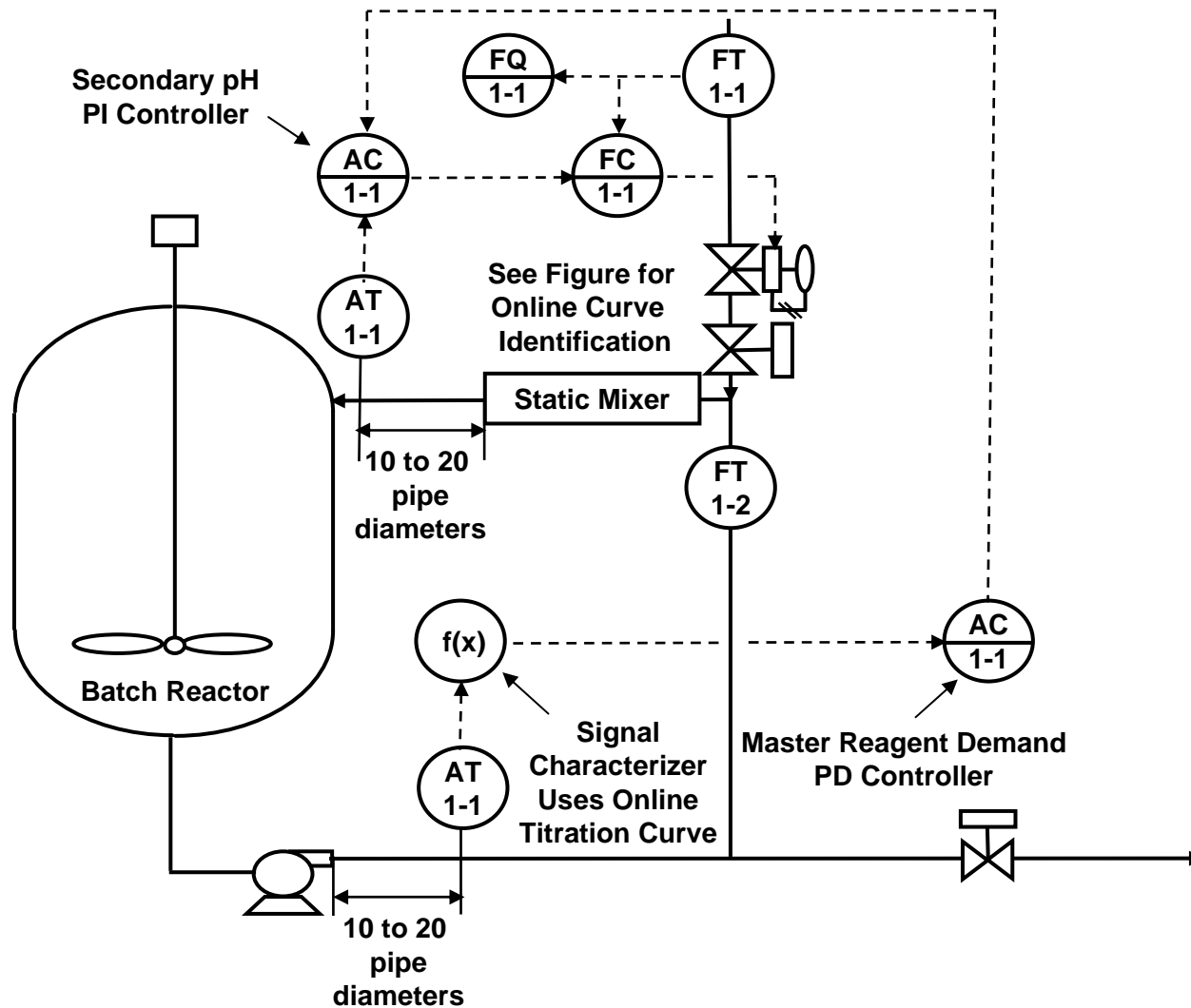


# Linear Reagent Demand Control Example



# Linear Reagent Demand Control Details

- **Signal characterizer translates loop PV and SP from pH to % Reagent Demand**
  - PV is abscissa of the titration curve scaled 0 to 100% reagent demand
  - Piecewise segment fit normally used to go from ordinate to abscissa of curve
  - Fieldbus block offers 21 custom space X,Y pairs (X is pH and Y is % demand)
  - Closer spacing of X,Y pairs in control region provides most needed compensation
  - If neural network or polynomial fit used, beware of bumps and wild extrapolation
- **Special configuration is needed to provide operations with pH interface to:**
  - See loop PV in pH and signal to final element
  - Enter loop SP in pH
  - Change mode to manual and change manual output
- **Set point on steep part of curve shows biggest improvements from**
  - Reduction in limit cycle amplitude seen from pH nonlinearity
  - Decrease in limit cycle frequency from final element resolution (e.g. stick-slip)
  - Decrease in crossing of split range point
  - Reduced reaction to measurement noise
  - Shorter startup time (loop sees real distance to set point and is not detuned)
  - Simplified tuning (process gain no longer depends upon titration curve slope)
  - Restored process time constant (slower pH excursion from disturbance)