

DAY 1

Introduction and Theory

- Control valve purpose and principles
- Flow conditions and pressure drops inside a valve
- Control valve and actuator signals
- Types of flow, Reynold numbers, vortices, gas vs liquid flow, Cv, Choked flow, etc.
- Cavitation and flashing
- Valve classification, associated hardware and an introduction to valve type

DAY 2

Valve Specifics, Characteristics and Sizing

- Continuation of valve types
- Valve selection and valves in P&IDs
- Valve leakage
- Valve characteristics (including equal percentage, linear, etc.)
- The relationship between inherent versus installed characteristics
- Calculations pertaining to valve sizing for a liquid application

DAY 3

Actuators, Positioners, Trims, Maintenance and Safety

- Valve sizing, using software
- Actuators, and the choices available
- Valve positioners
- Cavitation and noise control
- Valve installation and maintenance
- Pressure relief and SIS valves

DAY 4

Process Control Using Control Valves

- Introduction to process control
- The PID controller

- Open-loop tuning
- Closed-loop tuning
- Trial & error tuning (open and closed loop)

DAY 5

Optimum Control, Using Control Valves

- Valves in cascade loops
- Valves in ratio loops
- Valves in non-linear loops
- Valves in loops with long time delays
- Valves used in conjunction with PLCs
- New innovations in control valve technology