
Training Course Agenda for Control Loop Tuning Theory

Course Code	:	CLTT
Objectives	:	This course provides instruction on how the standard PID control algorithm works. It includes theory and practical information on how to tune a control loop, both “on the run” and using more precise methods. The course also covers related control concepts such as cascade and ratio control, feedforward, lag and dead-time.
Course Duration	:	1 day
Training Hours	:	morning session 9 ⁰⁰ to 12 ⁰⁰ afternoon session 13 ⁰⁰ to 16 ⁰⁰
Trainees	:	8 maximum
Participants	:	For engineers and technicians involved in tuning control loops and setting up simple control strategies.
Prerequisite	:	Participants should have some process knowledge. The course does not require any knowledge of the Yokogawa DCS.
Documentation	:	Yokogawa Control Loop Tuning Manual
Location	:	Please refer to the supplied Orientation sheet for venue details
Additional Information	:	Lunch will be provided.
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Course Content

Unit 1 – The Control Algorithm	
<p>Theoretical concepts</p> <p>The PID algorithm (“three term control”)</p> <ul style="list-style-type: none"> • Understanding the three terms • The concept of lag and dead-time and how they relate to the three terms • Control on deviation versus control on PV <p>Related concepts</p> <ul style="list-style-type: none"> • Direct and Reverse Action • Cascade control 	<p>Workshop</p> <p>The PID algorithm in action</p> <p>Using cascade control</p> <p>Using ratio control</p>

Unit 2 – Tuning Methods	
<p>Theoretical Concepts</p> <p>Various tuning methods</p> <p>Techniques used for better control</p> <ul style="list-style-type: none"> • Feedforward • Deadband 	<p>Workshop</p> <p>Tuning control loops</p> <ul style="list-style-type: none"> • On the run • Precise methods <p>Using feedforward and deadband</p>