EnVision
e-Learning & Universal Simulation

SRU - Tail Gas Treating Unit (SCOT)

A self-paced MultiMedia based Tutorial/CBT and real-time dynamic simulation of a Claus Tail Gas Treating Unit.

Tutorial/CBT:

This interactive tutorial provides an Overview, Fundamental Principles, and Control and Operating Principles for a Claus Tail Gas Treating Unit using Voice, Video, Animation and Graphics.

Overview
- Introduction
- Importance of SCOT Unit
- SCOT Process
- Personal Safety

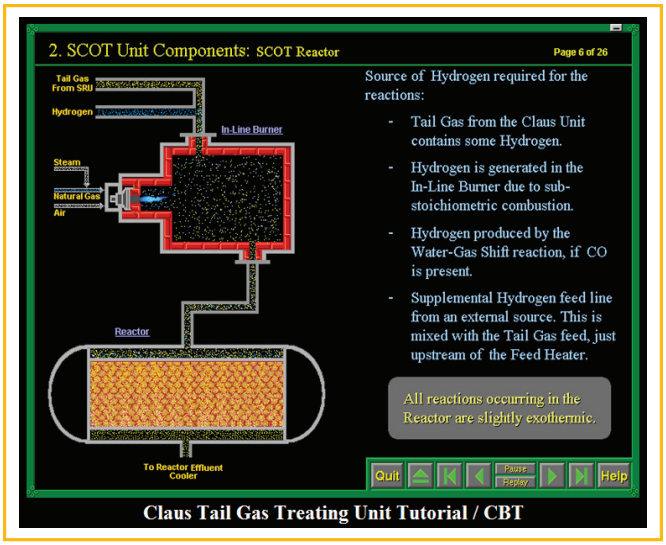
SCOT Unit Components
- Feed Heater
- SCOT Reactor
- Reactor Effluent Cooler
- Quench Tower
- Amine Solution
- Amine Absorber
- Amine Stripper
- Amine Filters and Cooler

Principles of SCOT Unit
- In-Line Burner Combustion
- Conversion of Sulfur Compounds
- Absorption
- Selective Absorption
- Amine Regeneration

Key Controlled and Operating Variables
- Feed Composition
- SCOT Reactor
- Quench Tower
- Amine Absorber
- Amine Stripper

Startup Operation
- Introduction
- Commission Incinerator and In-Line Burner
- Establish Cooling Operations
- Establish Amine System Operation
- Reactor Heat-up
- Introduce Feed and Establish Design Conditions

Shutdown Operation
- Introduction
- Sulfur Removal and Cool Down
- Stop Amine and Quench Systems



Troubleshooting
- SO2 Breakthrough
- Flooding and Foaming
- Poor Amine Absorber Performance
- Poor Amine Stripper Performance
- ReactorHigh Pressure Drop
- Leakage and High Corrosion Rates
- Equipment Fouling

- 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

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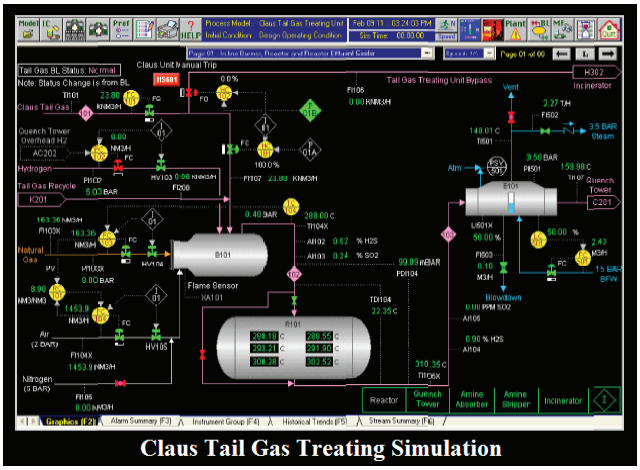
Simulation

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



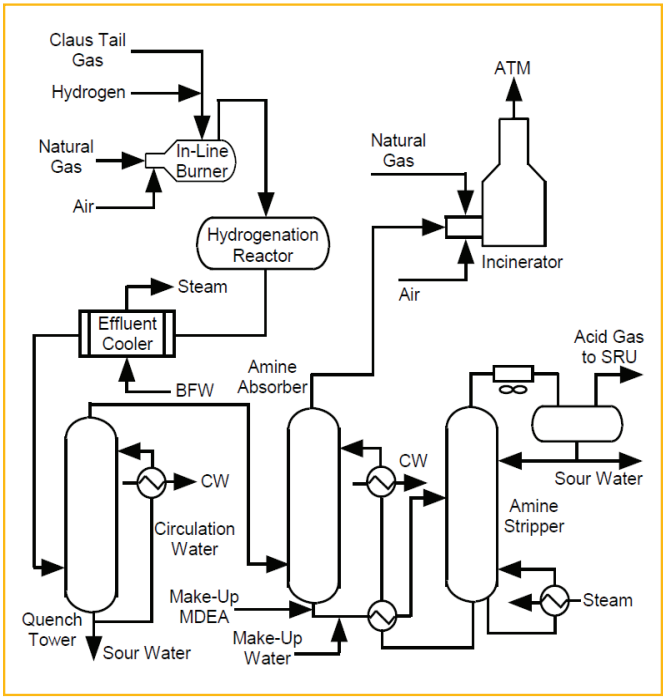
Claus Tail Gas Treating Simulation

Major Equipment:

- In-Line Burner
- Hydrogenation Reactor
- Quench Tower
- Amine Absorber
- Amine Stripper
- Incinerator

Key Operating Variables:

- Claus Tail Gas Flow: 23.8 KNM3/H (840 MSCFH)
  - Tail Gas H2S: 0.52 %
  - Tail Gas SO2: 0.24 %
- Reactor Pressure: 0.5 BAR (6.9 PSIG)
- Reactor Temperature: 288 C (550 F)
- Reactor Outlet H2S: 0.9 %
- Quench Tower:
  - Overhead H2: 2.3 %
  - Water pH: 6.7
- Amine Absorber:
  - Lean Amine Flow: 26 M3/H (115 GPM)
  - Lean Amine Strength: 50 WT% MDEA
  - Treated Gas Flow: 17.3 KNM3/H (610 MSCFH)
  - Treated Gas H2S: 15 PPM
  - Treated Gas CO2: 3 %
- Amine Stripper:
  - Acid Gas Recycle: 285 NM3/H (10 MSCFH)
  - Acid Gas H2S: 77 %
  - Acid Gas CO2: 8.9 %



- 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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