Utility Boiler Simulation and Tutorial


Tutorial/CBT:

This interactive tutorial provides an Overview, Fundamental Principles, and Control and Operating Principles for a Forced Draft, Drum-Type Utility Boiler using Voice, Video, Animation and Graphics.

Overview
- Applications of Boiler
- Types of Boiler

Boiler Components
- Deaerator and Feedwater System
- Drum, Water Circulation and Heating System
- Superheater and Heat Recovery System
- Combustion System
- Draft System
- Steam Distribution System

Boiler Performance
- Burner Characteristics
- Combustion Air
- Damper and Air Registers
- Fuel Characteristics

Control System
- Three-Element level Control
- Steam Temperature Control
- Steam Pressure Control
- Fuel Control
- Total Calorie Control
- Combustion Air Control
- Oxygen Control
- Cross Limit Control

Basic Operations
- Pre-Startup
- Startup
- Shutdown
- Post Shutdown

Normal Operations
- Effect of Load Change on Pressure
- Effect of Load Change on Level

Operating Considerations
- Combustion Conditions Leakage in Boiler
- Soot on Heating Tubes
- Error in Measurements

Troubleshooting
- Low Steam Drum Level
- Rupture of Heating Tubes
- Flame Out of All Burners

Tutorial has a built-in Quiz and comes with a Learning Management System (LMS) called TutAdmin. The LMS allows an instructor to register trainees and monitor their performance and Quiz scores.

Tutorial is available as a Standalone or Web based application.

Available in English, Chinese, Danish, Dutch, French, German, Spanish and Swedish.

GSE Systems
www.gses.com/EnVision
Simulation

GSE’s EnVision simulation is a real-time dynamic process simulation program used for Operator Training. It is based upon a rigorous and High-Fidelity mathematical process model to provide a realistic dynamic response of a process unit.

The Simulator allows a Trainee to Practice:
- Startup and Shutdown Operations
- Normal Operations
- Emergency Shutdown Operation
- Control Exercises
- Troubleshoot and practice recovery from Equipment, Instrument, and Control Valve Malfunctions

Major Equipment:
Boiler and Feedwater System:
- Steam & Mud drum
- Economizer
- Superheater & Desuperheater
- LP, MP and HP steam headers
- Deaerator

Fuel System:
- Combined oil and gas firing
- Four burners, wall mounted

Combustion Air System:
- Forced draft fan
- Air preheater

Key Operating Variables:
- Steam Generation: 34.5 T/H (76 MLB/HR)
- HP Steam Pressure: 56.5 BAR (800 PSIG)
- HP Steam Temperature: 370.0 C (698 F)
- MP Steam Pressure: 14.0 BAR (200 PSIG)
- LP Steam Pressure: 3.5 BAR (50 PSIG)

Controls:
- Advanced combustion controls with cross limit firing
- Purge permissive and purging operation
- Boiler trip and interlock system

Simulation comes with a Learning Management System (LMS) called SimAdmin that allows an instructor to register trainees and monitor their performance.
Simulation is available as Standalone (Single or Dual Monitor) and Instructor-Trainee versions.