the control system and process. Any element in Mimic can be manipulated or controlled, and instructor screens provide

easy access in one location. Typical controls allow instructors to manipulate operating conditions, such as boundary conditions and compositions, introduce ad-hoc device failures, control scripted training scenarios, and restore snapshots to steady-state operations.



### Scripted Scenarios

Pre-engineered scenarios with dynamic representation of student scores.

### Process Snapshots

Control and restore full steady-state, cold, or other methanol plant conditions.

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