

Open Enrollment Training PID Loop Tuning & Advanced Process Control Techniques



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This is one of the best classes I've been to. I've learned more in two days than I've learned in a lot of other longer classes.
Principal Controls Technician
Power Generation Industry
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Overview

Designed for engineers and technicians, courses cover fundamentals of process control as well as advanced process control techniques using our award-winning control solutions. Learn how to:

- Increase operational efficiency with existing assets
- Maintain safe regulatory control environments
- Mitigate risk of unscheduled downtime
- Reduce operational costs and Increase profitability
- Extend hardware asset lifespans
- Improve product consistency

This is universal PID loop tuning and process control training. The skills you learn will benefit you regardless of your control system. Our software is used for hands-on exercises in class, but this is not product training.

Course Option

Our modular courses enable you to acquire new skills or deepen specific skills while providing the flexibility to meet your specific needs. We offer the following modules:

- PID Controller Tuning
- Advanced Process Control Techniques
- Model-based Control Techniques «Add-on»
- Power Gen & Boiler Tuning «Add-on»

You can register for the course as follows:

- PID (1 day)
- PID and APC (2 days)
- PID and APC plus MBC (3 days)
- PID and APC plus Power Gen & Boiler Tuning (4 days)

Virtual
Interactive



OR



In-person
Interactive

See controlsoftinc.com/training/ for our current schedule.

Private Training

Private training is the perfect option for organizations that need a cost-effective way to train five or more employees all at once. Help your team become more productive by scheduling ControlSoft to train your team. Courses are delivered to your employees, on location or virtually, at your convenience. Each course is designed to meet your needs, and can be customized to include application-specific content if desired.

ControlSoft

- 40 years in business (est. 1985)
- Expert team of PhDs and advanced degree engineers, with 25-30 years field experience in plants worldwide
- Numerous patents and multiple industry awards for technology, service and growth over the past three decades



Course Content

PID Controller Tuning (Length: 7.5 hours)

Prerequisite: None

Learn the fundamentals of PID control, its variations, and things that are important to know in evaluating the health and tuning of PID loops, as well as how to tune a PID controller.

Topics	Applications
<ol style="list-style-type: none">1. Understanding Process Modeling and Control2. Fundamentals of PID Control3. Control and Tuning Objectives4. Tuning Techniques and Practices5. Industrial PID Equation Types6. Adaptive Tuning and Advanced Topics	<ul style="list-style-type: none">• Temperature• Pressure• Flow• Level• Speed• Position• Composition• High-order Process

Advanced Process Control Techniques (Length: 7.5 hours)

Prerequisite: PID Controller Tuning

Learn the best practices and techniques for process control strategies beyond PID control, as well as design, tuning, and common implementation pitfalls.

Topics	Applications
<ol style="list-style-type: none">1. Enhanced PID Control: Anti-reset Windup, Tracking mode, Bumpless transfer2. Cascade Control3. Feedforward Control4. Split Range Control5. Gain Scheduling and Multiple PID6. Override Control	<ul style="list-style-type: none">• Controlling Non-linear Process• Reducing Impact of Disturbances• Speed• Position• Composition• High-order Process

Model-based Control Techniques (Length: 7.5 hours)

Prerequisite: PID Controller Tuning & APC Techniques

Learn about model-based control theory and practice, including the design, tuning, and evaluation of applications best suited for model-based control.

Topics	Applications
<ol style="list-style-type: none">1. Model Based Control Overview2. Smith Predictor3. Internal Model Control (IMC)4. Coordinated Control (CC)5. Modular Multivariable Control (MMC)6. Predictive Control	<ul style="list-style-type: none">• Long Deadtime Processes• Multi-Output Control• Control of Interacting Processes

Power Gen & Boiler Tuning (Length: 15 hours)

Prerequisite: PID Controller Tuning & APC Techniques

Learn about critical boiler control loops and control methods, as well as design, tuning, and common implementation pitfalls that often make proper boiler tuning so challenging.

Topics	Applications
<ol style="list-style-type: none">1. Boiler Control2. Load Demand Control3. Boiler-Following Mode4. Turbine-Following Mode5. Coordinated Control6. Main Boiler Control Loops7. Trim Control Principles and Uses8. Function Generators Characterization9. SH/RH Steam Temperature Control10. Feedwater Flow Control	<ol style="list-style-type: none">11. Drum Level Control12. Pollution Controls (NOx, SOx, Opacity)13. SCR Ammonia Injection / NOx Emission Control Tuning14. Combustion Control15. Fuel Flow Control16. Air Flow Control17. Excess O2 Control18. Furnace Pressure Control19. Unit Master (MW and Throttle Pressure) Control Processes