



MAIN TECHNICAL PARAMETERS

Test hall dimensions:	75.0×90.0×25.4 m
Reinforced floor	5700 m ²
Acceptable loading on reinforced floor	37500 t
Power capacity	3600 kW
Compressed air consumption with 6 ati pressure	37 m ³ /s
Oil-pump station capacity under 200 ati pressure	5000 l/min
Recycling water supply under 1.5 kg/sm ² pressure	64 m ³ /h
Automated multi-channel loading system:	
– Channels number	500
– Frequency range	0.1...30 Hz
– Measurement accuracy (not less)	1%

Information-measurement system:

– Measurement channels number	1500
– Measurement acquisition rate	5000 measurements/s
– Measurement accuracy (not less)	1%

Non-destructure tests:

- eddy current testing
- ultrasonic inspection
- acoustic-emissive testing
- built-in testing
- visual and optical testing through endo-
scope

GENERAL DESCRIPTION

The laboratory is intended for full-scale structures fatigue strength investigations. The structure loading is realized by multi-channel electric hydraulic servo system with digital control. The measurements of the relative deformations, bandings, shears, forces, pressures, temperatures are performed by fast multipoint information-measurement systems. The structure health monitoring systems (ultra-sound, eddy-current, acoustic-emission, built-in, optical with endoscope) and automated continuous monitoring systems are applied for structure damages detection and crack propagation monitoring. The laboratory stands enable investigation of all the aircraft glider components simultaneously by cyclical loading via 120 channels and measurement of overpressure value.



CAPABILITIES

Fatigue strength laboratory allows to perform the following types of investigations:

- fatigue;
- residential strength;
- system functional check;
- vibrational;
- structure stressed-deformed state;
- structure fatigue cracks propagation;
- calibration of strain-gages applied on the structure;
- analysis and monitoring of inaccessible zones of the structure.



TECHNOLOGICAL ADVANTAGES

- Full-scale aircraft structure with taking-off mass upto 500 t with simultaneous loading of all glider components (wing, fuselage, empennage, landing gear, engine mounting) as the layout of the generic aircraft;
- Simulation of flight loading programs with quasi-random loads and flights alternation;
- Vibrational loading via electric hydraulic monitoring system controlled by a computer;
- Acoustic-emission structure control in a real-time mode.



APPLICATION

Fatigue strength of full-scale passenger, transport, military aircraft and helicopters, pipeline systems and machinery structures.

The laboratory is certified by State Certification Authority (Gosstandart) and International Aviation Committee. Certificate of IL-0002 accreditation for the following fatigue tests is received:

- aviation structures;
- wind-driven power plant;
- pipeline systems.

