Statistical Quality Control
&
Basic Model Building

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

Duration: 1 Day

You Will Learn:

In this short course you will be exposed to a number of statistical data concepts. Software tools using these concepts can be used by process engineers to establish if their plant is under *statistical* process control, and if not, what they can do about it.

The second part of the course shows you how to build reliable models from possibly unreliable industrial plant data. You can use these models for controller tuning, plant simulation or performing "what-if" type studies.

1. Introduction and monitoring for profit
    a. Economic constraints
    b. Types of data, sampling frequency
    c. Basic data statistics: means, variances, co-variances
2. Errors & how to spot them
    a. Types of errors
    b. Reconciling the errors
3. Statistical Process Control (SPC)
    a. Overview of commonly used tools
    b. Process analysis & Pareto charts
    c. Control charts & cusum charts
4. Basic model building from data
    a. Overview of common response shapes
    b. Graphical curve fitting
    c. Statistical curve fitting
    d. Using models in Matlab/Simulink
5. Controller performance assessment (CPA)
    a. How good is my control?
    b. How close to the optimum is my process?

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.

Instructor:

Dr. David I Wilson, Electrical & Electronic Engineering, AUT University