



Aerostructure Testing With Inclinometer



- **Objectives:** Accurately test quality of aerostructures
- **Solution:** Jewell Instruments **LCF-300**
- **Benefits:** Excellent repeatability and low hysteresis
- **Results:** Comprehensive and reliable test results

Overview

The increasing need for lightweight design – combined with improved functionality, quality, and economic build – continues to drive the need for comprehensive testing within key structural systems and components in the Aerospace sector.



[Jewell Instruments LCF-300](#)

Project

Extensive testing is critical in successful product development and implementation. Mechanical testing of materials and products used in aerospace applications is governed by strict standards and often require accreditation. The type of testing performed includes tensile, compressive, flexural, fatigue testing, and much more. Many types of sensors are used to accurately perform the stringent levels of testing required, and some of the testing includes:

- Static and dynamic tests to check for structural integrity and endurance of full aerostructures and assemblies.
- Fatigue tests to verify damage tolerance under different combinations of loading including force, pressure and displacement.
- Residual Strength Test and Failure Testing.

An aerostructure is a component of an aircraft's airframe. This may include all or part of the fuselage, wings, or flight control surfaces. There are many types of testing on in aerospace testing including high/low temperature, humidity, salt spray, decompression, altitude



Phone :
+1 (603) 669-6400



Email :
info@jewellinstruments.com



Web :
jewellinstruments.com



and waterproofness testing. Additionally, vibration, shock, acceleration, electric and acoustic environmental tests can be performed at Netherlands Aerospace Center (NLR).

The complex stresses that occur during the operation of technical structures must be examined under static and dynamic operational loads to assess the impact of fatigue and also to determine accurate in-service life predictions. Aerostructure companies design major composite and metal integrated airframe systems for military and commercial aircraft programs. Jewell Instruments' inclinometers have proven to be a valuable sensor in aerostructure testing.

An inclinometer with the resolution of $\pm 0.001^\circ$ is needed for feedback to control angular displacement during testing. The [LCF-300](#) has a resolution of 1 microradian and is fluid-damped to filter out noise and vibration from its readings. The damping feature is needed to reduce the crosstalk and low-level vibrations emanating from the test figure.

The Jewell [LCF-300](#) Series flexure suspension servo fluid damped inclinometer is a $\pm 1^\circ$ to $\pm 90^\circ$ device designed for applications where high levels of shock and vibration are present. [LCF-300](#) units are characterized by excellent turn on repeatability and very low hysteresis.



About Jewell Instruments

Jewell Instruments is a world leader in the design, manufacture, and distribution of high-precision products. Our expertise includes acceleration and tilt sensors, electronic compasses, avionics components, solenoids, and panel meters. The extensive application knowledge we have obtained through decades of experience allows us to provide custom solutions for a diverse group of industries. In fact, customers from all over the globe contact us for solutions to aerospace, medical, industrial, and telecommunications applications - to name a few.

To find out more, visit our website!



Phone :
+1 (603) 669-6400



Email :
info@jewellinstruments.com



Web :
jewellinstruments.com



CSAS1 Rev. A