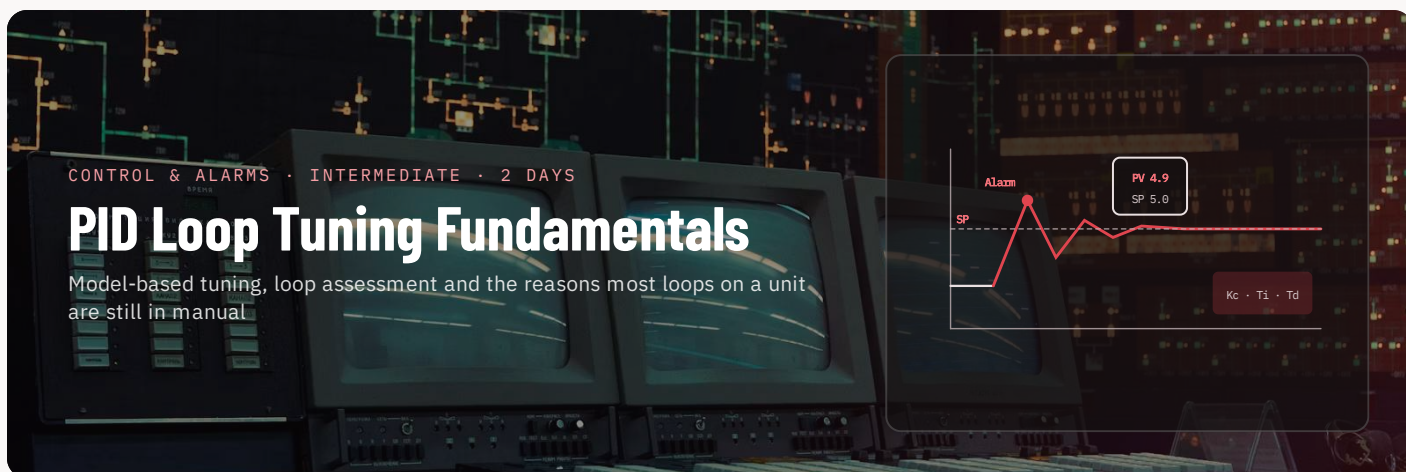




CONTROL & ALARMS · INTERMEDIATE · 2 DAYS

PID Loop Tuning Fundamentals

Model-based tuning, loop assessment and the reasons most loops on a unit are still in manual

DURATION
 2 days

LEVEL
 Intermediate

FORMAT
 On-site classroom · virtual instructor-led

LANGUAGE
 English

MAX. PARTICIPANTS
 16

Your

own loops assessed in CeraPID

8

tuning exercises on live-data models

1

loop KPI baseline for the unit

Overview

On a typical unit a third of the loops are in manual, a third oscillate and the rest were last tuned at commissioning. This course teaches tuning as an engineering method rather than a trial-and-error art: identify a process model from a bump test, choose a closed-loop response with a defensible lambda, and check the result on the trend. Participants work on their own loops exported from the historian, so the second day doubles as the first loop-assessment pass for their unit.

Learning outcomes

- Recognise the PID forms, units and options implemented in the site DCS and convert between them
- Run and interpret a bump or step test and fit FOPDT and integrating models
- Tune with IMC/lambda and SIMC rules for self-regulating, integrating and dead-time-dominant loops
- Diagnose oscillation, stiction, hysteresis and poor tuning from routine trend data
- Tune cascade, ratio, feedforward and override schemes in the right order
- Set loop KPIs and a review cycle so tuning does not decay

Who should attend

Control and instrument engineers, DCS configuration engineers, process engineers responsible for unit performance; experienced panel operators

Course outline

DAY 1

What a loop is for: variability, constraints and money · PID algorithm forms, units and DCS-specific options · process dynamics: gain, time constant, dead time, integrating processes · bump testing on a live loop · model identification in CeraPID · IMC/lambda and SIMC tuning · robustness and aggressiveness trade-off

DAY 2

Level, flow, pressure and temperature loop characteristics · cascade, ratio and feedforward tuning order · override and split-range schemes · stiction, hysteresis and valve issues seen from the controller · loop-assessment KPIs: variance, oscillation index, saturation, time in manual · workshop on participants' own loops · tuning records and MOC

Standards referenced

ISA-5.1 ISA-51.1 IEC 61131-3 ISA-75.25.01 / .02
 API RP 554

Tools & exercises

Model identification, tuning and loop KPIs in CeraPID on participants' own historian data

What's included

- ✓ Course manual and slide pack
- ✓ Software access for the course
- ✓ Post-course Q&A with the instructor
- ✓ Exercise and case-study pack
- ✓ Competency quiz and certificate
- ✓ Templates used in the exercises

PREREQUISITES

Familiarity with DCS operation or configuration; basic control theory helpful but not required

CERTIFICATION

Certificate of completion

INSTRUCTORS

Practising engineers — TÜV HAZOP Leader, CCPSC and IEC 61511 Functional Safety certified — with 200+ years of cumulative plant experience.

Book this course or build a custom curriculum

On-site at your plant or virtual · in-house groups · competency assessment included

sales@cerasus.ai · +974 5506 2743

Cerasus Technologies QFZ LLC · Ras BuFontas Free Zone · Doha, Qatar