

1. Anechoic chamber (AC)
2. Reverberation chamber 1 (RC1)
3. Reverberation chamber 2 (RC2)
4. Microphones, sound sources and co-ordinate devices
5. Measuring and operating equipment

### Main Technical Parameters

Dimensions of acoustic chambers, m:

Anechoic chamber .....	14.0×11.5×8.0 (1288 m <sup>3</sup> )
Free volume .....	12.2×9.7×6.3 (750 m <sup>3</sup> )
RC1 .....	6.4×6.4×5.15 (210 m <sup>3</sup> )
RC2 .....	6.6×6.4×5.15 (220 m <sup>3</sup> )

Operational frequency range, Hz .....

80...16000
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Dynamic range (RC1—RC2), dB .....

45...83
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Background noise, dB .....

~ 0
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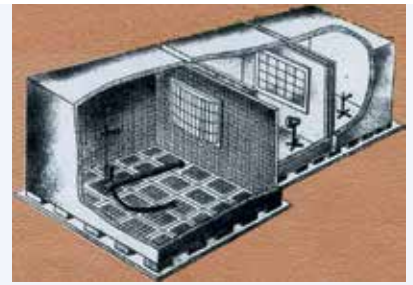
Data acquisition-processing system:

PULSE Multi-analyzer System Type 3560-C	
Number of channels .....	10
Frequency range, Hz .....	0...25600
Measurement accuracy, dB .....	±0.1

## General Description

Acoustic test facility AC-11 consists of three interconnected chambers: one anechoic and 2 reverberation chambers consecutively connected with the use of two apertures for setting test panels with dimensions  $2.2 \times 1.5 \text{ m}^2$  or  $1.5 \times 1.5 \text{ m}^2$ . To prevent the structure interference, the chambers are not rigidly bound to each other and to building structure. They are mounted on special rubber cushions and have separate foundations. Acoustic facility is equipped with co-ordinate systems and advanced multi-channel data acquisition-processing system for real-time acoustic measurements.

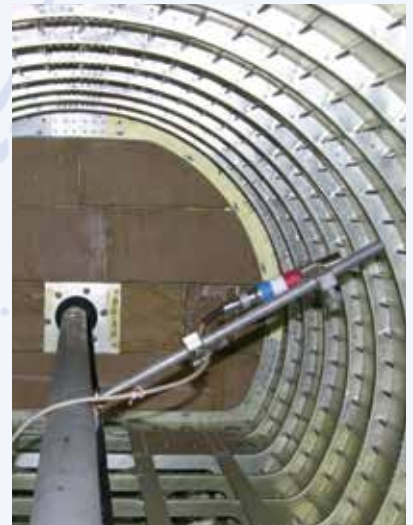
Additional systems: complex of equipment for carrying out vibro-acoustic measurements on the basis of laser vibrometer Polytec PDV-100.



## Capabilities

Acoustic facility AC-11 provides for the following acoustic tests:

- determination of sound transmission losses of panels under diffusive excitation and reception in two interconnected reverberation chambers (RC1—RC2);
- determination of sound transmission losses of panels under directed excitation (AC—RC1), under directed reception (RC1—AC), under directed excitation and reception (muffled RC1—AC);
- determination of sound absorbing structures and materials characteristics in RC;
- determination of acoustic power of sound sources in RC or AC;
- determination of vibro-acoustic characteristics of panels at their installation in an aperture between chambers or at their placing in one of chambers;
- vibro-acoustic tests of full-scale or model aircraft fuselage compartment in the conditions of diffusion (RC1) and free sound (AC) fields;
- determination of influence of exciting fields structure on vibroacoustic characteristics of panels, compartments and aircraft models.



## Technological Advantages

The wide frequency range, high dynamic range, low level of background noise and possibility of modeling the various exciting fields, that permits to carry out the extensive range of standard and non-standard acoustic researches. Depending on tasks in view, cameras (mutually or separately) can be transformed to independent functional setting. Great volume of cameras allows to carry out not only tests of scale models, but also tests of full-scale panels and compartment of various vehicles and the industrial equipment. RC1 can be easily converted to the small anechoic camera (muffled RC1).



## Application

From the moment of start-up in 1989, in acoustic cameras of facility AC-11 tests of various objects and materials on subjects for acoustic department of TsAGI and under contracts with leading Russian aviation companies are conducted. Acoustic facility AC-11 is a part of Test complex "Aeroacoustics" accredited by the aviation register of Inter-State Aviation Committee and by Federal Agency "Rostechregulirovanie".

