

DROP TEST FIXTURE

Aerospace

Project Management	
Systems Engineering	
Mechanical Engineering	
Electrical Engineering	
Software Engineering	
Quality Assurance	

SAMPLE RETURN HELICOPTER TEST FIXTURE DEVELOPMENT

APPROACH

- Implement Agile sprint planning
- Develop system requirements and design test fixturing
- Implement closed-loop control with a graphical user interface
- Develop precision motor control
- Test system verification/validation

RESULTS

- Delivered drop test fixture to simulate Martian gravity to client site
- Designed system to use closed-loop control with a PID controller to maintain system tension with the capability to repeat and log the test conditions, including vertical drop height and horizontal speed
- Created a test fixture that allows the client to adjust the gains and tune the system to meet a variety of test conditions
- Provided a knowledge transfer and system overview/training to the client

KEY TOOLS & TECHNOLOGIES

- | | |
|---------------------------|------------------------|
| ■ SolidWorks | ■ Limit switches |
| ■ Arduino | ■ Motor torque control |
| ■ PID closed-loop control | ■ 80/20 modularity |
| ■ MATLAB | ■ IGUS linear motion |
| ■ Load cells | ■ GUI |
| ■ Proximity sensors | |