



Practical Process Control[®]
“Techniques for Applied Process Control”

A Two-Day Training Workshop
For Process Technicians and Engineers

Practical Process Control



“Control Station’s ‘case study’ approach to teaching the subject was unique. Learning by doing helped me understand the topics as they were presented.”

Process Engineer
International Flavors & Fragrances

Techniques for Applied Process Control provides a thorough understanding of process dynamics and examines both concepts and techniques associated with maintaining advanced PID control systems. The course covers industrially-relevant control systems, and it stresses a systematic approach for the diagnosis and optimization of underperforming control loops.

Who Should Attend? **Technicians and Engineers**

Control Station’s training services are designed for practitioners. This workshop – *Techniques for Applied Process Control* – is a two-day, hands-on workshop ideally suited for individuals who maintain their plant’s critical process control investments.

What Will You Learn?

Proven Techniques and Industry Best-Practices

As with all Control Station workshops, we focus on practical knowledge and proven techniques. Our workshops provide participants with the intuition needed to analyze process dynamics and to improve overall process performance.

How Do We Teach?

Hands-On and Interactive Methodology

Control theory is complex, so our approach to training is simple: focus on the application of techniques rather than on the derivation of formulas. Our workshops are hands-on and interactive, engaging participants in the examination of real-world processes. By reinforcing traditional lectures with demonstrations and workshop exercises, we empower you to apply innovative techniques immediately and with confidence.

Our Instructors

Experienced Practitioners

Our training staff brings practical experience and subject matter expertise to each Practical Process Control workshop. They are skilled instructors who will teach you with proven techniques for optimizing your plant’s existing process control investments.

▶ Day One

Day One provides a foundation for the investigation of advanced control concepts. Equipped with a systematic approach for analysis and communication, participants will explore the full capabilities of the PID controller and they will gain a clear understanding of the strengths and weaknesses of common control structures.

Fundamentals of Process Dynamics

- › DEMONSTRATION: Modeling Process Dynamics
- › WORKSHOP: Exploring Dynamics of Gravity-Drained Tanks

Proportional Control

- › DEMONSTRATION: Implementation of P-Only Controllers
- › WORKSHOP: P-Only Control of Tank Level

Integral Action and PI Control

- › WORKSHOP: Hazards of Tuning PI Controllers by Trial and Error

Formal Approach to Controller Design

- › WORKSHOP: PI Control of a Heat Exchanger

Derivative Mode and PID Control

- › DEMONSTRATION: PID Control of Tank Level
- › WORKSHOP: PID Control of a Heat Exchanger

PID Control with Derivative Filter

- › DEMONSTRATION: PID with Filter Control of a Heat Exchanger
- › WORKSHOP: PID with Filter Control of a Multi-Tank Process

▶ Day Two

Day Two begins with a rapid review of the prior day's curriculum before tackling advanced approaches to the control of dynamic process behavior. Participants learn techniques for evaluating advanced control architectures and determining optimal control strategies.

Day One Review

Systematic Approach to Real-World Processes

- › DEMONSTRATION: Simulation and Control of a Heat Exchanger
- › WORKSHOP: Modeling and Simulating Control of a Single Loop Process

Cascade Control

- › DEMONSTRATION: Single Loop Control of a Jacketed Reactor
- › WORKSHOP: Cascade Control of a Jacketed Reactor

Feed Forward Control

- › DEMONSTRATION: Feed Forward Control of an Ideal Process
- › WORKSHOP: Feed Forward Control of a Jacketed Reactor

Dynamics of Non Self-Regulating (Integrating) Processes

- › DEMONSTRATION: Controlling a Non Self-Regulating (Integrating) Process
- › WORKSHOP: Modeling and Simulating Control of a Pumped Tank

Workshops are conducted from 8:30 AM – 4:00 PM



“Control Station equipped my team with the training they needed to succeed. They kept [it] simple and straightforward, focusing on techniques that could be applied immediately on the plant floor.”

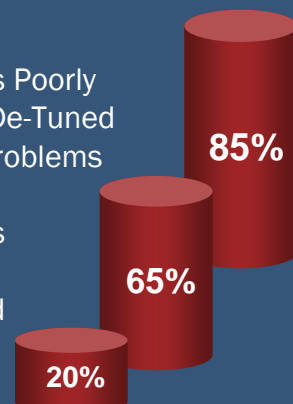
E&I Supervisor
Magnesium Elektron

According to the ISA, most PIDs fail to meet their primary control objective. Specifically:

Controllers Operating Inefficiently in Automatic Mode

Controllers Poorly Tuned or De-Tuned to Mask Problems

Controllers Poorly Configured





Top companies maintain their competitive advantage by maximizing productivity and minimizing costs – by optimizing and controlling critical processes. Training is an essential element in equipping engineers for success and achieving that advantage.

Regional and Onsite Workshops Hands-On and Interactive Methodology

Practical Process Control workshops are conducted regularly at sites across the United States. With a variety of convenient locations, participation is both easy and affordable.

Control Station also provides onsite training – we bring the workshop to your classroom. Ideal for audiences of up to 15 staff, onsite workshops are customized to target your company's primary process control challenges.

For more information about *Practical Process Control* and other Control Station solutions, contact us at 877-LOOP-PRO (877566-7776) or visit us on the web at www.controlstation.com.