

Process Control Fundamentals & AI Applications

Consultant / Trainer

Johannes van Opstal



The **Petrogenium**. course aims to provide an “Awareness” level understanding of the Process control discipline. A discussion of the full range of activities that fall within the discipline is covered. The course content can be customized to the client's requirements. Also, specific actual Process Control cases can be incorporated at the client's request.



Participants

This **Petrogenium**. course is intended for a wide range of professionals from the renewable, Chemical, and oil and gas industries with entry-level to mid-level industrial experience.



Learning Objectives

After completion of this course, the participants will acquire knowledge of different aspects of Process Control.

The course includes all the areas of Process Control:

- PID controller tuning, including use of a simulation to demonstrate some of the concepts.
- Base layer control.
 - PID control is the most common base layer control algorithm.
 - Complex control schemes
- Quality estimators.
- Multivariable Predictive Control
- Dynamic process simulation with live demonstration in Unisim Dynamics
- Troubleshooting of control systems through monitoring. Interaction with users and analysis
- Use of AI in Process Control (on client's request)

Programme

DAY 1

Basics of Process control

- Introduction
- Presenter & Participants
- What is Process Control?
- Course outline
- PID Controller tuning
- Importance of PID tuning to overall plant performance.
- PID control description, including the elements of the PID control loop, First Order plus Deadtime process model
- Tuning parameters
- Tuning a controller, including examples on a controller simulation, and covering the differences in control of the main process parameters of flow, temperature, pressure and level.
- Base Layer Control Review

DAY 2

Basics of Process control

- Base Layer Control
 - PID control
 - Cascade control
 - Split Range
 - Override control
 - Static decoupling
 - Furnace coil balancing
 - Air/fuel ratio control
 - Compressor control
- Quality Estimators
 - Why use them?
 - Simple linear regression or calculation
 - Commercially available products.

Programme

DAY 3

- Multivariable Predictive Control (MPC)
 - Why use it?
 - General MPC characteristics.
 - APC project outline.
- Dynamic Process Simulation (Unisim Dynamics)
 - Why use it?
 - General structure
- Control system troubleshooting
 - What goes wrong?
 - Control system monitoring through automation and interaction with users.
 - Analysis and resolution
- Final Q & A

Why select Petrogenium.?

The above support will be provided by principal consultants with 30+ years world-class experience in the technology and hands-on know-how from operation of refinery units.

Contact Petrogenium.:

Email: training@petrogenium.com

Website: <https://www.petrogenium.com/training/>

Because Experience Matters