

Research Activities

Samara State Technical University (SSTU, Samara Polytech) is the system coordinator of the implementation of key projects of the state program "Improving the waste management system, including municipal solid waste in Samara region for 2018-2024", the strategy for ensuring environmental safety and waste management in the region, and also participates in the implementation of a number of federal projects within the framework of the national project "Ecology" including: "Integrated system of MSW management", "Infrastructure for waste management of 1-2 hazard classes", "Clean water", "Improvement of the Volga", "Implementation of the best available technologies ", "Liquidation of objects of accumulated environmental damage".

SSTU has become a key member of the world-class Scientific and Educational Center "Engineering of the Future" which became one of the centers supported at the federal level in 2021.

In 2021 the university has acquired a number of new academic and industrial partners, cooperation with which has led to the creation of joint scientific and educational centers, new projects and technologies, and an increase in R&D. Among examples of such cooperation are:

- participation in the key projects of the REC "Engineering of the Future";
- participation in the "Nedra" consortium, established to improve the quality of higher and technical vocational education, scientific research for the mineral resource complex of Russia;
- establishment of a consortium "Ecology of the Volga River Basin" for the purpose of training personnel and developing practical solutions for the conservation, protection and restoration of the environment of the Volga basin.

Among the new strategic partners there is the non-profit foundation State Fund for the Development of Industry of the Samara Region. An agreement was concluded with the fund to include SSTU as an expert organization to conduct scientific, technical and production and technological examinations (contract No. 20/21 of 07/08/2021).

The bulk of design, engineering and technological work was carried out by order of industrial partners: industrial enterprises in the field of chemical technology, oil and gas production, hydrocarbon transportation and oil and gas processing. Among such works implemented in the reporting period are:

- Development of a technology for the production of a catalyst for deep hydrotreatment of mixed diesel fractions for implementation in the conditions of Gazpromneft-Catalytic Systems LLC, Gazpromneft-ONPZ LLC, 2018-2021, 60 million rubles;
- Development of working documentation for the facility "Sour Gas Utilization Unit" LLC "VPK-Oil" 2021-2022, 46.19 million rubles;
- Development, maintenance and approval of environmental documentation with the receipt of integrated environmental permits for the facilities of

Samaraneftegaz JSC, SamaraNIPIneft LLC, 2020-2022, 27.7 million rubles;

- Development of environmental working and design documentation for a number of works commissioned by Ecology JSC, SamaraNIPIneft LLC, Design Institute Geoplan LLC, etc., 2021, 25 million rubles;

- Inspection of the site of local wastewater treatment with the issuance of recommendations for the replacement of diisopropyl ether", JSC "SvNIINP", 2021-2022, 8.32 million rubles;

- Development of multifunctional waste management complexes for municipalities of the Samara Region, Ministry of Energy and Housing and Public Utilities of the Samara Region, 2020-2022, 68.46 million rubles.

In 2021 Samara Polytech continued working under a grant from the Fund for Basic Research in the amount of 25 million rubles within the project "Scientific and technical foundations of system analysis and multi-criteria optimization of a complex-structured system for processing industrial waste from oil refineries and petrochemical enterprises".

In 2021 the Department of Chemical Technology and Industrial Ecology was recognized as the only research team - a grant recipient of the Russian Science Foundation for the implementation of a project to reduce low-frequency gas-dynamic pulsations and the noise generated by them in power plants.

The engineering corps of SSTU involved in the organization of R&D and design work within the framework of the environmental management system includes:

- Scientific and analytical center of industrial ecology;
- Institute for Design and Survey Works;
- Laboratory "Multidimensional analysis and global modeling";
- Laboratory of intelligent systems;
- Volga region resource center of engineering ecology and chemical technology;
- Center for production and engineering.

The amount of funding for research and development work and scientific and technical services in the field of environmental management, ecology and sustainable development, carried out including on the basis of the departments' data in 2021 counted to more than 300 million rubles.

The main design, survey and technological work within the framework of the areas of ecology and rational environmental management are carried out at the Scientific and Analytical Center for Industrial Ecology (hereinafter referred to as NACPE) and the Institute for Design and Survey Work (hereinafter referred to as IPIR) of Samara Polytech. The volume of funding for R&D and scientific and technical services for 2021 amounted to: NACPE - 114.2 million rubles, IPIR - 22.9 million rubles.

NACPE laboratories (chromatography laboratory, department for sample preparation of solid objects and department for radiological research) are accredited by the Federal Accreditation Service (Rosakkreditatsiya), certificate № ROSS RU001.512985 was issued on December 30, 2016 as a testing laboratory (center),

the competence of SSTU as an expert center was confirmed by the Order of Rosaccreditation dated 18.12.2012 №PK1-2608. Design and survey work is carried out under the auspices of SROs. SSTU is a member of SRO Association of Design Enterprises "Promstroyproekt Group of Companies" and SRO "Interregional Association for Engineering Surveys in Construction", which gives it the right to carry out design and survey work on especially dangerous and technically complex objects.

The main partners of SSTU are customers of research and development and design work in the areas of ecology and environmental management are: JSC Novokuibyshevsk Refinery, Novokuibyshevsk; JSC Kuibyshev Refinery, Samara; JSC Syzran Refinery, Syzran; Samaraneftgaz JSC, Samara; Giprovostokneft JSC, Samara; SamaraNIPIneft, Samara; Privolzhskiye Trunk Oil Pipelines, Samara; Volga Territorial Generating Company, Samara; PJSC Togliattiazot, Togliatti; PJSC KuibyshevAzot, Togliatti; PJSC AvtoVAZ, Togliatti; Samarainvestneft JSC, Samara; Ministry of Forestry, Environmental Protection and Nature Management of the Samara Region; Directorate of the Federal Service for Supervision of Natural Resources Management (Rosprirodnadzor) for the Samara Region; the Middle Volga Department of the Federal Service for Ecological, Technological and Nuclear Supervision (Rostekhnadzor).

The high level of publication activity of scientific and pedagogical workers of Samara Polytech is confirmed by the presence of articles published in high-ranking publications. Thus, in 2021, the total number of articles on sustainable development goals published in high-ranking publications in the reporting year counted to 264 articles.

The University is the founder of the scientific journal "Urban Planning and Architecture" main areas of focus are:

- Water supply, sewerage, building systems for the protection of water resources;
- Environmental safety of construction and urban economy.

In the reporting year within the framework of environmental management the university received 3 patents for inventions and 1 certificate of state registration for a computer program including:

- Patent for invention № 2752983 "Method of cleaning oil-contaminated soil using high-pressure technology". The invention relates to the field of environmental protection and can be used to clean the soil from oil and oil products, as well as to eliminate the consequences of accidental spills.

- Computer program №. 2021664227 "Optimization of a complex structured system for the complex processing of industrial waste from oil and gas enterprises". The program implements an algorithm for optimizing complex-structured systems for the integrated processing of industrial waste from oil refineries and petrochemical enterprises according to technological, energy, environmental, socio-economic, logistical, geographical, geological, climatic and other criteria that characterize the characteristics of individual oil-bearing regions.

At the end of 2021 to ensure the training of scientific personnel in the field of ecology Samara Polytech formed a package of documents and submitted a petition to open a dissertation council in scientific specialties at the university in the field "Ecology" (technical sciences) and "Water supply, sewerage, building systems for the protection of water resources" (technical sciences). The petition was granted and the university created a council for the defense of dissertations for the degree of candidate and doctor of science. The dissertation council included 12 university scientists. Among them there are doctors of technical, physical and mathematical sciences. Dmitry Bykov, SSTU Rector, became the Chairman. Alexander Strelkov, Head of the Department of Water Supply and Sanitation, became the Deputy Chairman, and Olga Tupitsyna, Head of the Department of Chemical Technology and Industrial Ecology, became the Academic Secretary. Until the end of 2022 it is planned to hold 5 defenses of Ph.D. dissertations in the new dissertation council.

Ecologists of SamSTU are experts and members of public councils and working groups at ministries and departments of regional and federal significance, such as:

- European Commission "Education, Audiovisual and Culture Executive Agency (EACEA) programs";
- Scientific and Technical Council of the Ministry of Construction, Housing and Communal Services of the Russian Federation;
- Federal Environmental and Nuclear Supervision Service;
- Expert and Technological Council of the Russian Water Supply and Sanitation Association;
- Commission for Environmental Protection and Ecological Safety of the Public Chamber of the Samara Region;
- Urban Planning Council under the leadership of the Governor of the Samara Region;
- Commission for the development of housing and communal services in the Samara province under the provincial Duma;
- Technical council for the development of water supply and sanitation in the city of Samara;
- Volga branch of FUMO of the Ministry of Education and Science of the Russian Federation for technosphere safety;
- Federal educational and methodological association in the system of higher education for enlarged groups of specialties and areas of training 08.00.00. "Engineering and technology of construction" (FUMO);
- Working group under the Ministry of the Samara region to consider the development of the existing industrial zone on the spit of the Samara and Volga rivers;
- Working group at Giprovtokneft JSC;
- Editorial Board of scientific periodicals and journals "Life Safety", "Ecology and Industry of Russia", "Safety in the Technosphere", "Water Supply and Sanitary Engineering";

In 2021 SSTU scientists received recognition from the scientific community for outstanding results in the field of ecology and rational environmental management. So Olga Vladimirovna Tupitsyna, Doctor of Technical Sciences, became the winner of the award of the Governor of Samara region for the development of technology for the elimination of objects of accumulated environmental damage in order to return the restored territories for subsequent use. For the development of a number of practical approaches and devices for calculating and reducing noise and vibration, monitoring and reducing environmental pollution, the award of the Governor of Samara Region for outstanding results in solving technical problems was awarded to Andrey Vitalievich Vasiliev, Doctor of Technical Sciences.

Ecology Management Research

Dissertation Council for 1.5.15. "Ecology" and 2.1.4 "Water supply, sewerage, building systems for the protection of water resources" based at Samara Polytech

Chairman - Rector D.E. Bykov
Deputy - A.K. Strelkov

Samara Polytech is the founder of Scientific Journal "Urban Planning and Architecture"

05.23.04 - Water supply, sewerage, building systems for water resources protection;
05.23.19 - Environmental safety of construction and urban economy.

Research and Survey Works are held at highly dangerous and technically complex facilities under the aegis of Self-Regulated Organizations

Federal Service for Accreditation



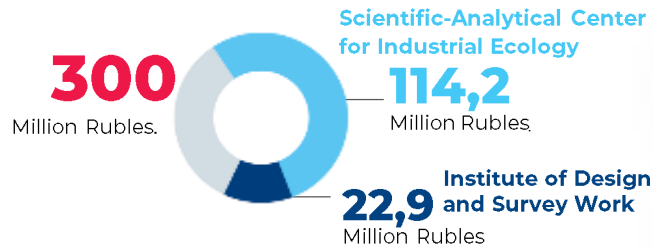
accredited **Laboratories of NACPE** and recognized **Samara Polytech as Expert Center**

3 Patents for Invention

1 State Registration Software Certificate

264 Articles in High-ranking Publications

Amount of Research & Development Funding



System Coordinator for implementation of key Ecology and Rational Nature Management Federal and National projects



The Department of **Chemical Technology and Industrial Ecology** is the only research team **receiving Russian Science Foundation Grants** for the implementation of **"Low-frequency Gas-dynamic Pulsations Reduction and Noise Cancelling Occurring in Power Plants"**

O.V. Tupitsyna, A.V. Vasiliev recognized by **Scientific Community** received the Governor's Award for outstanding results in Ecology and Rational Nature Management

Ecologists of Samara Polytech are experts and members of public councils and working groups at Ministries and Departments of Regional and Federal significance

Institutions involved in Research & Development and Projects



Main Partners for Research & Development and Design Works

