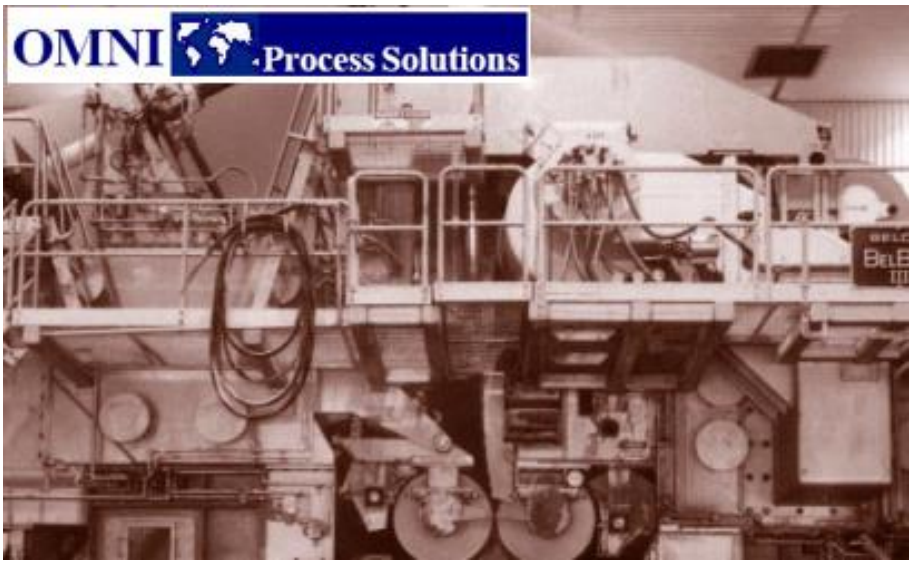
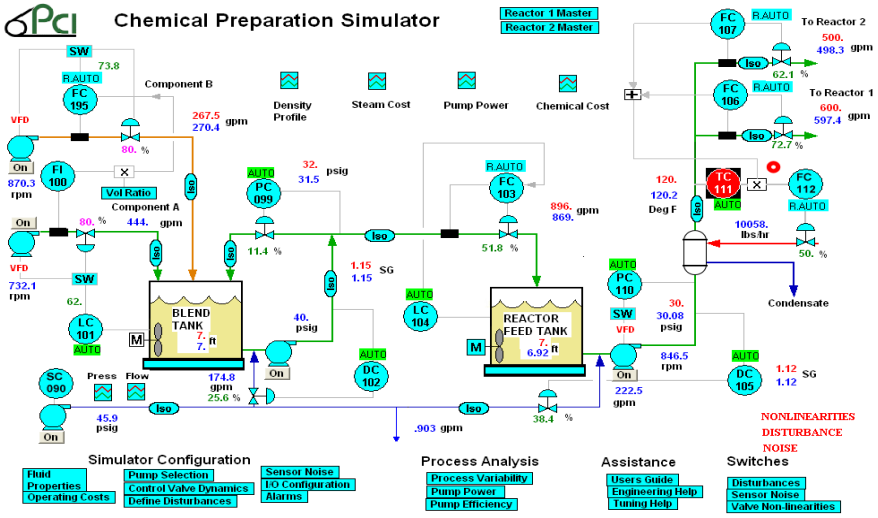


Process Control Optimization Course

Ways to improve control loop performance

Topics covered include:

- Role of the Control Loop
- DCS Overview
- Process Dynamics
- Non-linearities
- PID Controller
- Lambda Tuning Procedures
- Setpoint and Load response
- Advanced regulatory control strategies
- Developing Tuning strategies
- Troubleshooting Loop Problems



High process variability compromises the economic performance of continuous processes. A control loop that is well designed, maintained and tuned can play a key role in minimizing process variability. Unfortunately the control loop often acts to increase process variability due to poor valve response, oscillatory controller tuning and sensor problems.

The instrumentation technician who is given the responsibility of maintaining control loop health and optimizing controller tuning sometimes has little or no formal training in these activities. Tuning the controller by guesswork is a frustrating experience, often resulting in little or no improvement in control loop performance.

The process control optimization course will provide the tools to identify and correct process control problems using sound engineering principles.

Course Fees

CDN $ $2,500.00
USD $ $2,300.00

(Canadian Taxes Included.)
Fees include a full set of course notes.

The remote course is limited to 5 attendees. to ensure individual attention and allow time to address specific mill issues.
An on-site course is limited to 8 attendees.

Course Schedule

DAY 1

08:00 Process Control Basics
- Control Terminology
- Control loop components

09:00 Simulator Introduction

10:00 Process Dynamics
- 1st Order response
- Integrating response

11:00 Lab - First Order Dynamics

12:00 Lunch Break

13:00 Lab - Integrating Dynamics

14:00 Non-linearities
- Backlash and stiction
- Inherent non-linearities
- Impact on control performance

15:00 Lab 3 - Non-Linearities

16:30 Adjourn

DAY 2

08:00 PID Controller Basics
- PID control action
- Tuning methods

09:30 Lambda Tuning - 1st Order
- Lambda tuning
- Calculation of tuning constants
- Selecting Lambda value
- Robustness

11:00 Lab - Tuning 1st Order

12:00 Lunch Break

14:00 Lambda Tuning - Integrators
- Selecting Lambda
- Calculation of tuning constants

15:00 Lab - Tuning Integrators

16:30 Adjourn

DAY 3

08:00 Control Performance
- Setpoint and Load response
- Attenuation capabilities
- Impact of Non-linearities

10:00 Lab – Control performance

11:00 Advanced Strategies
- Cascade, Ratio, Feedforward
- Application of Lambda tuning

12:00 Lunch Break

13:00 Lab - Tuning Strategies

15:00 Loop Troubleshooting
- Tools and tests
- Analytical procedure

16:30 Adjourn

DAY 4

08:00 Lab – Troubleshooting

12:00 Lunch Break

13:00 Special Topics
- Tuning Tools
- Time series analysis tools
- VFD opportunities
- Performance monitoring
- Control strategies

11:00 Lab - Tuning 1st Order

16:30 Adjourn

Course Location…

The course is held either at a conference facility or by video conference. Attendees are responsible for arranging their own accommodations.

Accommodations…

For convenience, we recommend that registrants stay at the hotel course site.

About Omni…

Omni Process Solutions is based in Vancouver, BC. The company conducts process and control optimization surveys and provides a range of training courses related to process control optimization. Visit our web site at www.omniprocessolutions.com for more information about our services.

About the Course …

This four-day course is intended to strengthen the student's ability to optimize control loop performance. Control loop fundamentals, the measurement of process dynamics and Lambda tuning are the key topics in the first half of the course. The second half of the course focuses on control loop performance, applying Lambda tuning to advanced regulatory control strategies and analytical control loop troubleshooting. Approximately 40% of the course is devoted to a computer-based lab that illustrates the main concepts.

Who Should Attend...

The course is primarily intended for E&I mechanics, instrumentation engineers and process engineers. It is also a good introductory course for the process control specialist.

Instructor, Doug Nelson

Doug has over 30 years of industrial process control experience. He has authored papers on dryer control, control valve selection and the uses of process simulation in optimization surveys.