Fluidized Catalytic Cracker (FCCU) Simulation and Tutorial

A self-paced MultiMedia based Tutorial/CBT and real-time dynamic simulation of a Fluidized Catalytic Cracker Unit.

Tutorial/CBT:

This interactive tutorial provides an Overview, Fundamental Principles, and Control and Operating Principles for a Fluidized Catalytic Cracker Unit using Voice, Video, Animation and Graphics.

Overview
- Introduction
- Importance of FCC Unit
- Process Overview

FCC Process Components
- Feed Preheat System
- Reactor System
- Regenerator System
- Flue Gas System
- Catalyst Transfer Lines
- Fractionation System
- Variation of Reactor and Regenerator

Key Principles of FCC Process
- Reaction
- Coke Formation
- Combustion of Coke
- Catalyst Circulation
- Energy Balance

Key Performance and Operating Variables
- Reactor Temperature
- Catalyst/Oil Ratio
- Reactor Pressure
- Regenerator Temperature
- Delta Coke
- Complete and Partial Combustion
- Afterburning and CO Promotor
- Air Flow and Distribution
- Lift/Dispersion Steam
- Stripping Steam
- Feed Properties
- Catalyst Activity and Selectivity

Operating Principles
- Normal Operations
- Startup

Troubleshooting
- Flow Reversal
- Severe Afterburning
- High Regenerator Temperature
- High Light Gases Yield
- Low Gasoline Yield
- Low Catalyst Activity/Selectivity
- Insufficient Combustion Air

- 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:
• Reactor
• Regenerator
• Main Fractionator
• Overhead Condensers
• Overhead Drum
• Wet Gas Compressor
• Steam Generator
• Startup Heater
• Main Air Blower
• LCO Stripper
• HCO Stripper
• FCC Feed Preheat Exchangers
• Product Coolers

Key Operating Variables:
• Reactor Feed: 212.0 M3/H  (32.0 BPH)
• Gasoline: 129.0 M3/H  (19.4 BPH)
• LCO Product: 34.5 M3/H  (5.2 BPH)
• HCO Product: 14.7 M3/Hr (2.2 BPH)
• SLO Product: 25.2 M3/H  (3.8 BPH)
• Reactor Temperature: 520.0 C  (968.0 F)
• Conversion: 63.5 WT %
• Catalyst/Oil ratio: 6.0 WT/WT
• Delta Coke: 0.99 WT %

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.