

# Adv. Process Control: Fundamentals Profit NLC Design for Polymer Plants Implementation



## Course Overview

**Course number:** APC-0002

**Course length:** 4.5 days

### Are you considering implementing a multi-variable controller in a polymer plant?

This course introduces the Profit<sup>®</sup>NLC technology and its application to the polymer process industry. The course objective is to provide the Process/Control Engineer with an understanding of the technology, and provide him with the tools necessary to evaluate the performance of a non-linear multi-variable controller in an offline environment. The following topics are covered through a series of lectures and hands-on exercises.

- Polymer Dynamic Modeling System Overview (PDMS)
- Example PDMS Flowsheet Model Development
- Introduction to the offline environment - APC Studio
- Controller Configuration
- Running Controller in Different Modes
  - Steady State
  - Model Parameter Update
  - Dynamic Simulation
  - Replay of Plant Data
  - Full Interactive Simulation and Control
- State Estimation – IDF and MHE technologies
- Typical NLC Project Execution Methodology
- Taking the Controller Online

The course presents the basic concepts and strategies needed to develop, test and prepare a Profit<sup>®</sup>NLC control application for deployment online. It includes extensive hands-on lab exercises where participants will create, configure and test a control application. Lab exercises will include basic application troubleshooting.

## Course Benefits

### Understanding the Profit<sup>®</sup>NLC Controller technology

- Understand the Profit<sup>®</sup>NLC technology with particular emphasis on application to the polymer industry
- Gain the basic skills necessary to maintain a Profit<sup>®</sup>NLC application
- Perform what-if studies for developing transition strategies and troubleshoot plant incidents.

### Course Delivery Options

- In-Center Instructor-Led Training
- On-Site Instructor-Led Training

### Who Should Take This Course?

**Process and Control Engineers interested in exploring the power of model based non-linear control technology.**

In particular those engineers responsible for implementing and maintaining advanced control applications on a highly non-linear process such as polymer plants.

### Prerequisite/Skill Requirements

#### Prerequisite Course(s)

- None

#### Required Skills and/or Experience

- Process Engineering or Control Background
- Working knowledge of Windows operating system

#### Desirable Skills and/or Experience

- Plant, process, and controls knowledge
- Knowledge of polymer processes
- Knowledge of process dynamics and some exposure to multivariable control

## Course Topics

### You will learn how to....

- Take a dynamic process model of a polymer plant and embed it in a controller
- Take the controller and model and perform steady state simulations of the process
- Perform parameter updates to improve the model's predictions against plant measurements
- Tune the control action through dynamic simulations
- Tune the internal state estimation feedback algorithm
- Run simulations of product transitions, production rate changes etc.
- Understand the steps needed to implement a controller project
- Understand the additional steps needed to take the offline controller model and deploy it online to control a real process

## Additional Training

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

**For more information and registration, visit [www.automationcollege.com](http://www.automationcollege.com).**