Examples Used in This Workshop

- Measurement Sensors: temperature, pressure, pressure drop, level, flow density, concentration
- Final Control Element: solenoid, valve, variable speed pump or compressor, heater or cooler
- Automatic Controllers: on/off, PID, cascade, feed forward, model-based Smith predictor, multivariable, sampled data, parameter scheduled adaptive control

Workshop Goals

- Learn why understanding the dynamic behavior of a process is fundamental to controlling it
- Practice methods of collecting and analyzing process data to gain this all important understanding of process dynamics
- Learn what "good" or "best" control performance means for a particular process
- Understand the computational methods behind the popular controllers and learn when and how to use each
- Learn how controller tuning parameters impact performance and how to determine values for these parameters
- Understand the limitations and pitfalls of the different controllers and learn how to turn this to your advantage

Thought Experiment: Cruise Control in a Car

Cruise Control in a Car

- Control Objective: maintain car velocity
- Measured Process Variable: car velocity
- Manipulated Variable: pedal angle, flow of gas
- Controller Output: signal to actuator that adjusts gas flow
- Set point: desired velocity
- Disturbances: hills, wind, passing trucks....

2. Hands-On Case Studies

Gravity Drained Tanks
Heat Exchanger

Hands-On Case Studies