



Main Technical Parameters

Main hall of a laboratory

Reinforced floor	1900 m ²
Reinforced ceiling	1900 m ²
Load capacity of reinforced ceiling	1000 tf

Auxiliary hall:

Reinforced floor	650 m ²
Reinforced gantries	

Technological systems:

- Hydraulic station:
 - oil-pump station with capacity 2000 l/min
 - hydraulic system pressure 20 MPa
 - stationary pipelines
 - hydraulic loading cylinders 600
 - hydraulic units of load control 200

- Overpressure air system of hermetic compartments loading $P_{\max} = 600$ kPa
- Exposure rupture tolerance & protection system
- Loading control information complex "Arrow" up to 120 channels
- Information system of strain gauge measurements "Strength-4000" 2 × 4000 channels
- Information system of loading control, angular and linear displacement measurements "Strength-2000" 2000 channels
- Set of capacitance inclinometers and displacement gages (electrometric and laser) more than 200

Static tests laboratory is certified as a unite test rig.
All control and measurements equipment is verified and certified.

General Description

Full-scale structures static strength test laboratory is designed to fulfill static investigation of full-scale aircraft with taking-off weight up to 250 tones and helicopters with taking-off weight up to 100 tones. Objects under research are loaded via multi-channel electric hydraulic servo system. Strain-deformed state is checked with a help of multi-channel high-speed information-measurement systems. Tests are accompanied by numerical calculation of structure strength capability. Structural damages are also investigated by an electronic nondestructive inspection system.



Capabilities

Laboratory equipment enables the following:

- Static strength tests of full-scale structures, their units and components;
- Residual strength exploration;
- Strain-Stressed state exploration using strain-gauge gages, angular and linear displacement gages, coherent laser radar MV224;
- Checking of units and complexes operation including operation of loaded structures;
- Computer processing and output of measurements' results;
- Comprehensive demonstration of test results during a rate of experiment.



Technological Advantages

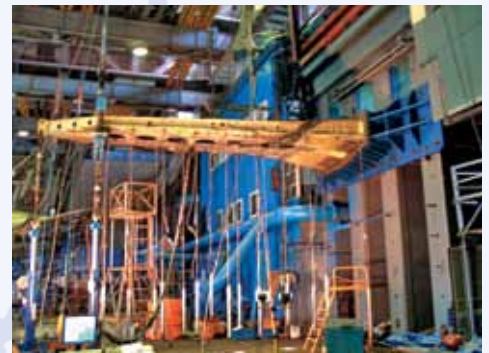
Reinforced structure of the laboratory enables testing of full-scale aircraft structures without specific gantries. Auxiliary part of the laboratory is equipped with the universal gantries devices.

Both pulling and pushing machines are used in the laboratories in dependence on a test programme.

Static strength test laboratory is equipped with the local hydraulic and air loading systems.

There is a set of universal loading components of a system which provide with concrete lever systems for structure loading.

A set of loading hydraulic cylinders allows application of loads from 100 kgf to 400 tf in dependence on loads and geometric characteristics.



Application

The laboratory is widely used for static strength tests of various fixed wings, helicopters, wing-in-ground effect aircraft, spacecrafts, air-space craft and the other full-scale objects and models (more than 50 types). Laboratory equipment enables simultaneous tests of several objects. The laboratory is accredited as a part of Test complex "Strength" by Inter-State Aviation Committee aviation register and Federal Agency "Rostechregulirovanie".

