EnVision
e-Learning & Universal Simulation

Distillation (Depropanizer)

A self-paced MultiMedia based Tutorial/CBT and real-time dynamic simulation of a Multicomponent Distillation Column.

Tutorial/CBT:

This interactive tutorial provides an Overview, Fundamental Principles, and Control and Operating Principles for a Multicomponent Distillation Column using Depropanizer as an example, using Voice, Video, Animation and Graphics.

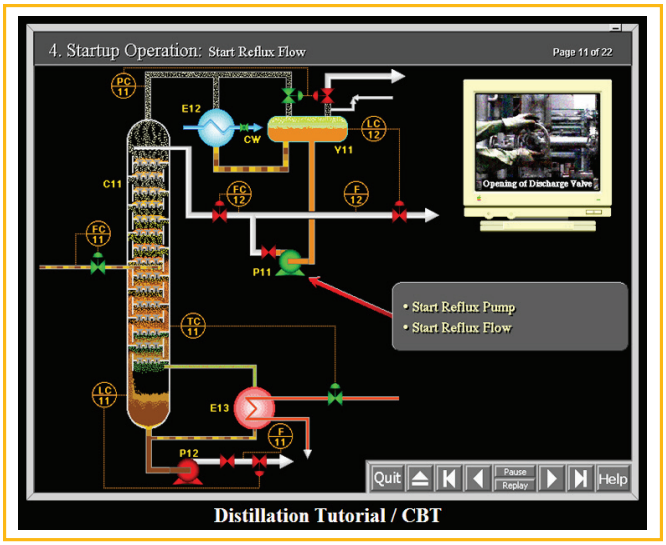
Overview
- Distillation Unit Components
- Tower
- Trays
- Reboiler/Condenser
- Reflux Drum

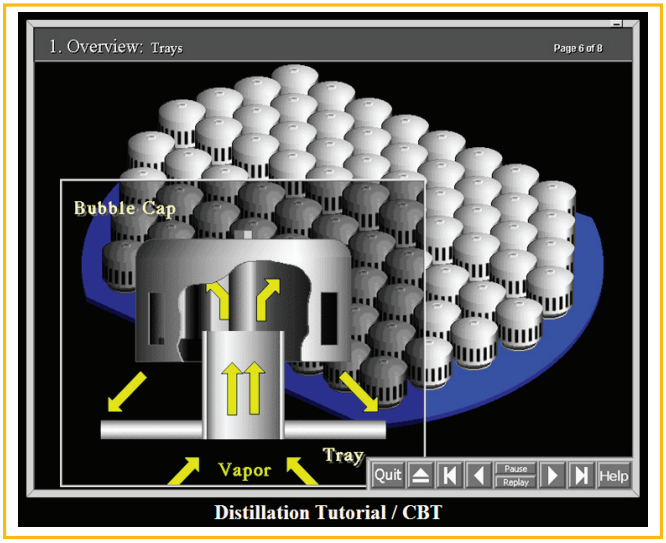
Basic Principles
- Ideal Gas Law
- Vapor Pressure
- Boiling Point
- Dalton's and Raoult's Law
- Separation Principle
- Relationship between Composition vs. Temperature

Process Control
- Feed and Product Control
- Reflux Control
- Pressure Control
- Composition Control

Distillation Column Operations
- Startup
- Normal Operations
- Load Changes
- Change in Product Composition
- Feed Composition Changes
- Shutdown Operations

Troubleshooting
- Reflux Pump Trip
- Drum Level Transmitter Failure
- Loss of Feed
- Loss of Condenser Coolant





- 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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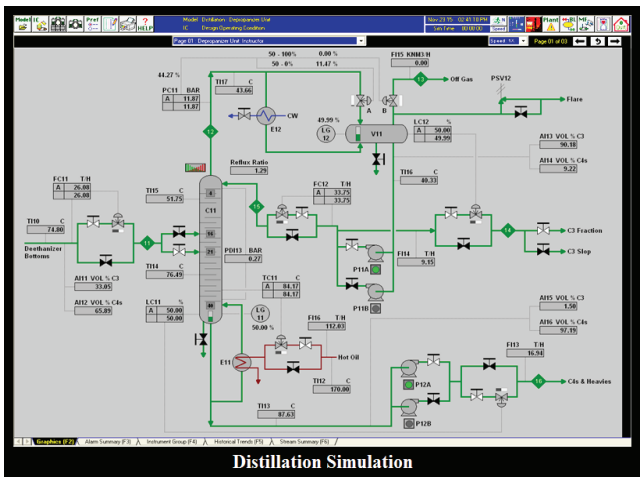
Simulation

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


Distillation Simulation

Major Equipment:

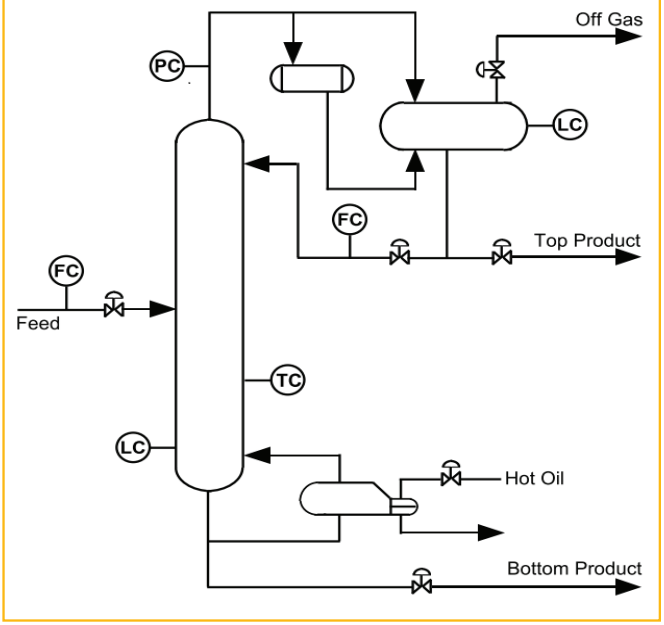
- Column with 40 trays
- Reboiler: Hot Oil Heated
- Total condenser: Water Cooled
- Reflux Drum
- Pumps

Key Operating Variables:

• Feed(deethanizer bottom):	26.1 T/H	(57.5 MLB/HR)
• Top Product:	9.2 T/H	(20.2 MLB/HR)
• Bottom Product:	16.9 T/H	(37.3 MLB/HR)
• Reflux Flow:	33.8 T/H	(74.4 MLB/HR)
• Tower Pressure:	11.9 BAR	(172.0 PSIG)
• Top Temperature:	43.7 C	(110.8 F)
• Bottom Temperature:	87.6 C	(189.7 F)

Controls:

- Feed Flow Controller
- Reflux Flow Controller
- Bottom Temperature Controller
- Split Range Tower Pressure Controller
- Tower Bottom Level Controller
- Reflux Drum Level Controller



- 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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