EnVision
e-Learning & Universal Simulation

Sulfur Recovery Unit

A self-paced MultiMedia based Tutorial/CBT and real-time dynamic simulation of a Sulfur Recovery Unit.

Tutorial/CBT:

This interactive tutorial provides an Overview, Fundamental Principles, and Control and Operating Principles for a Claus Process used in Sulfur Recovery Unit (SRU) using Voice, Video, Animation and Graphics.

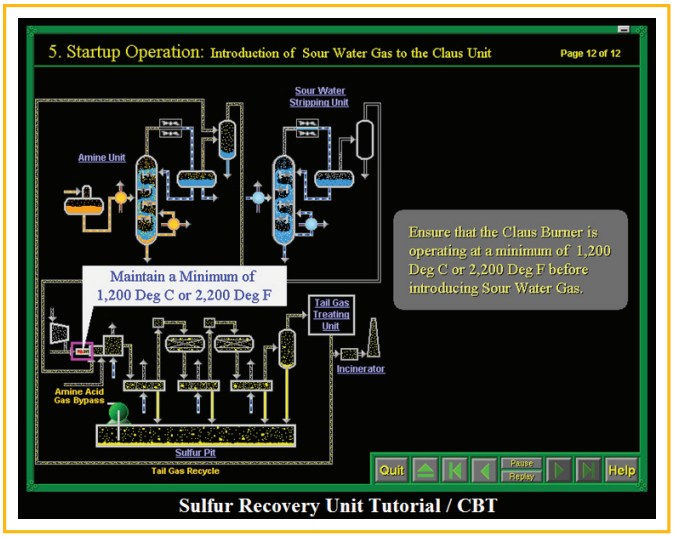
Overview
- Introduction
- Importance of SRU
- Process Overview

SRU Components
- Amine Stripper
- Sour Water Stripper
- Thermal Reaction Furnace
- Waste Heat Boiler
- Sulfur Condensers
- Catalytic Reactors

Principles of SRU
- Absorption and Regeneration of Amine
- Claus Reactions
- Ammonia Destruction
- Sulfur Condensation

Key Controlled and Operating Variables
- Reboiler Steam to Feed Ratio
- Amine Stripper Pressure
- Amine Strength
- Sour Water Stripper Pressure
- Sour Water Stripper Condenser Temperature
- Air Flow Control
- Claus Burner Temperature
- Catalytic Reactor Temperature
- Sulfur Condenser Temperature
- Reheater Temperature

Troubleshooting
- Hydrocarbons Carryover
- Amine Stripper Flooding
- Amine Losses
- Excessive Water in Gas to Claus Unit
- Combustion Air Flow Problems
- Degradation of Catalyst Activity
- Plugged Sulfur Seal Legs
- Sulfur Fires



Sulfur Recovery Unit Tutorial / CBT

Startup Operation
- Introduction
- Pre-Startup Check
- Purge and Warm-up of Claus Unit
- Warm Up of Amine Unit
- Introduction of Rich-Amine to Amine Unit
- Introduction of Amine Acid Gas to Claus Unit
- Warm up of Sour Water Stripping Unit
- Introduction of Sour Water to Sour Water Stripping Unit
- Introduction of Sour Water Gas to Claus Unit

Shutdown Operation
- Introduction
- Shutdown of Sour Water Stripping Unit
- Shutdown of Amine Unit
- Shutdown of Claus Unit

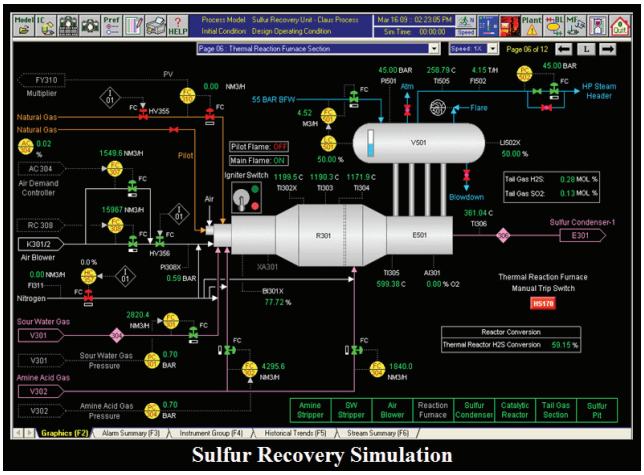
- Tutorial has a built-in Quiz and comes with a Learning Management System (LMS) called TutAdmin. The LMS allows an instructor to register trainees and monitor their performance and Quiz scores
- Tutorial is available as a Standalone or Web based application
- Available in English, Chinese, Danish, Dutch, French, German, Spanish and Swedish

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

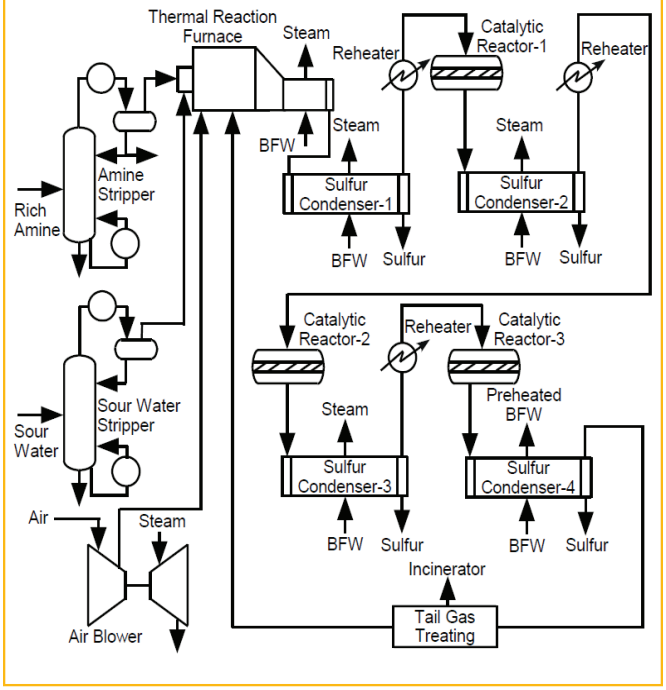


Major Equipment:

- Rich Amine Flash Drum
- Amine Stripper
- Sour Water Stripper
- Thermal Reactor Air Blowers
- Air Blower Turbine
- Claus Burner
- Thermal Reaction Furnace
- Catalytic Reactor Reheaters
- Catalytic Reactors
- Sulfur Condensers
- Sulfur Seal Legs and Sulfur Pit
- Tail Gas Treating Unit (Simplified)
- Incinerator

Key Operating Variables:

- Amine Mole Loading: 0.6 Mole/Mole
- Amine Acid Gas Feed: 5.9 KNM3/H (211 MSCFH)
- Sour Water Gas Feed: 2.8 KNM3/H (100 MSCFH)
- Reactor Air Flow: 17.5 KNM3/H (618 MSCFH)
- Reaction Temperature
  - Thermal Reaction: 1200 C (2190 F)
  - Catalytic Reaction: 210 C (430 F)
  - Sulfur Production Rate: 215 T/D
- Sulfur Conversion: 98.5 %



- 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

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