

FULL-SCALE STRUCTURAL TESTING LAB



The Full-Scale Structural Testing Lab assesses the structural performance and durability of commercial and military aircraft by performing full-scale and component testing (static, durability and damage tolerance), pressure cyclic testing, hail strike testing, material testing and tireburst/explosive effects testing.

Representative Clients: Department of Defense, Boeing Aircraft Co., Spirit AeroSystems, Bombardier Learjet, Lockheed Martin, Sikorsky Aircraft, Hawker Beechcraft, Radiance Technology, Miltec

Equipment:

- 4 load control systems with 280 channels and 13 separate load stations
- 14 data acquisition systems that can record over 2,500 channels of data
- Secured data ports for customer data transfer
- ARAMIS photogrammetry system, a 3D deformation measuring system to characterize displacements and strains in components
- CATIA V5 capabilities
- More than 420 hydraulic cylinders starting at 1" bore up to 6" bore
- Approximately 400 servo valves ranging from 1 gpm to 10 gpm
- 1,200 gallon hydraulic reservoir with four each 60 gpm pumps for supplying hydraulic fluid throughout the test floor variable to 3,000 psi
- 500 load cells ranging from 50 lbs. - 200,000 lbs.
- 4 load frames with stroke and load control that can be used for material and component testing up to 200,000 lbs.
- Five large durability test base fixtures for rapid development of durability test setup for aircraft up through business-size jets
- Pressure control equipment for fuselage cyclic and static pressure testing that includes both a 6" shop air supply from the local plant and a stand-alone 655 cubic foot per minute 125 hp air compressor
- Hail gun
- Both TIG and arch welding capability for test fixtures
- HAAS vertical mill, lathe, milling machine, plasma cutter and various large saws for support of test setups
- Forklifts – 2 each capable of lifting 3,000 lbs., 1 capable of lifting 10,000 lbs.
- Broderson crane capable of lifting approximately 12,000 lbs.
- 45 ft. man lifts with articulating booms



Contacts:

Tim Hickey, Director
(316) 978-8204
thickey@niar.wichita.edu

Larry Braden, Manager
(316) 978-8222
lbraden@niar.wichita.edu

Located on the Wichita State University campus, in a city recognized as the Air Capital of the World, The National Institute for Aviation Research (NIAR) is a prestigious state-of-the-art aerospace research and development laboratory with global reach and expertise. NIAR integrates university, government and industry in cooperative efforts to advance technologies.

The Institute's clientele include many of the world's aerospace manufacturers, NASA and the FAA. It is the largest aviation R&D academic institution in the United States, with 135,000 square feet and more than a dozen laboratories. NIAR is recognized internationally as a high-tech research and development, design, testing, certification and learning center.