Aero 2 Recommended Assessment

Pitch PID Control Design

Note: These results are based on the Aero 2 hardware. The response between different Aero 2 units and the Virtual Aero 2 will vary.

Control Design

1. Find the equations to find the natural frequency and damping ratio needed to match percent overshoot and peak time specifications.

2. Evaluate the natural frequency and damping ratio needed to meet the desired peak time and percent overshoot above.

Simulating the PID Controller

1. Enter the PID equations in the MATLAB script.

2. Attach the MATLAB figure response of the PID simulation using the designed PID gains.

3. Measure the peak time and percent overshoot. Are the specifications satisfied?

Hardware Implementation of the PID Controller

1. Attach the MATLAB figure response the PID implementation.

2. Measure the peak time and percent overshoot. Do they match the specifications?

3. If the peak time and percent overshoot did not satisfy the requirements, then give one possible reason that could have caused this discrepancy.