New Methods for Tuning PID Controllers

An Intensive Short Course for Process Control Engineers, Technicians, & Technical Managers

Duration: 1 Day

While PID controllers are still the most common industrial controller, they are also, typically abominably tuned. Studies have shown that simply improving the tuning of the existing PID controllers to be one of the most cost-effective ways to optimise production.

The problem is that tuning controllers on live equipment is time-consuming, hazardous, and if you are using the Ziegler-Nichols scheme, practically impossible.

Isn't it time that you learnt about some more modern tuning schemes? This course will show you how.

You Will Learn:

In this short course you will be exposed to a number of modern tuning schemes that address the deficiencies of the classic Ziegler-Nichols methods. The course will provide you with:

1. Alternatives to Ziegler-Nichols ultimate oscillation and/or Cohen-Coon openloop tests for PID tuning. These include Lambda (λ) tuning and Yuwana-Seborg.
2. Clarify between the various commercial PID implementations and highlight what is important and how to convert from one type to another.
3. Auto-tuners, including relay-based auto-tuning and some adaptive PI regulators.
4. Methods to compensate for deadtime using Smith predictors and predictive PI controllers (PPI).
5. Internal model control (IMC) and tuning based on optimisation
6. "Hands-on" tuning using real-time Matlab & Simulink.

The course includes real-time laboratories interfaced with MATLAB with SIMULINK. Labs also involve simulated plant models and real process data, although you may want to bring your own data sets (in MATLAB or Excel format).

Each course participant will be provided with a set of course notes containing copies of the overheads, further reading material in reports and papers, and a collection of MATLAB m-files used in the laboratory exercises.

Who Will Benefit:

This course is designed for process control engineers, technicians and technical managers looking to make intelligent choices that result in reduced emissions, less energy use and increased profit.

Instructors:

Dr. David I Wilson, Electrical & Electronic Engineering, AUT University
Dr. Brent Young, Chemical & Materials Engineering, University of Auckland