€TRAINING

Aspen HYSYS and Process Modeling

30 June - 11 July 2024
Dubai (UAE)

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REF: E764 DATE: 30 June - 11 July 2024 Venue: Dubai (UAE) - Fee: 9915 Euro

Introduction:

This training program provides participants with the skills to effectively use Aspen HYSYS software for process simulation and modeling. It enables participants to address real-world engineering challenges and enhance process performance.

Program Objectives:

At the end of this program, participants will be able to:

- Gain proficiency in building, navigating, and optimizing process simulations using Aspen HYSYS, including advanced steady-state simulations.
- Utilize various HYSYS functions efficiently to construct comprehensive process flowsheets, leveraging intuitive solving capabilities for rapid model development.
- Explore multi-flowsheet integration to streamline and organize simulation efforts effectively, using Workbook and Flowsheet interfaces for quick modeling.
- Enhance convergence characteristics of columns and flowsheets, troubleshoot common issues, and improve simulation accuracy.
- Utilize Aspen HYSYS's rating capabilities to evaluate the performance of existing equipment and determine optimum operating points through case studies.
- Learn pipeline hydraulics calculations essential for assessing sizing requirements in gas gathering systems.
- Discover effective methods for reporting simulation results, including the use of Microsoft Excel VB macros, to communicate findings efficiently.

Targeted Audience:

- Process Engineers with Process simulation experience.
- New engineering graduates/technologists who will be using Aspen HYSYS in their daily work.
- Process engineers doing process design and optimization projects and studies.
- Plant engineers checking plant performance under different operating conditions.
- R&D engineers and researchers using Aspen HYSYS for process synthesis.

Program Outlines:

Unit 1:

Propane Refrigeration Loop:

- Add and connect operations to construct a simple flowsheet.
- Use the graphic interface to manipulate flowsheet objects and provide a clearer representation of the process.
- Understand how to process information has propagated both forwards and backward.
- Convert simulation cases to templates.
- Build and analyze a propane refrigeration loop simulation.

Unit 2:

Refrigerated Gas Plant:

- Install and converge heat exchangers.
- Use logical operations: Adjust and Balance.
- Model a simplified version of a refrigerated gas plant.

Unit 3:

NGL Fractionation Train:

- Model distillation columns with the assistance of the Column Input Expert.
- Manipulate column specifications to better represent process constraints.
- Evaluate utility requirements using the Process Utility Manager.
- Model a two-column natural gas liquid NGL recovery plant.

Unit 4:

Oil Characterization and HP Separation:

- Introduce Oil Characterization in Aspen HYSYS.
- Use the Aspen HYSYS Spreadsheet and Case Study functionality.
- Use the Oil Environment to characterize a crude assay and then employ the Case Study and Spreadsheet operation to determine how the Gas Oil Ratio GOR varies with pressure.

Unit 5:

Gas Gathering System:

- Simulate a gas gathering system located on varied terrain using the steady-state capabilities of Aspen HYSYS.
- Use the pipe segment and the Hydraulics subflowsheet to model a piping network in Aspen HYSYS.

Unit 6:

Two-Stage Compression:

- Introduce the use of the recycling operation.
- Recognize suitable recycling locations.
- Implement performance curves for rotating equipment.
- Utilize the recycle operation to build a two-stage compression flowsheet; define and activate compressor curves.

Unit 7:

Natural Gas Dehydration with TEG:

- Review the recommended methods to saturate single-phase and two-phase hydrocarbon streams.
- Discuss the implications of hydrate formation and the different means available to avoid hydrate problems.
- Model a typical TEG dehydration unit.
- Model a typical TEG dehydration unit and determine water dew point for the dry gas; use the hydrate utility to investigate the effects of methanol injection on hydrate inhibition.

Unit 8:

Rating Heat Exchangers:

- Review heat transfer calculation models in Aspen HYSYS.
- Configure a shell and tube heat exchanger to use a built-in Rating model.
- Integrate rigorous Exchanger Design and Rating EDR calculations into an Aspen HYSYS flowsheet.
- Use a Rating model to determine if an existing heat exchanger will meet process specifications; design and rate a heat exchanger using the EDR interface inside Aspen HYSYS.

Unit 9:

Troubleshooting / Best Practices:

- Introduce best practices for product integration and automation.
- Investigate the reasons why a simulation may produce poor results, consistency errors, etc.
- Identify appropriate thermodynamic models for common processes.
- Use suggested tips to debug simulations and columns.
- Troubleshoot existing Aspen HYSYS cases; recognize common problem areas in an Aspen HYSYS case.

Unit 10:

Reporting in Aspen HYSYS:

- Create a variety of customized reports using newly added functionality in the Report Manager.
- Access free Excel utilities designed to extract simulation data.
- Use Aspen Simulation Workbook to deploy models in Microsoft Excel.
- Use the Report Manager, Excel utilities, and Aspen Simulation Workbook to obtain custom reports.