Gasoline Blending Simulation and Tutorial

A self-paced Multimedia based Tutorial/CBT and real-time dynamic simulation of a Gasoline Blending Unit.

Tutorial/CBT:

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

Overview
• Introduction
• Importance of Blending
• Blending System Overview
• Process Safety

Blending System Elements
• Various Types of Blending
• Fluid types
• Additives
• Tanks
• Pumps
• Blend Header
• Online Analyzer
• Octane Engine

Properties
• Octane number
• Volatility
• Distillation
• Other Properties
• Component Properties
• Property Tests
• Property Models

Blend Control
• Uniqueness of Blend Control
• Ratio Controllers
• Property Control
• Computer Control
• Manual Control
• Trim Control
• Recipe Planning
• Ethanol addition

Normal Operation
• Blending Plan
• Equipment Availability
• Loop Selection
• BRC and BPC Setup
• Analyzer Preparation
• Startup with / without BPC
• Full Rate Blending with / without BPC
• Trickles
• Post-Blending Activities
• In-Line Blending to Pipeline or Ship
• Rundown Blending
• Batch Blending

Common Operation
• Tank Mixing
• Tank Sampling
• Line Displacement and Compatibility
• Seasonal changes

Abnormal Blending Operation
• Component Problems
• Off-Spec Tank Heel
• Off-Spec Tank After Blending
• On-line Analyzer Problems

- 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

Gasoline Blend Components:

- Straight Run Naphtha
- Cracked Naphtha
- Reformate
- Alkylate / Isomerate
- Butanes

Unit Equipment:

- Component Tanks (Floating Head)
- Butanes Tank (Sphere)
- Pump Suction Headers
- Component Pumps (Small, Medium and Large Capacity)
- Blend Header
- Booster Pump
- Product Tank
- Product Pump
- Analyzers and Autosamplers

Key Unit Data:

- Blending Rate Max: 1500 M3/H (9000 BPH)
- Tank Capacity:
  - Component Tank: 5000 M3 (30000 BBL)
  - Butanes Tank: 500 M3 (3000 BBL)
  - Product Tank: 5000 M3 (30000 BBL)

- 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