

2018#

inprocess The logo for 'inprocess' features the word 'in' in orange, 'process' in blue, and a white 's' inside an orange triangle pointing to the right.



SIMULATION OF PETROCHEMICALS PLANTS

Steady State Simulation course with focus on Petrochemical Processing Applications

TRAINING

Training is an essential element for any organization's success. **Inprocess** has a commitment to quality and a reputation of excellence making sure we offer you cost-effective complete training solutions.

Courses delivered by **inprocess** staff have helped process technicians, engineers, and scientists to understand and apply innovative simulation techniques. We are able to offer both standard and tailored training courses using real world examples.

Inprocess offers a broad variety of training services for implementation, maintenance and updating of knowledge on process simulation technology.

Inprocess courses:

- offer training in the use of Process Simulators as well as acquiring the engineering knowledge and industry best practice to obtain the largest possible benefits from these tools
- are directed at improving your ability and confidence in the use of technology, in parallel with a deeper understanding of the processes with the object of solving industry problems as efficiently as possible.

CUSTOMIZED FOR YOU

Inprocess uses a modular approach to courses and seminars. This allows us to readily change the amount of emphasis on specific areas or to add, subtract, or re-order modules with minimal effort. Some of our most popular combinations of modules are available in prepackaged sets:

- Introduction to Gas Processing and Conditioning Simulation
- Introduction to Petroleum Refining Processes Simulation
- Introduction to Dynamic Process Simulation

The courses we offer are tailored to specific industries, for example we have courses based on the offshore oil and gas industry, the refining industry or the air separation industry. In addition, customization for with specific examples and content for your plant is available as well.

LEARNING BY DOING

Our courses are based on hands-on training. Theory is introduced and covered to the extent necessary to ensure understanding of correct principles for practical use. However, the real heart of the material focuses on the many aspects of application of knowledge to the plant. Principles are presented, and then examined in application in case studies from actual operating units.

Training is held in small groups to increase involvement and keep everyone's interest high. Our training helps operators and engineers optimize a broad range of different process units by:

- Selected examples, meaningful for your units, emphasize the basic points and show how to approach real problems and produce results.
- Course sections customized to fit your plant and process to improve applicability and knowledge retention.

SIMULATION OF PETROCHEMICALS PLANTS

OBJECTIVES

The course content covers the basic needs of petrochemical plants steady state process simulation users. The basic unit operations are introduced in a stepwise manner with the objective of being able to build flowsheets by the end of the course. The use of several software functionalities will show users how to explore operating alternatives for the processing plant units that are being studied.

The course has been designed to include many hands-on exercises to facilitate a more efficient and interesting learning experience. Theory is used to introduce the objectives of every module in the course as well as to help attendees to understand how the underlying calculations are performed.

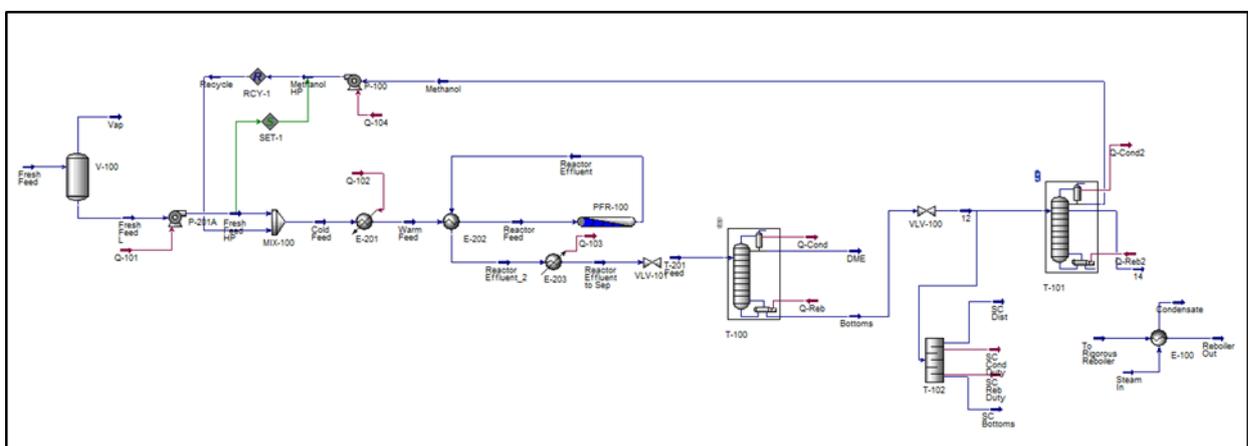
PARTICIPANTS

This course is intended for engineers beginning to use process simulation as well as for those who already use it but who need a refresher to experiment with new software features or extend the applications they use process simulation for. The workshops have been designed with an increasing complexity, in order to help in developing the attendees' learning curve.

The course content is aimed at process engineers, control engineers, safety and environmental engineers, planning engineers and engineers from other departments where process simulation is or could be in use.

CONTENTS

The concepts acquired during the course in the calculation of distillation columns, reactors, heat exchangers, etc. as well as validating the adequacy of thermodynamic packages and parameters will allow engineers to build their own process simulation cases for their daily design, process and energy improvement or troubleshooting studies. Basing decisions on rigorous simulation results will lead to better and quicker decision making and furthermore improve confidence in the decisions taken.



MODULES CONTENT

MODULE	MODULE TITLE AND SHORT DESCRIPTION	TIME	DAY
1	INTRODUCTION TO THE PROCESS SIMULATOR Working with an existing case. Getting used to GUI elements. Setting-up a user preferences file. How to work with fluid streams. How to install stream utilities. How to install and connect unit operations. The Degrees Of Freedom concept.	2 hours	Day 1
2	BASIC THERMODYNAMICS Creating a new case. How to select components for a simulation: Traditional - hypothetical. The need of thermodynamic correlations and methods. The importance of binary interaction parameters.	2 hours	
3	HEAT TRANSFER UNIT OPERATIONS (RAFFINATE COOLER) Heaters, Coolers, Shell & Tube Heat Exchangers. Air coolers. Design calculations. Rating simulations.	3 hours	
4	REACTIONS AND REACTORS (SYNTHESIS DIMETHYL ETHER) How to define several types of reactions. How to use them inside reactors in the flowsheet. Basic reactors (conversion, equilibrium, Gibbs). CSTRs. PFRs.	4 hours	Day 2
5	INTRODUCTION TO DISTILLATION COLUMNS (SEPARATION DIMETHYL ETHER) Distillation columns: How to install, define and solve distillation columns. Absorbers. Condensers and Reboilers. Use the design basic calculations for a new distillation column.	4 hours	
6	ADVANCED DISTILLATION COLUMNS (SEPARATION DIMETHYL ETHER) Evaluation of column hydraulics. Modification of distillation column subflowsheets. Rigorous calculation of condensers and reboilers. Use of the Recycle Unit operation.	2 hours	Day 3
7	COMPRESSORS, PUMPS AND PIPELINES (ETHYLENE PLANT COMPRESSION) Simulation of compressors and pumps, with and without performance curves. Use of Adjust mathematical operator. Copy and paste flowsheet operations. Templates. Modelling of pipelines for pressure drop and heat transfer calculations.	3 hours	
8	BUILDING A PETROCHEMICALS PLANT (CUMENE-PHENOL PROCESS) Without a guided exercise, build a complete plant with all unit operations and tools described in the previous exercise. <ul style="list-style-type: none"> The reaction section The separation section Overall flowsheet convergence 	4 hours	