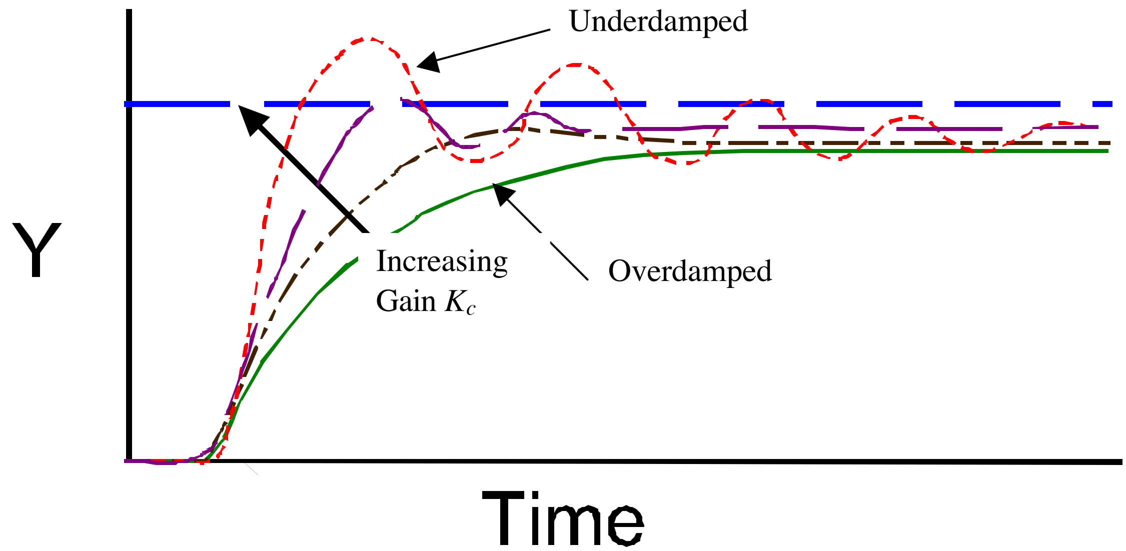
1. Once K_{cd} has been found set the final gain of the controller based on desired response.
   - $K \approx 1.2K_{cd}$ if an underdamped response is desired.
   - $K \approx 0.8K_{cd}$ if an overdamped response is desired.



2. Once the controller gain is set, enter a large integral tuning parameter (τ_I). This represents a small amount of integral action. Decrease τ_I to get the desired elimination of steady state offset. Remember, in most cases the purpose of integral action is to eliminate offset. As you decrease τ_I at some point you will notice that the controller becomes more oscillatory. If the controller was overdamped when you started and becomes underdamped, you know it is because of the integral action. Thus you have reached the limit and should back off on the integral action.

That's it.

Derivative action can be added if desired. If the process value signal is **not** noisy and the derivative is on the measured PV and not on the error, derivative action should stabilize the controller. In general, if derivative action is added, the controller gain (K) can be increased and the integral term (τ_I) can be decreased. **BEWARE: derivative action often behaves poorly on industrial processes.**