

## SC-SS13: STEADY STATE PROCESS SIMULATION (REFINERY FOCUS)

### OBJECTIVES

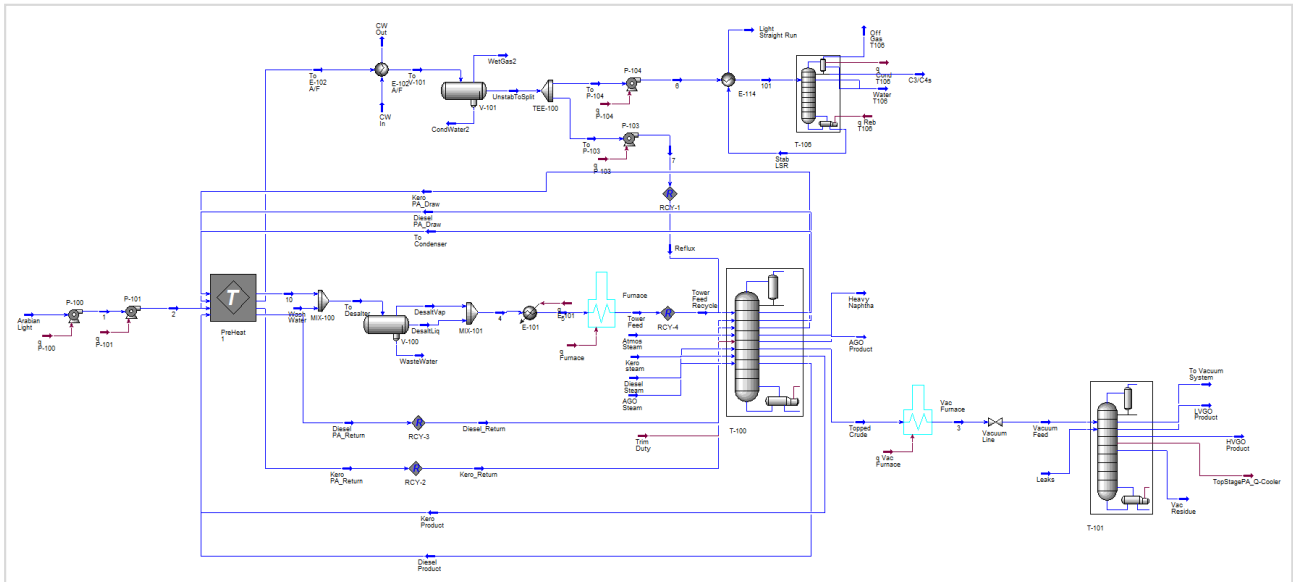
The course content covers the needs of process simulation users in an oil refinery working or designing environment. The use of several software functionalities will show users how to explore operating alternatives for the processing plant units that are being studied. The concepts acquired during the course will allow engineers to build their own process simulation cases to solve design problems in their daily job. Basing decisions on rigorous simulation results will lead to better and quicker decision-making and furthermore improve confidence in the decisions taken.

### PARTICIPANTS

The course is aimed at engineers who are involved in the design, control and operation of Oil Refinery facilities. Therefore, the course content is also applicable for process engineers, control engineers, safety, and environmental engineers involved in roles and tasks, where process simulation is in use.

### CONTENTS

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.



### THREE-DAYS COURSE AGENDA

MODULE	MODULE TITLE AND SHORT DESCRIPTION	TIME	DAY
1	<b>INTRODUCTION TO THE PROCESS SIMULATOR</b> 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	<b>BASIC THERMODYNAMICS</b> Creating a new case. How to select components for a simulation: Traditional - hypothetical. The need of thermodynamic correlations and methods.	1 hour	
3	<b>REFORMER STABILIZER</b> In a naphtha reformer unit the effluent from the catalytic reformer reactor needs to be stabilized before further processing. Simple unit operations.	2 hours	
4	<b>REFINERY DISTILLATION COLUMNS</b> Experimenting with the different capabilities of the simulator to solve the distillation problems usually encountered in refinery modelling.	2 hours	
5	<b>OIL CHARACTERIZATION</b> How to use laboratory data and analysis to define a crude oil or a final product in order to be used in the simulation case.	2 hours	Day 2
6	<b>MODELLING A CRUDE/VACUUM SYSTEM WITH PRE-HEAT TRAIN</b> The simulation model of an integrated Crude/Vacuum system, with preheat train, will be constructed and its performance examined.	5 hours	
7	<b>MODELLING A FCC MAIN FRACTIONATOR AND GAS PLANT</b> The model for the main fractionator column of a Fluid Catalytic Cracking unit will be modelled together with the associated gas concentration unit.	4 hours	Day 3
8	<b>HYDROCRACKER SIMULATION</b> An example of a typical hydrocracker unit will be modelled, consisting in the feed heating section, an approximate reactor model, the product cooling section, the HP separator and the recycle gas stripper.	3 hours	