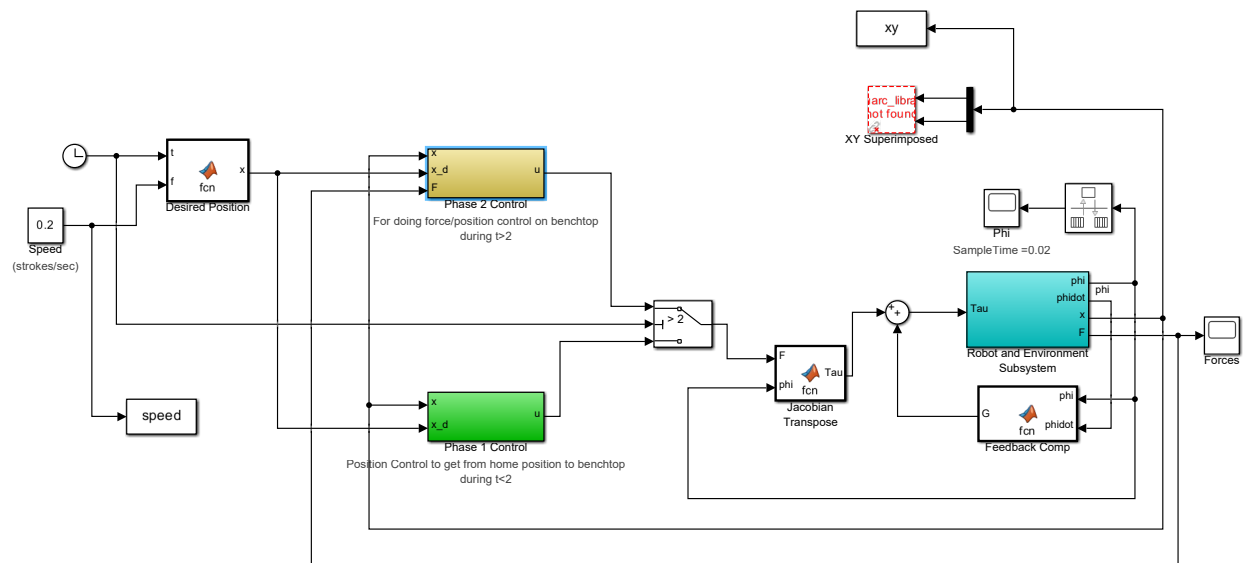


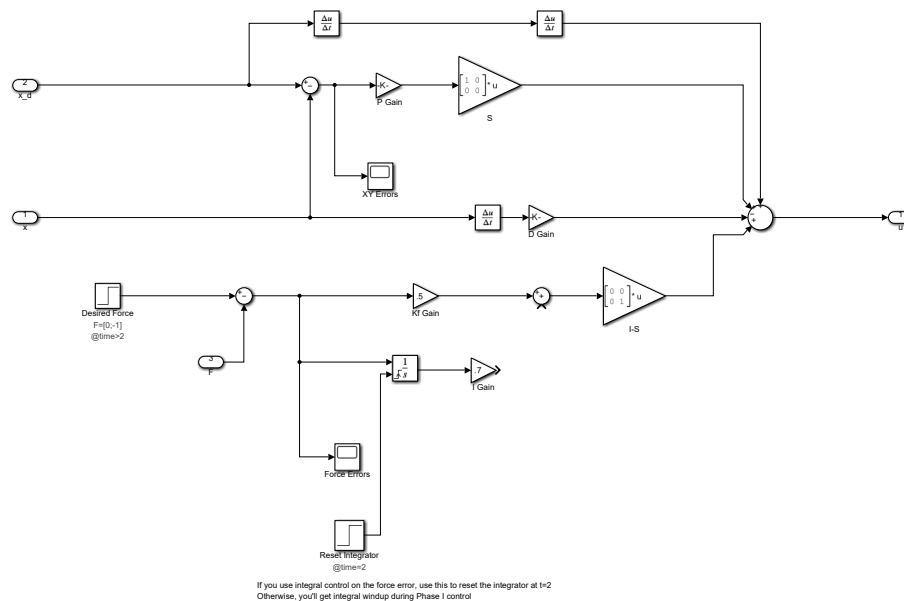
Robot Control Lab 6: Hybrid Position/Force Control

1 P FORCE CONTROL

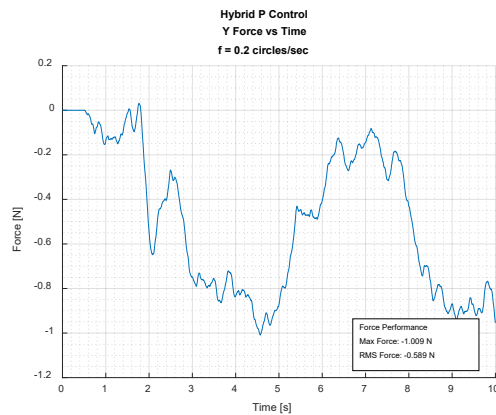
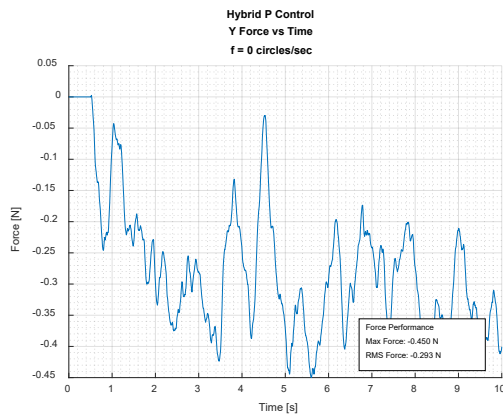
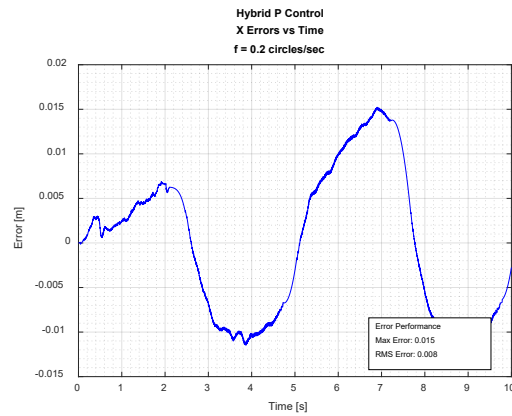
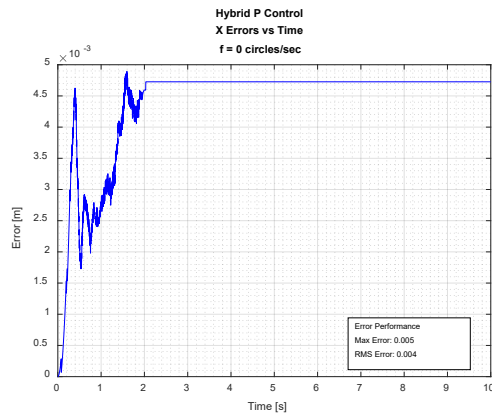
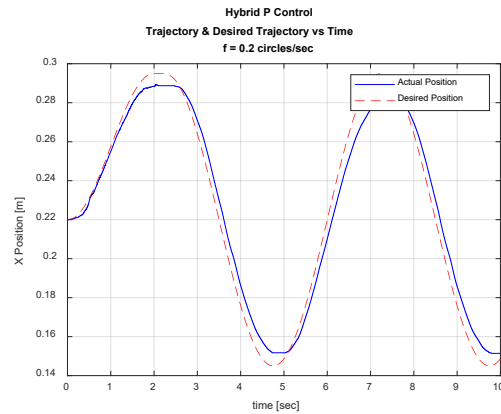
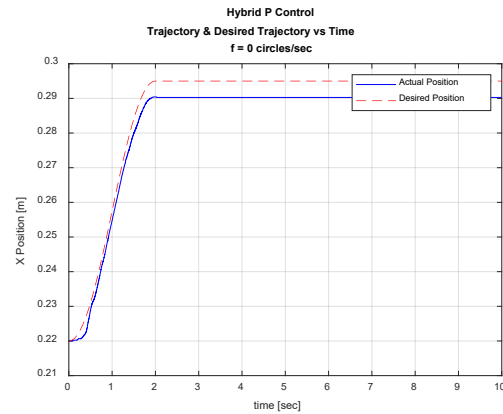
1.1 SIMULINK MODEL



Phase 2 Control



1.2 PLOTS

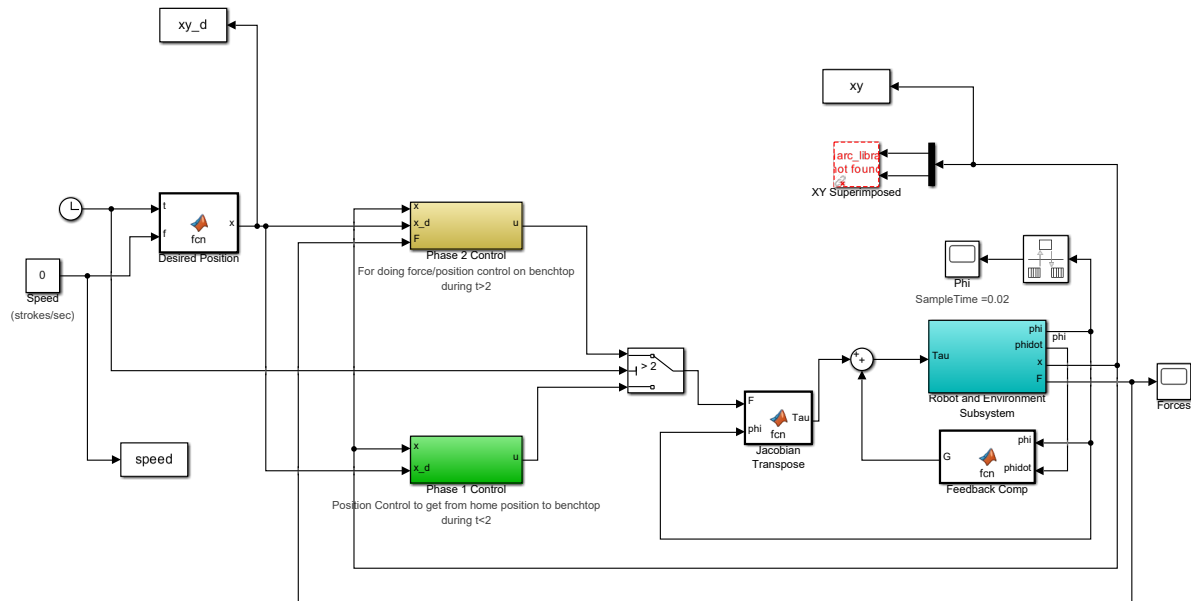


1.3 ANALYSIS

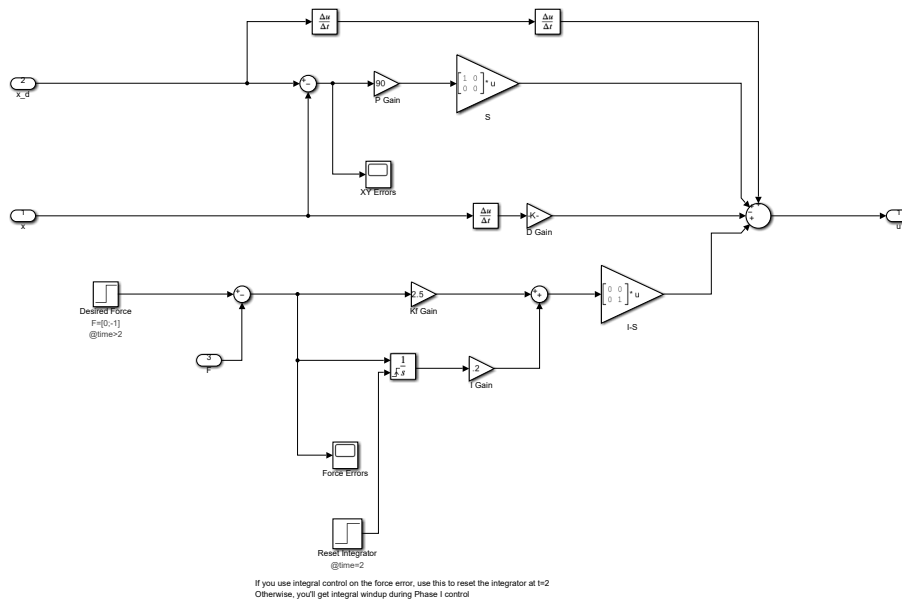
Pretty decent control, but didn't have amazing tracking within the movement section. We couldn't have a good gain to satisfy trajectory without breaking the -1N threshold on the Y force (although we did just barely cross it for a small portion at -1.009N). The force sensor was very noisy, as you can see the Y force with no motion still has jumping all around.

2 PI FORCE CONTROL

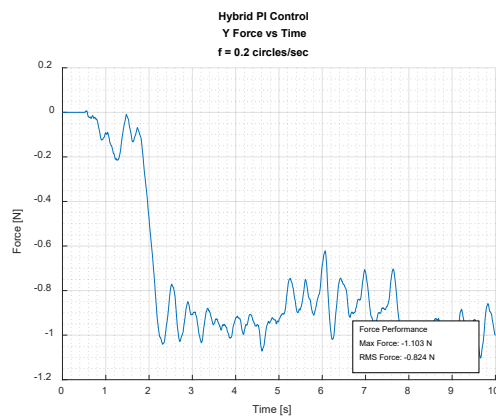
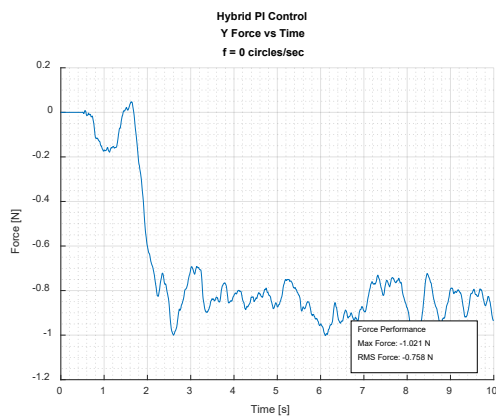
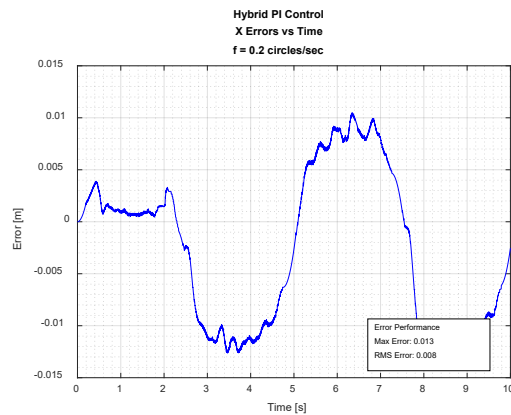
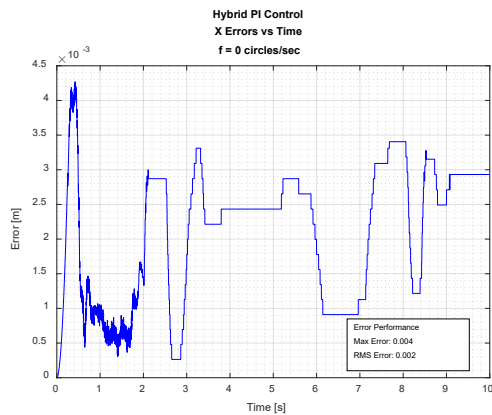
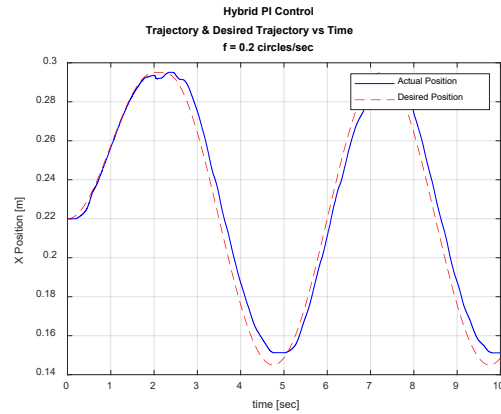
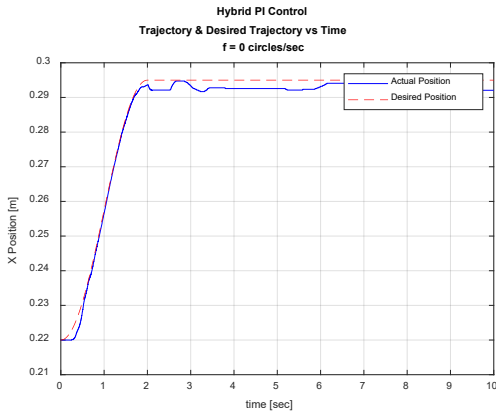
2.1 SIMULINK MODEL



Phase 2 Control



2.2 PLOTS



2.3 ANALYSIS

This had better tracking, and lower RMS tracking error at rest than the P control. It also had higher max force in the 0 and 0.2 circles/second frequencies. We also saw higher RMS force in the y direction. I'm guessing this higher RMS was because the operation control is "fighting" against the force control. These controllers would likely be much more accurate and perform better with better force sensors, or at a different force scale.