

#### DAY ONE

- Process Control context – objectives, benefits, threats, terminology and structure.
- Process Responses – types and measurement.
- Data analysis – sampling, noise and filtering.
- PID feedback control – PID components, equation types and tuning approaches.
- Tuning techniques – flow, pressure, temperature and level tuning approaches.
  
- Exercises to focus on:
  - Response definition
  - Appropriate use of filtering
  - Use of the Tune Wizard tuning tool

#### DAY TWO

- Loop performance and instrument vulnerabilities.
- Dealing with Deadtime – tuning and model based control.
- Cascade control – initialisation and anti-windup issues.
- Process non-linearity and how to deal with this.
- Constraint control and ratio control.
- Dynamic compensation and feedforward control.
  
- Exercises to focus on:
  - Diagnosing loop performance problems
  - Issues associated with tuning level loops manually
  - Design of cascaded loops
  - Solutions to Non-linearity
  - PID loop design review
  - Feedforward control design review
- Workshop to discuss specific control issues (attendee supplied)

#### DAY THREE

- Alternative level control approaches.
- Distillation control approaches.
- Interaction and Decoupling.
- Duty control.
- Use of calculations and pressure compensated temperatures.
- Use of engineering models and developing an inference.
- Analyser feedback control.
- Control scheme design, implementation and maintenance and Operator Needs.
- Multivariable Predictive Control and benefits estimation.
- New Techniques: Neural networks, Fuzzy logic and Expert Systems.
  
- Exercises to focus on:
  - Issues associated with tuning deadtime loops manually
  - Design of duty controllers
  - Level Controller tuning techniques
  - Pressure Controller tuning techniques

Note – although the course exercises use Tune Wizard from PAS, the purpose of the exercises is to demonstrate generic loop tuning principles and skills applicable to any tuning package.