

Title: CENTRAL AERO-HYDRODYNAMICS INSTITUTE imeni PROFESSOR N. Ye.
ZHUKOVSKIY USSR

Source: Nauchno-Issledovatel'skiye Instituty Tyazheloy Promyshlennosti
 pp 495-508.

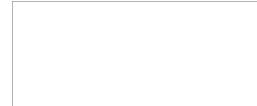
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CENTRAL AERO-HYDRODYNAMIC INSTITUTE imeni PROF. Ns Ye. ZHUKOVSKIY

(TsAGI)



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Location:

17 Radio Ulitsa, Moscow 77.

Telephone:

Ye-1-17-96.

TsAGI is subordinate to the Main Administration of the Aviation Industry (GUAP, NKTP).

Chief of the Institute:

Engineer N. M. Kharlanov

TsAGI undertakes the study of problems of aerodynamics, hydrodynamics, rigidity, construction, and testing of experimental planes, hydroplanes, gliders, as well as aero-sleds.

Scientific Sectors, Divisions, and Laboratories:

Sector of Experimental ^{Design} Construction

Divisions:

^{Design} Construction

Special ^{designs} constructions (screw apparatus)

Exploitation, test flights and final adjustments.

Scientific Research Sector:

Experimental-Aerodynamics Division

Laboratories:

Ventilation

Physical Methods for Testing Equipment

Experimental Hydraulics Division:

Laboratories:

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Hydraulic Valves

Mechanical Laboratory for Models

General Theory Group

Division of Accuracy of Aviation Constructions:

Laboratories:

Static Tests

Dynamic Tests

Studies of Rigidity by the Light Method

Photographic Laboratory

Leading Scientific Personnel and Specialists:

Engineer N. M. Kharlanov - Chief of TsAGI, recipient of the Order of Lenin and the Order of the Red Star

Academician S. A. Chaplygin - Chief of the General Theory Group, recipient of the Order of Lenin, of Labor Red Banner

Corresponding Member of the Academy of Sciences USSR, Doctor of Aerodynamics P. A. Val'ter

Corresponding Member of the Academy of Sciences USSR, Doctor of Mechanical Sciences, Professor L. S. Leybenzon

Corresponding Member of the Academy of Sciences USSR, Doctor of Physico-Mathematical Sciences, Professor A. I. Nekrasov - holder of the Red Star

Honored Worker of Science, Corresponding Member of the Academy of Sciences USSR, A. N. Tupolev - Chief ^{Designer} ~~Constructor~~ TsAGI, Holder of Order of Lenin, Red Star, Labor Red Banner USSR, and the Labor Red Banner RSFSR

Hero of the Soviet Union M. M. Gromov - awarded the Order of Lenin, Red Banner, and two Red Stars

Professor V. P. Vetchinkin - Mechanic^C

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Professor A. N. Zhuravchenko - Awarded Order of Labor Red Banner
 Professor G. Kh. Sabinin - Consultant for the Experimental Aerodynamics Division; Awarded the Order of Labor Red Banner
 Engineer A. A. Arkhangel'skiy - Deputy Chief of the ^{Design} Construction Division on Technical Matters; Awarded Order of Lenin
 Engineer G. N. Musinyants - Deputy Chief Experimental Aerodynamics Division (EAO); Awarded Order of Lenin
 Engineer V. M. Potlyakov - Deputy Chief Sector of Experimental ^{Design} Construction; Awarded Order of Lenin and Order of Red Star
 Engineer K. A. Ushakov - ventilators

Fundamental Problems Currently Studied at TsAGI:

Spin in a plane and methods for maintaining pilotage at low speeds
 Related aerodynamic action of the various parts of an aeroplane
 Increasing the speed of aeroplanes
 Decreasing the landing speeds of aeroplanes
 Increasing range of planes
 Supersonic speeds
 Aerodynamics of fuselages and other equipment
 Problems of planing (for hydroplanes)
 Plane engines
 Aerodynamics of low and high speeds
 Hydrodynamics
 Division for testing plane performances under actual flight conditions
 Theory of the rigidity and resistance of aircraft constructions

The Institute gives technical aid on the following problems:

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Aerodynamics of flying equipment

Rigidity of aircraft constructions

Construction of aeroplanes, amphibians, autogyros, gliders, etc.

Construction of hydroplanes, small boats and the displacement of hulls

Testing of new models

Designing and making computations on ventilators for various uses

Periodicals:

"Trudy TsAGI," published in Moscow since 1923; responsible editor, Professor Aleksandrov.

"Tekhnicheskiye Zametki," published in Moscow since 1932; responsible editor, Professor Aleksandrov.

"Byulleten' TsAGI."

TsAGI was formed in 1918 by Professor N. Ye. Zhukovskiy and a group of his associates. This group had been active since 1917 when they were known as the Aviation Computing-Experimental Bureau of the Main Administration of the Air Fleet. One of the first tasks of TsAGI was the study of the forces of the air and water and their utilization for the national economy. In addition, TsAGI also carried out research on the forces of wind. In the vicinity of Balaklava the institute built a large wind-powered machine (30 meter diameter of blades). This type of research was conducted under the auspices of the Division of Wind Machines which in 1931 was separated from TsAGI and formed the Central Wind-Power Engineering Institute (TsVEI).

At one time TsAGI also had a Hydraulics Division which conducted research on hydraulic constructions and hydro-electric stations. Since 1931 this Division has been identified as the independent Hydro-Machine

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Building Institute.

At one time TsAGI also conducted research on airplane engines in the Propeller-Engine Division which since 1930 has become an independent agency - Central Institute of ^{Scientific Research} ~~Aviation~~ ^{Aircraft Engine} ~~Machine~~ Building (TsIAM).

In 1932 the Division for Testing of Aviation Materials was separated from TsAGI and formed into the ^{Scientific Research} All-Union Institute of Aviation Materials Studies.

In this manner not only was TsAGI developed, but at the same time it gave rise to four new institutes.

At the present time TsAGI conducts research to determine the problems of aeroplane construction, studies of flight and operating characteristics, various theoretical experimental problems and utilization of the results obtained by studies for improving the characteristics of planes in general.

Theoretical questions in the field of aerodynamics, hydrodynamics and the general theory of rigidity are conducted by a group of scientists and research specialists headed by Academician S. A. Chaplygin. The Aerodynamic Laboratory, TsAGI is equipped with all manner of equipment which permits the study of models in high-velocity air flow.

TsAGI has also conducted studies on the various lifting problems of airfoils and utilizing such theories as those expressed by Zhukovskiy and Prandtl¹ and others developed the best shape for aircraft wings. It must be kept in mind that the wing of an aircraft does not act as an independent agent but rather as a part within the whole complex making up the body of a plane. Special attention is given to essential parts of the plane which serve no lifting function but which nevertheless contribute to the aerodynamics of the fuselage.

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Special equipment was constructed which permits the operation of airscrews in tandem.

Professor A. N. Zhuravchenko and the late Engineer G. G. Kul'man constructed special model equipment which permitted the study of the various factors surrounding spins.

At the Experimental Aerodynamics Division, TsAGI, special ~~semi-~~^{automatic} recording equipment was designed which is of utmost importance to studying the performance of planes under actual flight conditions. This division also works on various problems connected with the construction of hydroplanes (hull design, design of floats, etc.).

TsAGI also conducts research for the benefit of various industrial organizations like metallurgical plants (research on air blasts in furnaces), research for railroad transportation systems (ventilation for the trains over the Sumar Pass, etc.).

At the Laboratory of Static Testing, TsAGI, research is being conducted to determine the effect of loading on various types of sample materials to be used in the airplane construction field.

The Laboratory on Dynamic Testing, TsAGI conducts research to determine the effect of shock forces and variable forces on materials to be used in the airplane construction field.

The Division of Aviation Construction is working in close cooperation with the Experimental Aerodynamics Division on studies on the force diagrams of airplane parts under load.

The General Theory Group in addition to studying problems of aerodynamics and hydrodynamics is also studying problems of the rigidity and resistance of materials.

It might also be mentioned that all of the divisions of TsAGI work in close cooperation with the Division for Testing Plane Performance under Actual Flight Conditions.

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In its work TsAGI is closely related to the Institute of Mathematics and Mechanics of the Moscow State University, various aerodynamics laboratories in Khar'kov and Moscow, and with various individual scientists in Moscow, Leningrad, Khar'kov and Kazan.

The Scientific Research Sector, TsAGI conducts research not only on planes designed by TsAGI itself but test planes constructed by all the airplane manufacturers in the USSR.

TsAGI in an attempt to better coordinate the work of various airplane builders and airplane designers in the USSR has formed the All-Union Council on Aerodynamics which unites all the enterprises of the USSR dealing with problems in the field of aerodynamics.

Note: Various photographs which accompany the article show the ANT-20 (Maksim Gor'kiy) a model of a high speed wind tunnel; the hull testing tank at TsAGI; the Wind Power Laboratory, TsVEI (formerly under TsAGI jurisdiction), and three autogyros which were built by TsAGI.

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