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**TO: PROCESS CONTROL PROFESSIONALS**  
**ANNOUNCING: ADVANCED PROCESS CONTROL STRATEGY TRAINING CLASS**  
**PRESENTED BY: CONTROLSOFT INC.**

**WHEN: 8:30 AM – 5:30 PM**  
**LOCATION: INDIANAPOLIS, IN – WED & THUR, DEC 9-10, 2009**  
**HOUSTON, TX – WED & THUR, FEB 3-4, 2010**  
**LOUISVILLE, KY – WED & THUR, MARCH 10-11, 2010**  
**PHOENIX, AZ – WED & THUR, APRIL 14-15, 2010**

**PURPOSE:** This 2-day training class, designed for engineers, technicians and operators, will demonstrate the most common process control strategies. Each strategy will be developed, tested, and simulated, clearly demonstrating why one would use the strategy.

**SPECIAL BONUS:** EACH STUDENT WILL RECEIVE A FREE 60-DAY EVALUATION COPY of the same software tool that the instructor will be using to develop, test, and simulate the applications listed below.

**COST: \$1,600 per student – 2-Day Seminar includes:  
 PID Loop Tuning & APC Strategy Training**

**APC STRATEGY CLASS AGENDA**

<b>Understanding Process Control:</b>	<b>Difficult Control Problems:</b>	<b>Applications Simulated:</b>
Advanced PID Control	Interacting PID Loops	Standard PID
Model-Based Control	Long Deadtime Processes	Model-based Control
Cascade Control	Multi-Output Control	Cascade Control
Feedforward Control	Extruder Control	Long Deadtime
Gain Scheduling		Gain Scheduling
Split Range		Feedforward Control
Override Control		Heat/Cool Split Range

Please send registration form along with payment information by fax to 440-443-0249 or e-mail to sales@controlsoftinc.com. Call ControlSoft at 440-443-3900 with any questions.

Name	Title		
Company			
Address			
City	State	Zip	
Phone #	Fax #		
Email	Training (circle one): <b>Baton Rouge</b> <b>Philly</b> <b>Indy</b> <b>Houston</b>		
<b>\$1,600</b> Payment: <b>CREDIT CARD</b> (circle one)	Visa	MasterCard	AmerExp
Acct. No.	Expiration date (mo)		(yr)
Name and billing address if different:			
P.O. #		CHECK #	

**CONTROL SOFT – HIGHEST RATED IN EXCEPTIONAL SERVICE**  
**BY CONTROL MAGAZINE READERS**

## **ADVANCED PROCESS CONTROL STRATEGY TRAINING CLASS**

### **PURPOSE OF THIS CLASS**

This session will demonstrate ways to improve product quality and increase yield through better process control using the best practices techniques for commonly used process strategies beyond PID control, such as multi-layer cascades, override control, gain scheduling, and feedforward compensation, design and tuning. We will discuss when each strategy is appropriate along with the common implementation pitfalls that produce less than desirable results.

**Each strategy will be simulated and demonstrated using software-based process simulation in class. As in the first day, hands on exercises will allow attendees to practice these techniques in real-time simulation.**

**Required for each attendee: A laptop computer with Windows 2000 or XP; No VISTA MS PowerPoint is used for simulation for the APC class.**

### **CLASS AGENDA**

- **PID Control:** Review and overview of PID control; Common mistakes; Brief discussion of proper tuning from previous day's instruction.
- **Cascade Control:** Benefits of cascade control; Processes that benefit from cascade; Common implementation issues; Demonstration.
- **Feedforward Control:** Benefits of feedforward; Discussion of when to use feedforward; Implementation of feedforward; Design & Demonstration of how feedforward control can reduce a process disturbance.
- **Gain Scheduling and Multiple PID:** Discussion of process nonlinearity; How nonlinearity can affect your process; Implementation of gain scheduling; Demonstration of the benefits of gain scheduling.
- **Override Control:** Discussion of override control for process safety; Implementation of override control; Discussion of the importance of controller tracking; Simulation.
- **Long Deadtime Processes:** Discussion of other common control issues and their solutions.
- **Robust Model Predictive Control:** 3x1 Model based control, modeling, tuning and applications.

### **APPLICATIONS**

Students will receive copies of all the simulations used in class. These will include simple temperature, flow, and level loops along with complex applications such as Chlorine Control, Chemical Reactor, In-Line Blending, Extrusion, and Ramp and Soak Furnace Control.

Using the provided software, students can simulate, change, and build a new control strategy on the fly. The results can be seen and evaluated right away.

### **WHO SHOULD ATTEND**

Engineers, technicians, operators and laboratory managers who have the responsibility for building or maintaining a process and/or who need to set up, use, evaluate, or tune complex control strategies or advanced controls.

### **CUSTOMER TESTIMONIES**

*"All topics were covered very well and will be useful back at the plant. I would recommend the training to anyone wanting to truly understand the control loop tuning process."*

*-- I&C Technician, TVA, 2006 Attendee*

*"The training was great. We can now tune an application in about 4 hours that used to take us a week or more to tune properly." -- Engineering Technician, Allegheny Energy, 2007 Attendee*

*"The trainer was very knowledgeable and covered everything well. The training and simulation exercises helped to get a grasp on our tuning issues." -- I&C Technician, Garland Power and Light, 2008 Attendee*