

# Process Simulation: Fundamentals - Dynamic Modelling Using UniSim Design



## Course Overview

**Course number:** PDS-4528-VILT

**Course length:** 3 days

Develop the skills and 'know-how' required for creating and running dynamic simulations using UniSim Design Dynamics.

The course runs over three days. The course is made up of a series of hands-on workshops using examples from the Oil and Gas industry, although the skills learnt can be applied to any model. Each workshop is preceded by an Instructor-guided discussion and demonstration.

## Course Benefits

- Solve complete dynamic problems using UniSim Design software by first building a steady state flow sheet and then performing steps to make the transition to dynamics
- Learn how to build models in dynamics
- Learn pressure flow theory, column dynamics theory, and control theory
- Interpret pressure flow specifications, strip charts and controllers
- Discover techniques and 'rules of thumb' for controller tuning
- Learn advanced features of UniSim Design Dynamics like static head, valve actuator dynamics and compressor anti-surge controllers
- Automate actions within a dynamics case by utilizing the Event Scheduler

## Course Delivery Options

- [Virtual Instructor-Led Training](#) (VILT)
- IMPORTANT – Prior to registration for the e-learning courses (AT, RT, VILT, and VT), you must perform the User Readiness Test. Go to [Asynchronous Training, Recorded Training, Virtual Instructor-Led Training, and Virtual Training Access Requirements](#) to perform this test.

## Who Should Take This Course?

- Engineers who need an introduction to the use of UniSim Design for Dynamic modeling

This course is aimed at users with some experience of UniSim Design.

## Prerequisite/Skill Requirements

### Prerequisite Course (s)

- None

### Required Skills and/or Experience

- None

### Desirable Skills and/or Experience

- A background in chemical engineering or industrial chemistry
- Familiarity with UniSim Design or HYSYS® steady state modeling concepts

## Course Topics

### The following topics are covered

- Getting Started in Steady State
  - Build a simple steady state model to use as a basis for the rest of the course
- Pressure Flow Theory
  - Discussion of the theory behind UniSim Design Dynamics and the Dynamics solver
- Transitioning from Steady State to Dynamics
  - Learn techniques to transition cases, apply these to the steady state model built earlier
- Basic Control Theory
  - Revise basic control theory necessary in UniSim Design Dynamics models
- Dynamic Details
  - Introduction to UniSim Design Dynamics high fidelity options (static head, actuator dynamics, valve characteristics, nozzle positions, heat loss models)
- Expanding the Model
  - Make additions to the model whilst running in Dynamics, Look at different control schemes
- Compressor
  - Add a compressor, anti-surge loop and anti-surge controller
- TEG Dehydration Tower
  - Add a distillation column to the Dynamics model
- Event Scheduler
  - How to set up and use the Event Scheduler
- Cause & Effect Matrix
  - Introduction to the Cause & Effect matrix
- Fired Heater
  - Build a model using the Fired Heater (Furnace) unit operation

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### **Additional Training**

To increase your knowledge and skills, there are additional courses available from Automation College.

**For more information and registration, visit**  
[www.honeywellprocess.com/en-US/training](http://www.honeywellprocess.com/en-US/training).