Automation of Refinery Offsite Operations

General Objectives:

To provide a thorough understanding of the principles of operating and managing refinery offsite operations.

Specific Objectives:

At the end of training the trainees will be able to:

- Understand the distinction onsite/offsite operations in a complex;
- Learn about issues of custody transfer and terminal operations;
- Assess all elements of tank farm management storage needs, control, instruments, safety, environment, oil movement, scheduling;
- Grasp the refinery´s crude oils and products blending operations;
- Analyze offsite automation projects planning, economics and strategic implementation.

Audience:

Managers, technical and operating staff in the oil and gas industry interested or involved in offsite operations.

Workload:

40 hours

CONTENTS:

Module I – Overview of offsite operations

- Overview of refining processes;
- Distinction and economics of offsite operations;
- Custody transfer problems and challenges;
- Terminal operations (marine, pipeline and trucks).

Module II – Tank farm management

- Tank farm fundamentals;
- Automatic Tank Gauging (ATG) system;
- Tank inventory information management;
- Tank quality analysis and prediction;
- Fugitive tank emission measurement and control;
- Oil movement and control;

- Planning and scheduling.

Module III – Blending systems and operations

- Blending operations;
- Crude blending;
- Product (gasoline, diesel, fuel, lube) blending;
- Blending modes and configurations;
- Field equipment and instrumentation;
- Analyzers and sampling systems;
- Regulatory blend control;
- Blend trim control.

Module IV – Advanced blend control and optimization systems

- Advanced blend control strategy;
- Blend models;
- Blend optimization;
- Refinery wide planning;
- Offline blend optimizer;
- Online blend control and optimization;
- Data reconciliation and feedback;
- Interfaces with other systems;
- System architecture;
- Over-all integration.

Module V – Planning, justifying, implementing and realization

- Project identification;
- Data gathering and analysis;
- Economical justification;
- Where and how to start?;
- Required enterprise changes;
- Project implementation phases and strategy;
- How to realize and sustain benefits?;
- Putting it all together – Myths and facts.

Module VI – Simulated demonstration of optimizations and automation systems

- Introduction and examples of linear programming;
- Crude blending simulation and LP;
- Offline blend optimization of fuel products;

- Online tanks quality tracking system;
- Online blend control and optimization.