Introduction to Process Control

Agenda

(1-day Course)

08.45 *REGISTRATION*

09.00 **Introduction**

- Motivation - The Need for Control
- Fundamental Control Trade-offs and Challenges

09.30 **Process Dynamics**

What are dynamics; Typical Responses

- Self-Regulating
- Integrating
- Nonlinearities
- Sensors / Actuators

10.45 *TEA/COFFEE*

11.00 **Process Dynamics Hands-on**

Real-life Example of how dynamics are found

11.30 **Applying PID Control**

- Proportional Control
- Integral Control Action
- Derivative Control Action

12.00 *LUNCH*

12.45 **Applying PID Control (Continue)**

- Implementation / Structures of PID
- Integral Wind-up; Bumpless Transfer
- Tuning Methods: Ziegler-Nichols; IMC

13.30 **PID Tuning - Hands-on**

Real-life Example of Tuning a Level Controller

14.30 *TEA/COFFEE*

14.45 **Enhanced Control**

Ratio control, Split Range Control, Coarse/Fine Control, Feed-forward Control, Cascade Control, Averaging Level Control, Dead-time Compensation, Linearising Control, Gain Scheduling, Decoupling Control

16.00 **What Makes Control Difficult and Practical Solutions**

Deadtime and Lag Filtering Noise; Noise and Derivative Action, Disturbances Inappropriate Controller Tuning Nonlinearities; Sensor, Saturation Example Actuator Problems - Hysteresis and Stiction

17.00 *CLOSE*

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