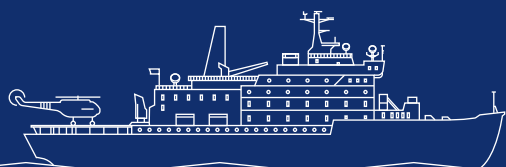




ATOMENERGOMASH

ROSATOM



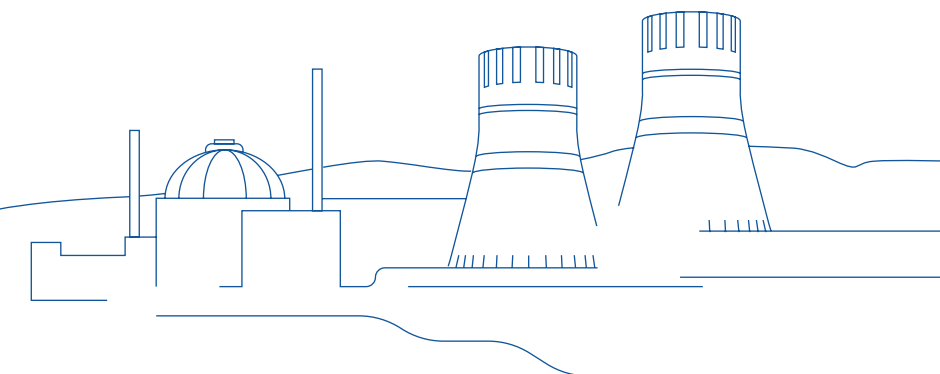
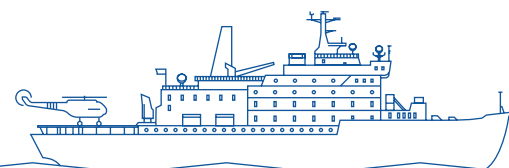
PERFORMANCE  
OF THE MECHANICAL ENGINEERING  
DIVISION IN 2022

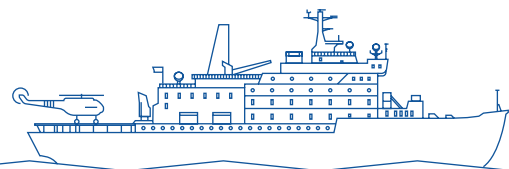


ATOMENERGOMASH  
ROSATOM

2022

**PERFORMANCE**  
OF THE MECHANICAL ENGINEERING  
DIVISION IN 2022





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GRI 2-22 MESSAGE FROM THE HEAD OF THE DIVISION

Dear colleagues,

I would like to present the reporting materials of the Mechanical Engineering Division of State Atomic Energy Corporation ROSATOM (JSC Atomenergomash) for 2022.

This report covers production, financial, social and environmental issues related to activities of the Mechanical Engineering Division of ROSATOM.

In 2022, JSC Atomenergomash’s activities were influenced by multidirectional factors. The major challenge of 2022 was global changes that caused a large-scale reorganisation of transport and financial flows, which necessitated a serious adjustment of many business processes. However, the restrictions imposed on Russia created additional conditions for the development of new business areas of

In the reporting year, in addition to work on its strategic goals—to ensure the supply of key equipment under ROSATOM’s plans, improve performance, and increase the share of new products in revenue, the Mechanical Engineering Division was actively involved in replacing imported equipment and technologies in Russia’s strategic industries. In March 2022, the first tests were completed on a new test bench for medium- and large-capacity equipment for LNG projects built by the Division at the site of JSC Efremov Institute of Electrophysical Apparatus (NII-EFA) in Saint Petersburg; the test bench is unique in Europe. The first item of equipment to be tested on the test bench was the ENK 2000/241 large-capacity cryogenic LNG pump designed to load liquefied gas from storage tanks into the tanks of an LNG carrier.



It currently has the highest performance among LNG pumps manufactured in Russia. The successful tests confirmed the reliability and operability of equipment made in Russia and validated the capabilities of ROSATOM’s Mechanical Engineering Division in the sphere of development of new high-technology products for the gas industry. JSC Atomenergomash continues to work in this area. Currently, it is producing a pilot prototype of the first Russian working fluid turboexpander with the fullest possible use of domestically produced components and the first Russian LNG loading arm, with tests scheduled for 2023.

In 2022, agreements were signed on cooperation with the largest Russian LNG producers.

The Division continued to expand its capabilities to provide the LNG sector with key domestic technologies. For example, it initiated the development of a fundamentally new LNG storage and transportation technology involving the use of independent tanks made of carbon-fibre-reinforced plastic. In addition, the project has been included in the Northern Sea Route (NSR) development plan until 2035 and supported by the interdepartmental Commission on Promoting National Interests in the Arctic under the Security Council of the Russian Federation.

Given transport and logistics constraints, the development of the NSR is particularly important. At the end of December 2022, the Government of the Russian Federation decided to build two more (the fifth and sixth) follow-on multipurpose nuclear icebreakers (MPNI) of Project 22220 in 2023–2030.

To date, the Division has shipped a total of eight RITM-200 reactors for Project 22220 icebreakers: four sets of two reactor units per icebreaker (the

flagship Arktika icebreaker and three subsequent MPNIs: Sibir, Ural, and Yakutiya). The Division’s enterprises mass-produce RITM reactor units for the needs of the nuclear fleet. The set for Yakutiya left the production site in 2022. Now, two more reactor vessels are being produced for the fourth MPNI. The shipment of the first vessel from this set is scheduled for 2023.

Being tasked to implement ROSATOM’s NPP construction plans and to expand the market supply of new products, the Division actively searches for opportunities to concentrate all the necessary production capacities in the controlled organisations. So, in 2022, the Izhora Industrial Site involved in the production of equipment for the nuclear industry.

Despite logistical difficulties, in 2022, the Division continued to perform all tasks to provide equipment for large-capacity nuclear power facilities under construction in Russia and abroad. Currently, the Division’s enterprises are working on equipment projects for a total of 22 nuclear power units at various stages, from design to delivery.

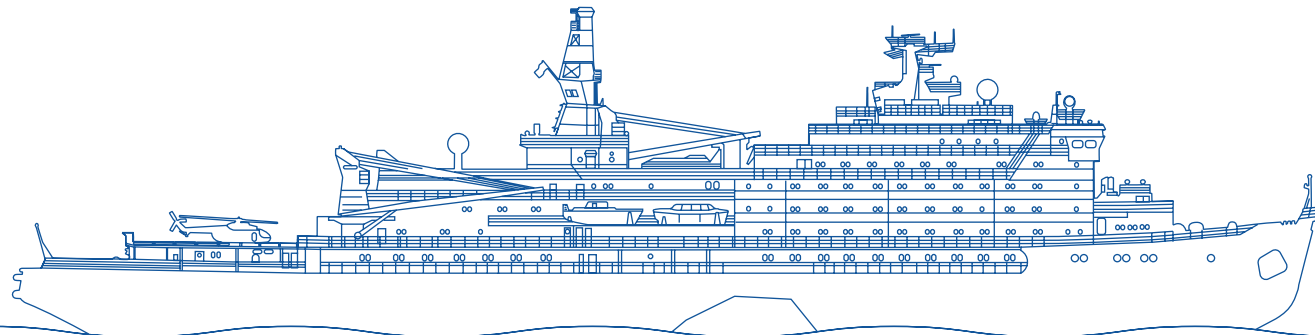
The Division continues to fulfil orders as part of the introduction of the latest nuclear technologies. In 2022, the Division’s enterprises began shipments under the project to construct the world’s first fourth-generation power unit with a BREST-OD-300 fast natural-safety reactor in Seversk. In the reporting year, an MBIR reactor vessel manufactured by the Division was shipped to the Dimitrovgrad site. After commissioning, it will be the most powerful fast neutron research unit in the world. The Division also continues to work on the project of the BN-1200M follow-on sodium-cooled fast neutron reactor.

The Division's quality improvement programme is also worth mentioning. Despite the current restrictions and refusal of some countries to cooperate, in 2022, JSC Atomenergomash was successfully recertified for compliance with the requirements of ISO 9001:2015 and ISO19443:2018.

The successful implementation of all the plans is greatly facilitated by continuous work to improve production efficiency, in particular, through digitisation. In 2022, the first results of the introduction of the domestic production equipment monitoring system (PEMS) were summed up. Now, over 400 machines are connected to the system at seven enterprises of the Division. The system made it possible to more accurately assess the equipment

load and available reserves in order to manufacture more products with the same number of machines. Process optimisation and faster interaction between different production sites through the PEMS allowed the Division to increase the productive load of machines by 4%. It is obvious that the introduction of the system should be continued both to cover more machines and to develop the functionality, including integration with the personnel positioning system, video analytics, and equipment reliability prediction systems.

Environmental and social responsibility is an integral part of JSC Atomenergomash's operations. The high technological potential allows the Division to implement solutions that make a significant con-



tribution to achieving the Sustainable Development Goals. One of the most significant projects in this area focuses on the production of equipment for waste-to-energy plants. In 2023, the first such facility is expected to be launched in the Moscow Region.

In 2022, ROSATOM's Mechanical Engineering Division reached another all-time high revenue of RUB 115 billion. The Division's portfolio of orders is traditionally big and exceeds RUB 800 billion, which shows confidence in the future workload of our enterprises.

In conclusion, I would like to thank employees of the Division for their professionalism and selfless work, as well as our customers and partners for their trust and cooperation in the new difficult conditions. Working for the benefit of the country and in the interests of customers has been and will be the top priority of JSC Atomenergomash and the Division's enterprises.



**Andrey Nikipelov**

Chief Executive Officer of JSC Atomenergomash,  
Head of the Mechanical Engineering Division<sup>1</sup>



1. In 2022.



**1** KEY RESULTS AND EVENTS  
IN THE REPORTING YEAR

**2** OVERVIEW  
OF THE DIVISION

**18 NPPs**  
SHIPMENT OF MECHANICAL  
ENGINEERING PRODUCTS  
IN 2022



# KEY RESULTS AND EVENTS IN THE REPORTING YEAR

## Key results in 2022

Indicator	2020	2021	2022	Indicator change analysis
Shipment of mechanical engineering products, number of NPPs	19	16	18	Products are delivered for NPP construction projects and for the maintenance and supply of equipment and spare parts for operating units
Share in the Russian power machine engineering industry in terms of revenue, %	42	42.2	43.2	The Division keeps its leading position in the power machine engineering market thanks to the expansion of the production of nuclear power equipment and the development of new businesses in the fuel and energy sector of the Russian Federation
Consolidated revenue, RUB billion	83	106	115	Steady revenue growth is driven by increased production and supply of products for NPP construction and service projects and the development of new nonnuclear businesses
Order portfolio, RUB billion	850	988	841	The change in the order portfolio is due to the implementation of ROSATOM's NPP construction plans and changes in the volume of the order portfolio of nonnuclear businesses
Average headcount, persons <sup>1</sup>	17,978	18,455	20,479	The increase is driven by the growing production of NPP equipment
Lost Time Injury Frequency Rate (LTIFR) <sup>2</sup>	0.07	0.07	0.19	The increase is due to the expansion of the scope of consolidation and a 25% increase in the headcount. These employees are undergoing safety onboarding supported by the implementation of the Division's internal regulations
Taxes paid, RUB billion	7.6	8.4	9.3	The increase in the amount of VAT accrued and paid to the budget is due to revenue growth and the acquisition of new assets
Occupational health and safety costs, RUB million	535	465	891	The change is due to the frequency of special assessments of working conditions and training in occupational safety and health

1. The indicator according to the APR/QPR is presented in Appendix 4.  
2. The indicator does not include the Division's foreign enterprises.

## Key events in 2022

- The Division supplied 85% of equipment for the first power unit of Akkuyu NPP.
- The Division completed the delivery of equipment for the nuclear steam generating plant for Rooppur NPP (Bangladesh) and Kudankulam NPP (India, units No. 3 and 4).
- The Division completed the delivery of the major part of equipment for the nuclear steam generating plant for unit No. 1 of Kursk NPP 2.
- The Hungarian atomic energy agency issued a license for the construction of Paks II NPP and the manufacture of the reactor vessel.
- The Division supplied a set of cooling pipelines and reinforcement grids for the innovative nuclear power unit with a BREST-OD-300 fast neutron reactor. The Division ensured the delivery of a large-sized plate with a support weight of 156 tonnes through the Northern Sea Route.
- The vessel of the MBIR fast neutron research reactor was manufactured and shipped.
- A prototype of the ENK 2000/241 large-capacity LNG pump, Russia's first pump of this class, was tested at the test bench for critical LNG production equipment at JSC Efremov Institute of Electrophysical Apparatus (NIIEFA).
- The Division signed a contract for the development, manufacture, and supply of LNG loading arms for the Baltic GCC.
- The Division signed a contract with Russia's largest natural gas producer for the preparation of documentation for CWHE using mixed refrigerants, one of the key elements of large-capacity LNG production and Russian liquefaction technology.
- As part of the improvement of production processes and the introduction of the Production Equipment Monitoring System at the Division's enterprises, 100% monitoring of production equipment and automated data collection in the workplace is provided.
- New production sites were integrated into the Division's production scope to expand production capabilities of mechanical engineering equipment and blanks made of special steels for Russian industries.



2 | OVERVIEW OF THE DIVISION

**GRI 2-1** The Mechanical Engineering Division of ROSATOM (hereinafter referred to as the Mechanical Engineering Division, the Division) is one of the leading mechanical engineering holdings in Russia and the key supplier of main and auxiliary equipment for Russian-design NPPs under construction.

**GRI 2-2**

**GRI 2-6**

The Mechanical Engineering Division is part of ROSATOM and includes engineering, design centres, major power engineering and metallurgical plants, as well as research and material science organisations.

Using competencies gained during multiple years of improving and producing nuclear energy equipment, the Company is successfully developing adjacent business areas at an accelerating pace. JSC Atomenergomash offers a range of solutions for the manufacture and supply of equipment for the nuclear and thermal power industry, the oil and gas industry, and the special steel market. Extensive production and technological capabilities of the Division’s enterprises and full control over the entire production chain enable the Division to supply its customers with high-quality reliable equipment. Thanks to well-coordinated production, JSC Atomenergomash can efficiently implement NPP construction, service and equipment modernisation projects. Equipment produced by JSC Atomenergomash ensures operations of 20% of NPPs worldwide, in almost 20 countries. All NPPs of Russian design<sup>1</sup> are equipped with JSC Atomenergomash’s products.

The Division aims to expand the range of equipment supplied, increase the capacity of production sites, promote its products on foreign and domestic markets, market products of its own design, develop new partnerships within the country.

The Division is involved in ensuring reliable supplies of equipment by providing national power machine engineering capabilities, has a complete technological production chain, from the production of special steels and metallurgical blanks to the manufacture of final equipment. The Company carries out design work both within the Division and with other suppliers of equipment for energy projects.

The Division is the main designer and single-source supplier of all marine reactor units for the multipurpose nuclear icebreakers Arktika, Sibir, Ural, Yakutiya, and Chukotka with the RITM-200 reactor unit (RU), widely regarded as the largest and most powerful icebreakers.

JSC Atomenergomash manufactures high-capacity equipment for Russian oil and gas companies. And the Division’s enterprises have been designing and producing thermal power equipment for many years: the Company supplied its products to 40% of TPPs in Russia and CIS countries. As part of the Clean Country priority project, the Division is the main producer of key process equipment for waste-to-energy plants.

1. NPPs with VVER reactors.

Key participation projects

Business area	City, country	Project
Nuclear power industry	Kurchatov, Russia	Kursk NPP
	Makarovka, Russia	Kursk NPP 2
	Zarechny, Russia	Beloyarsk NPP
	Balakovo, Russia	Balakovo NPP
	Volgodonsk, Russia	Rostov NPP
	Sosnovy Bor, Russia	Leningrad NPP
	Novovoronezh, Russia	Novovoronezh NPP
	Polyarnye Zori, Russia	Kola NPP
	Desnogorsk, Russia	Smolensk NPP
	Udomlya, Russia	Kalinin NPP
	Seversk, Russia	BREST-OD-300
	Ostrovets, Belarus	Belarusian (Ostrovets) NPP
	El Dabaa, Egypt	El Dabaa NPP
	Kudankulam, India	Kudankulam NPP
	Tianwan, China	Tianwan NPP
	Gulnar, Turkey	Akkuyu NPP
	Paks, Hungary	Paks II NPP
	Pabna, Bangladesh	Rooppur NPP
Thermal power industry	Liaoning, China	Xudabao NPP
	Svistyagino, Russia	Svistyagino WEP
	Mogutovo, Russia	Mogutovo WEP
	Timokhovo, Russia	Timokhovo WEP
	Khmetyevo, Russia	Khmetyevo WEP
	Kazan, Republic of Tatarstan, Russia	Kazan WEP
	Syktvykar, Russia	Mondi Syktvykar TPP
	Irkutsk, Russia	Irkutskenergo TPP 10
Gas and petrochemical industry	Amur Region, Russia	Amur GCC
	Perm Region, Russia	EuroChem-Usolsky potash plant
	Novokuibyshevsk, Russia	Novokuibyshevsk Refinery
	Ufa, Russia	Bashneft-Ufaneftchim
	Kaliningrad, Russia	Varnitsa, LLC
	Tobolsk, Russia	West Siberian deep hydrocarbon conversion plant
	Yamalo-Nenets Autonomous Okrug, Russia	Ob LNG Project
	Yamalo-Nenets Autonomous Okrug, Russia	Arctic LNG 2 Project
	Yamalo-Nenets Autonomous Okrug, Russia	Yamal LNG Project
	Angarsk, Russia	Angarsk Petrochemical Company
	Ust-Luga, Leningrad Region, Russia	Baltic GCC



Business area	City, country	Project
	Kstovo, Russia	LUKOIL-Nizhegorodnefteorgsintez
	Syzran, Russia	Syzran Refinery
	Nizhnekamsk, Russia	TANECO
	Sakhalin, Russia	Sakhalin 2 Project

### The Division’s position on the market

Power machine engineering helps to ensure reliable electricity supply and thus meets a basic need of the modern economy. The global power machine engineering market is influenced by various trends in the global power industry and the dynamics of the commissioning of new generating capacities.

In 2022, the global installed capacity of power plants increased by 416 GW. There is a tendency to increase the growth rate of installed capacity in the world. Since 2021, this indicator has grown by 10% and doubled compared to 2020. The 91% increase in 2022 was driven by new solar and wind power plants, whose share in the global energy balance reached 26%, which is comparable to the share of coal (28%) and gas CHPPs (24%). Hydropower and thermal power accounted for less than 10% of the total increase in installed capacity in 2022 worldwide. Southeast Asia provides more than 50% of new generating capacities of all types. The global energy sector still tends to prioritise investment in renewable energy and gradually reduce hydrocarbon consumption in electricity production.

In 2022, global electricity consumption shows a decrease in growth rates. This indicator increased by 2%, which is lower than the electricity consumption growth rate in 2021 (6%) and the average annual growth rate (2.4%) over the past 5 years. Global electricity consumption is projected to grow up to 2.7% annually until 2025, mostly thanks to the consumption in the developing economies of South and Southeast Asia. According to IEA estimates, RESs and NPPs will provide up to 90% of new capacities in the world as part of meeting the growing electricity consumption. The share of renewable energy sources in the global balance is expected to reach 35% by 2025.

There is a global trend towards resuming nuclear programmes. The bulk of the new large-capacity nuclear power units will be commissioned in Asian countries. China aims to increase electricity generation at NPPs from the current 2% to 10% by 2035. South Korea and Japan plan to revive their NPP construction programmes. The Government of India agreed on five sites for new large-capacity NPPs. In the USA, a license was issued for the construction of a commercial modular SNPP.

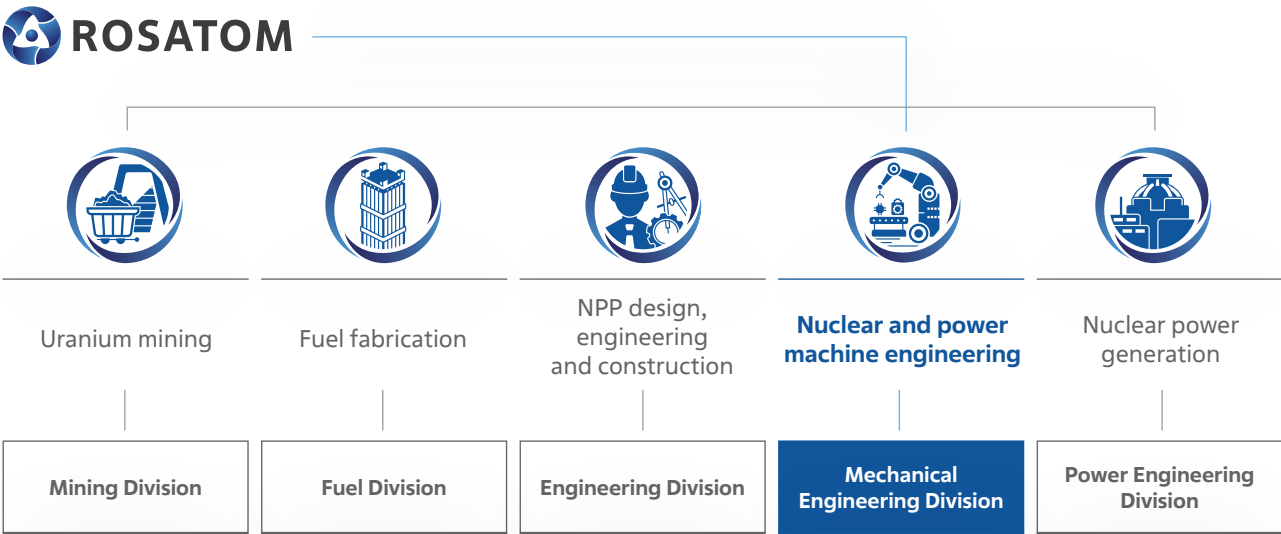
In the reporting period, the Russian market saw a relative decline in industrial output across all segments of mechanical engineering. In terms of key product groups, Russian power machine engineering has developed in different directions. In the steam turbine equipment group, there is a production decrease trend. In 2022, there was a 33.2% decline, with a 67% decrease a year earlier. In the steam generating equipment segment, a 207% rise in production in 2021 was followed by a 68.6% decline. In the gas turbine equipment segment, output increased by 43.9% following a 60% decrease in 2021. This was driven by the adaptation of the power machine engineering market after foreign producers had left Russia and other countries had imposed sanctions.

1. As at December 31, 2022.

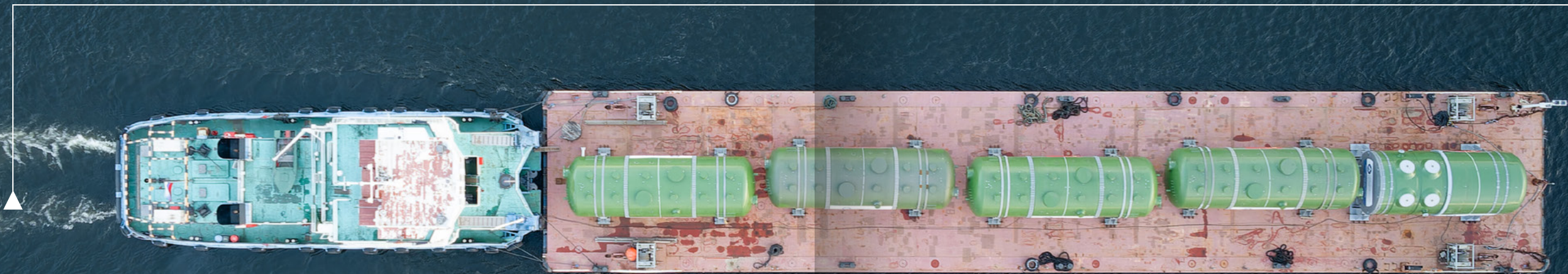
The Division is one of the largest power machine engineering companies in Russia. In 2022, the Division increased its share on the Russian power machine engineering market in terms of revenue. The core competence of the Division is the supply of full sets of reactor and turbine island equipment for nuclear power plants. In 2022, equipment produced by the Division was used at 19% of power units in terms of installed capacity.

Given that foreign suppliers have left the Russian market, this provides the Division with additional opportunities to actively develop new businesses. The Division is developing new technologies to replace imported equipment in sectors that are strategically important for the country, including domestically developed solutions for natural gas liquefaction.

### Role of the Division in the structure of ROSATOM







**3** GOVERNANCE SYSTEM

**4** INNOVATION AND DEVELOPMENT  
OF SCIENCE

**43.2%**

**SHARE IN THE RUSSIAN POWER  
MACHINE ENGINEERING INDUSTRY  
IN TERMS OF REVENUE**





### 3 | GOVERNANCE SYSTEM

- GRI 2-1 The Division builds its corporate governance system in accordance with Russian and global best practices and standards. The Company performs its current corporate governance tasks as stipulated by applicable Russian legislation regulating operations of the joint-stock company and its governing bodies, ROSATOM’s unified industry-wide methodological guidelines and related local corporate governance regulations.
- GRI 2-9
- GRI 2-10
- GRI 2-12
- GRI 2-13
- GRI 2-14 JSC Atomenergomash applies some provisions of the Corporate Governance Code recommended in Letter No. 06–52/2463 of the
- GRI 2-15
- GRI 2-16 Bank of Russia dated April 10, 2014, with due regard to the special characteristics of ROSATOM’s legal status stipulated in
- GRI 2-19
- GRI 2-20
- GRI 2-28 laws and regulations of the Russian Federation that ensure consistent management of organisations in the nuclear industry.
- GRI 2-29
- GRI 2-26
- GRI 403-5 These provisions are incorporated in a number of local regulations of the Company.

#### Key governing bodies:

- the General Meeting of Shareholders;
- the Board of Directors;
- the Chief Executive Officer.

#### Assignment mechanism

Members of the Board of Directors are elected by the General Meeting of Shareholders pursuant to the procedure provided by Federal Law on Joint-Stock Companies and JSC Atomenergomash’s Articles of Association and hold their offices until the following annual General Meeting of Shareholders. Persons elected to the Company’s Board of Directors may be re-elected an indefinite number of times. Cumulative voting is used to elect members of the Company’s Board of Directors.

#### Remuneration policy

In accordance with Clause 2 Article 64 of Federal Law on Joint-Stock Companies, Clause 14.12 of the Company’s Articles of Association, members of the Company’s Board of Directors during the period of performance of their duties may be paid remuneration and (or) reimbursed for expenses related to the performance of their functions as members of the Board of Directors of the Company upon the decision of the General Meeting of Shareholders. The amount of such remuneration and reimbursement is established by the General Meeting of Shareholders. No decisions were taken in 2022 to pay out remuneration

and/or reimburse expenses incurred by the members of JSC Atomenergomash’s Board of Directors; no remuneration or reimbursement for expenses were paid out.

Policies and other local regulations on remuneration and (or) reimbursement for expenses to members of JSC Atomenergomash’s Board of Directors have not been approved.

#### Chief Executive Officer<sup>1</sup>

In 2022, Andrey Nikipelov was the Chief Executive Officer of the Company.

A Commission was established by JSC Atomenergomash’s Order No. 33/275-p dated August 9, 2016 to comply with the corporate conduct requirements and resolve conflicts of interests at JSC Atomenergomash, which operates based on the approved Regulations.

The authorised capital of the Company is comprised by nominal value of the Company’s shares purchased by the Company’s shareholders. All shares of the Company are issued in book-entry form. Each ordinary share of the Company confers on the shareholder the same rights.

The number of preferred shares: JSC Atomenergomash’s preferred shares were not placed or offered. Preferred share issuances were not registered.

#### Corporate governance principles

JSC Atomenergomash’s current corporate governance principles are related to distributing the functions of governing bodies, increasing interaction, eliminating conflicts of interest, and specifying the responsibilities of the parties to each other.

Key corporate governance principles include the following:

- Ensuring equal and fair treatment of all shareholders when exercising their right to participate in managing the Company.
- Real provision of shareholders with the opportunity to exercise their rights and legitimate interests related to participation in the Company and protection of these rights in case of violation.
- Strategic management of the Company’s activities by the Board of Directors, determination by the Board of Directors of the basic principles and approaches to the risk management and internal control systems in the Company, effective control by the Board of Directors over the activities of the Company’s executive body. Accountability of members of the Board of Directors to the General Meeting of Shareholders of the Company.
- Effective and conscientious management of the Company’s current activities by the executive body exclusively in the interests of the Company.
- Accountability of the executive body to the Board of Directors and the General Meeting of Shareholders of the Company.
- Timely disclosure of complete and reliable information about the Company, including data about its financial position, economic indicators, ownership and management structure, to allow the shareholders

1. More details about the Chief Executive Officer of JSC Atomenergomash are given in the Reporting Materials of the Mechanical Engineering Division for 2021.

of the Company to make informed decisions. The Company's annual report, one of the most important tools for communication with shareholders and other stakeholders, contains information that allows assessing the Company's performance for the year.

- Taking into account the rights of stakeholders, including employees of the Company, as provided for by law, and encouraging active cooperation between the Company and stakeholders to increase assets, the value of the Company's shares, and create new jobs.
- Effective control over the Company's current financial and economic activities to protect the rights and legitimate interests of shareholders. Organisation of internal audit for a systematic independent assessment of the reliability and effectiveness of the risk management and internal control system, corporate governance practices of the Company.

Significant corporate actions taken by the Company in a manner that allows shareholders to receive full information about such actions timely and influence them and guarantees observance and adequate protection of their rights when performing such actions.

The Board of Directors is not informed of issues related to the economic, environmental, and social impacts, including complaints from stakeholders, since this is not provided for by the Articles of Association. Such cases did not arise in the Company's activities in 2022.

### Membership in non-profit organisations:

- All-Russian Industry Association of Employers 'The Russian Union of Employers in the Nuclear Industry, Power and Science';
- All-Russian Industry Association of Employers 'Union of Machine Builders of Russia';
- Self-Regulatory Organisation and Non-Profit Partnership 'Association of Organisations Engaged in Construction, Reconstruction, Overhaul of Nuclear Facilities «SOYUZATOMSTROY»;
- Association of Project Management Specialists and Organisations 'SOVNET Project Management Association';
- Union of Oil and Gas Equipment Manufacturers.

### Improvement of the corporate governance system

To improve its corporate governance system, the Company complies with the provisions of the Corporate Governance Code approved by the Board of Directors of the Bank of Russia on March 21, 2014, optimises the functions of its governing bodies by redistributing the competence of the Board of Directors, the General Meeting of Shareholders, and the Chief Executive Officer in the Articles of Association, which reduces the time for making management decisions. Non-operating companies are excluded from the scope of consolidation (sale, liquidation).

### Compliance and introduction of quality management systems in the Division

The quality of products manufactured by the Division's enterprises is secured by the developed and certified quality management system of the COs in accordance with the requirements of ISO 9001. In the reporting year, the required level of quality of equipment manufactured for NPPs under construction and in operation was achieved (according to the results of input control at the first presentation).

In 2022, all organisations controlled by JSC Atomenergomash continued to participate in improving the Unified Industry-Wide Quality Management System of ROSATOM (UIS-Quality), with the following extended modules added to the UIS-Quality:

- Legally significant quality documents necessary for claim work were prepared.
- Additional functionality units of the Non-Conformity Management module were implemented for one of the project.
- Management of costs due to non-conformities of products (goods, works, services) was implemented.

The effectiveness of the integrated quality management system of JSC Atomenergomash was confirmed in July 2022. The recertification audit of compliance with ISO 9001:2015, GOST R ISO 9001-2015, ISO 19443:2018, GOST R ISO 19443-2020 was conducted by the International Certification Service LLC (Russia, accredited by the Federal Accreditation Service) and KALITEST (Turkey, accredited by TÜRKAK, a full member of the IAF).

No audits were conducted by customers or supervisory authorities in 2022. Audits of product suppliers were carried out in accordance with the approved schedule of audits of the Division's suppliers and assessment of the quality management system of JSC Atomenergomash and COs for 2022–2025. The results of the audits were formalised using the UIS-Quality. Corrective measures were developed by the organisations to fix the non-conformities found. The non-conformities are eliminated on time in the UIS-Quality. JSC Atomenergomash continues to inform its employees of issues of quality assurance, technical regulation, metrology, standardisation, and safety culture (quality digest). The digest is published quarterly on JSC Atomenergomash's portal.

In the reporting year, six seminars were held for the Company's employees on the functions 'Quality Management System' and 'Safety Culture' (hereinafter, QMS and SC) to increase their involvement in the sectoral and divisional processes 'Quality Management' and 'Safety Culture.' At the seminars, employees were informed of the current QMS and SC and its impact on the effectiveness/efficiency of the organisation's processes and increasing domestic/foreign customer satisfaction.

### Communication with external stakeholders

In its activities, the Mechanical Engineering Division focuses on respect, cooperation, and the interests of stakeholders. As part of its communication policy, the Division uses various interaction formats that take into account the interests of stakeholders. In addition, the Company implements social and charity programmes on an ongoing basis. JSC Atomenergomash interacts with customers, partners, ROSATOM, divisions, employees, trade unions, public authorities, rating agencies, public and environmental organisations, expert and professional community, mass media, educational institutions. To make procurement activities more transparent, the Division publishes information for suppliers on official websites, electronic trading platforms.

JSC Atomenergomash informs the public about its activities through the media, social networks, special projects, such as PR campaigns in Moscow and the Mechanical Engineering Division's host cities and towns. In the reporting year, the Division's enterprises continued to organise public tours to their sites as part of 'industrial tourism,' allowing public access to their enterprises during the Week without Turnstiles campaign. In the reporting period, the enterprises were visited by more than 10,000 people, including schoolchildren, students of specialised universities and vocational schools undergoing internship at the enterprises, various delegations, technical teachers from leading regional schools, employees of counterparty enterprises.

The Division's approach to media relations is based on a policy of maximum transparency and openness. Press releases and notices are promptly posted on the website of JSC Atomenergomash. By the end of 2022,

the number of JSC Atomenergomash’s subscribers on social media (excluding enterprise pages) amounted to almost 11,000, an increase of 21%. In 2022, there were roughly 11,000 publications about the activities of the Division and its organisations in the Russian media. About 1,000 of these publications told about the Division’s projects and technologies in green energy, safety, and ecology.

In 2022, the Division’s marketing activities were focused on small nuclear power plants, as well as LNG technologies.

Major communication events	Description of activities
St. Petersburg International Economic Forum	Participation and presentation at the panel session ‘Foreign Competency Substitution in the Industrial Support of Russian LNG Projects.’ Signing of a Memorandum of Cooperation with PJSC Gazprom on the use of a test bench for testing technologies and equipment for medium- and large-capacity production of liquefied natural gas.
Atomexpo International Forum	As part of the SNPP Day, a round table was held on the topic ‘Floating NPPs: Mobile Nuclear Solutions for Energy Systems of the Future.’ Solutions for LNG pumps were exhibited.
11th St. Petersburg International Gas Forum	As part of the business and exhibition programme, the capabilities for manufacturing equipment for the gas industry were demonstrated. The key development stages and the primary technical solutions were shown for the first domestic LNG loading arm for a marine shipping terminal as part of an ethane-containing gas processing unit. At Gazprom’s corporate exhibition ‘Import Substitution in the Gas Industry,’ visitors could see a layout of the ENK 1750/188 submersible pump, Russia’s first large-capacity cryogenic pump.

Commitment to sustainable development principles

GRI 2-23 In the course of its operations, the Division shares ROSATOM’s commitment to the sustainable development principles and its focus on environmental, social and governance aspects of its operations.

The Division contributes to the achievement of the UN Sustainable Development Goals through its product line, its financial and economic performance and its efforts to ensure the sustainability of internal environmental, social and governance processes.

As part of its core business, the Division produces high-tech mechanical engineering equipment for the power industry and various industrial sectors. The equipment supplied and research results are an integral part of products and industrial facilities that contribute to improving the quality of human life and achieving the UN SDGs, including:

- producing key equipment for nuclear power considered in the Russian Federation a low-carbon energy source;
- producing nuclear floating power units to provide affordable energy to remote and hard-to-reach areas;
- producing equipment for environmentally friendly waste-to-energy plants;
- developing and implementing new materials that reduce energy consumption and use of resources for mechanical engineering products;

- creating solutions and units for water purification and disinfection, wastewater treatment, desalination technologies to ensure access to clean water.

Hydrogen refuelling complex

As part of the development of nuclear hydrogen energy technologies for large-scale production and consumption of hydrogen, the Division plans to assemble hydrogen refuelling complexes. According to approximate estimates, one small hydrogen refuelling complex with one column can reduce CO<sub>2</sub> emissions by about 287 tonnes per year. Thirty passenger cars can be refuelled from such a hydrogen refuelling complex daily. So, the HRC network of 2,250 complexes with three columns will allow Russia to reduce CO<sub>2</sub> emissions by about 1.9 million tonnes annually, which is about 0.1% of Russia’s total annual CO<sub>2</sub> emissions or 0.01% of global CO<sub>2</sub> emissions.

Waste-to-energy plants

Atomenergomash designs, develops, and produces key equipment for medium and large-capacity thermal power facilities. As part of the construction of environmentally friendly waste-to-energy plants, Atomenergomash manufactures and supplies full sets of boiler and turbine island equipment. Waste-to-energy plants are the best alternative to disposal at a landfill, as they provide efficient recycling of waste unsuitable for reuse into energy, contributing to a decrease in municipal waste disposal. Such a comprehensive waste management solution ensures efficient resource saving and sustainable development of regional ecosystems. The plant under construction in the Moscow Region can provide electricity to about 250,000 people or a city with 100,000 residents.

The Division manages its operations in such a way as to support comprehensive economic, social and environmental development of its organisations and the regions where they are located. The Division pursues a socially-oriented policy that meets the fundamental needs of the residents in its host towns and cities without compromising the interests of future generations.

The Division makes efforts to ensure the sustainable development of the company, non-harm, and positive impacts on the environment and the regions of operation. JSC Atomenergomash adopted a set of documents regulating some aspects of sustainable development activities:

- the Uniform Industry-Wide Sustainable Development Policy;
- the Uniform Industry-Wide Sustainable Development Guidelines;
- the Uniform Industry-Wide Public Reporting Policy;
- the Uniform Industry-Wide Environmental Policy;
- the Uniform Industry-Wide Social Policy;
- the Uniform Industry-Wide Human Rights Policy;
- the Uniform Industry-Wide Anti-Corruption Policy;
- the Uniform Industrial Procurement Standard;
- the Code of Ethics and Conduct of ROSATOM’s Employees determining the standards and rules of ethical behaviour of employees.

In 2022, JSC Atomenergomash continued to form a sustainable development management system. To implement unified approaches to sustainable development, the Division appointed responsible coordinators.



To ensure compliance of the activities of ROSATOM and its organisations with the sustainable development principles determined by the UN Global Compact and to increase the industry-wide maturity in sustainable development, in the reporting year, the Division conducted internal industry certification of the sustainability of its business areas in terms of environmental, social and managerial aspects. As part of the industry-wide certification, there are plans to assess sustainability of other business areas with subsequent implementation of plans and actions aimed at improving the Division's products and businesses.

To improve sustainable development management, in 2022, JSC Atomenergomash conducted a pilot ESG assessment of the Division's key organisations. Based on the assessment results, potential ESG risks were evaluated, and their management levels were determined. The results of the assessment are included in mid- and long-term plans to increase the sustainability of the Division's activities.

To enhance sustainable development engagement and awareness, the Division trains its employees. In the reporting year, employees completed 3,648 person-courses on sustainable development on the Record-mobile industry-wide platform. Nine people completed in-person training.

The Division attaches great importance to environmental safety in affected areas, sustainable use of natural resources and energy. It is introducing automated utility metering systems and energy efficiency methodology. JSC Atomenergomash's enterprises are taking measures to reduce hazard class I mercury-containing waste by replacing fluorescent light bulbs with energy-saving LED light bulbs. The Division is introducing waste sorting.

Another important part of the Division's sustainable development is occupational health and safety events, support for employees and their families, corporate social programmes, and fair wages and salaries. The Mechanical Engineering Division's enterprises are major taxpayers contributing to budgets of the regions of operation. In some Russian regions, the Division donates funds to municipalities for social and economic development and urban improvement programmes.

For details on the related activities conducted by the Division in 2022, see Sections 13. Safety of Operations, 8. Developing the Human Capital.



## Responsibility for the Division's products at all stages of their life cycle

The Division is involved in development of products at all stages of their life cycle, such as documentation formation, quality control at production stages, installation and commissioning, and input control. Under service contracts, the equipment is maintained at the operational stage until its decommissioning. The Division has the following order of responsibility:

- The technical process includes the improved principles of the ROSATOM Production System (RPS).
- Control over the development of design documentation by developers of engineering designs, Customers, General Contractors, Authorised Organisations.
- Equipment quality control at all stages of manufacturing. For this purpose, X-ray control chambers, a chamber for hydraulic testing, laboratories for destructive and non-destructive testing are created at production facilities.
- Participation of the company's representatives in the installation and commissioning of equipment at NPP sites.
- Warranty obligations for the equipment supplied.

To minimise the environmental impact, JSC Atomenergomash's enterprises are constantly improving their equipment, as well as monitoring and diagnostic systems for reactor units, extending the life of NPPs.

## Anti-Corruption

The principles of business ethics underlie the activities of the Division. Employees are aware of the importance of adherence to high ethical standards, including honesty and conscientiousness in performing work, interacting with partners and suppliers. JSC Atomenergomash and controlled organisations have established Commissions for Compliance with the Requirements for Corporate Conduct and Conflict of Interest Resolution. The following documents were developed and adopted:

- The 2021–2024 Anti-Corruption Plan containing a list of priority activities aimed at implementing the anti-corruption plan of ROSATOM and its organisations for the period from 2021 through 2024.
- The Uniform Industry-Wide Anti-Corruption Policy of ROSATOM and Its Organisations. The policy sets out the basic anti-corruption principles, approaches and tools.
- The Code of Ethics and Conduct of ROSATOM's Employees determining the standards and rules of ethical behaviour of employees.
- Unified Industry-Wide Guidelines on Professional Development for People Whose Job Duties Include Anti-Corruption Activities.
- A unified industry-wide procedure for the handling of Hotline messages in ROSATOM and its organisations.
- Documents regulating the procedure for taking measures to identify and eliminate the causes and conditions conducive to conflicts of interest, for reporting cases of inducement to commit a corruption offence, for reporting the receipt of gifts and hospitality, and for interacting with law-enforcement authorities.
- An annually updated List of Positions requiring employees to provide information about their income, property and property obligations, as well as information about income, property and property

obligations of their spouse and minor children.

- Uniform industry-wide guidelines on assistance to authorised representatives of control (supervisory) and law enforcement agencies conducting inspections of the anti-corruption activities of ROSATOM and its organisations.

The asset protection units of controlled organisations annually monitor compliance of the anti-corruption local regulations and their application and the anti-corruption policy of ROSATOM's organisations with the anti-corruption legislation.

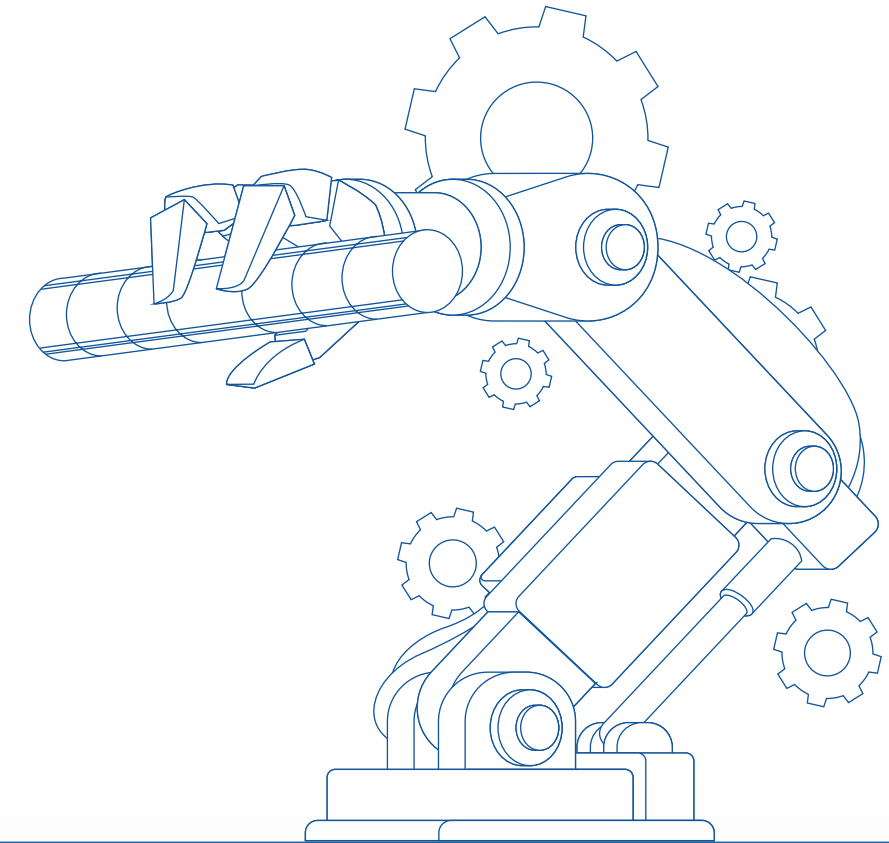
In 2022, JSC Atomenergomash and its controlled organisations took anti-corruption preventive measures in accordance with Federal Law No. 273-FZ on Combating Corruption dated December 25, 2008 (version of December 29, 2022), as well as the National Anti-Corruption Plan for 2021-2024.

Employees of the asset protection units of controlled organisations completed anti-corruption trainings and advanced training courses under the programmes of the Autonomous Non-Profit Organisation of Extended Education 'ROSATOM's Technical Academy' on the following topics:

- the activities of departments of industry organisations that ensure economic security, asset protection, and anti-corruption when preventing corruption and other offenses in procurement procedures and contract conditions;
- countering corruption and other offenses in industry organisations;
- compliance by employees of ROSATOM's organisations with anti-corruption restrictions, prohibitions, and requirements.

All employees of the asset protection units of the Mechanical Engineering Division who are responsible for the prevention of corruption and other offenses were trained under the above programmes and received related certificates. Eight employees of the managing company were trained under the advanced anti-corruption training programme.

There were no reports of corruption in the specified period via the dedicated Hotline channel. There were no confirmed cases of non-renewal or termination of contracts with business partners due to corruption-related violations in the reporting period.



In 2022, the Mechanical Engineering Division carried out scientific development and innovation activities aimed at further improving the competitiveness of the Division, strengthening its position in the global power machine engineering market, maintaining the established level of safety and quality of equipment, meeting contractual delivery deadlines.

### Key results

New equipment was used to introduce resource-efficient technologies in the production of vessel reactor equipment with RITM-200 and RITM-400 power units, heat exchangers for fast neutron reactor units with liquid metal coolant. The equipment made it possible to reduce the consumption of natural gas in processes by 245,016 m<sup>3</sup> per year.

Work was carried out to further improve the VVER technology using new areas of technology development (VVER-SKD, spectral regulation, etc.). This technology is fully competitive in the global NPP construction market.

Certification was prepared for a new RCP vessel made with anticorrosive cladding of the inner surface of the vessel.

The Division conducted R&D, development and adjustment of design documentation, as well as substantiating R&D on the RCP for the BREST-OD-300 reactor unit, under which an RCP-1720 prototype should be developed and delivered. According to an additional agreement, the manufacture of the separation seal section previously scheduled to 2021 was postponed to 2022. In 2022, a column for installing a pump unit with a model frequency converter and the separation seal section were manufactured.

The production of prototype batches of pipes and pipe blanks was completed for structural elements of NPU with lead coolant.

To substitute imported products, a technology for manufacturing the separation part of superheater separators for NPPs with VVER reactors was created. This is an unparalleled solution in Russia.

To replace imported production equipment, a cutting tool for drilling deep holes in critical heat exchangers was created. This tool is unique in Russia.

The following devices were created: a device for monitoring the cylindrical surface of fuel pellets, a device for monitoring the diameter of fuel pellets. The device for monitoring the cylindrical surface of fuel pellets is designed to detect defects on the cylindrical surface of fuel pellets. Pellets that do not meet the criteria specified in the technical requirements are removed from the general flow and placed in a special container for return to the input of the fabrication line. The defect detection and measurement method is based on 3D scanning of the cylindrical surface of pellets.

To improve the quality of training of scientific personnel in collaboration with National Research Nuclear University MEPhI, the Power Machine Engineering basic department continues to train masters in Design and Technological Support of Mechanical Engineering Enterprises.

### Plans for 2023:

- To continue implementing investment R&D projects and develop innovative technologies. To introduce import-substituting IT technologies throughout the life cycle of products.
- To complete developing documentation and start manufacturing equipment as part of R&D on the layout of equipment for the processing line for remote production of fuel elements with uranium-plutonium fuel for the VVER-1200 reactor; to complete installing and commissioning equipment for the laboratory of mechatronics and robotics; to conduct the first R&D in the laboratory.
- To train employees in the strategic area of hydrogen energy and to continue conducting R&D to develop process equipment for hydrogen production; to develop a hydrogen refuelling complex.
- To develop an engineering design for the main handling equipment for SNPP based on the SHELF-M RU.
- To conduct R&D to substantiate the use of structural materials for energy and petrochemical equipment. To learn how to produce equipment for additive manufacturing of parts using domestic elements.
- To develop and manufacture a full-scale prototype/layout of a metering device for the processing line for remote production of uranium-plutonium fuel pellets for a VVER reactor based on components and Russian software as part of import substitution. To develop a unit for grinding, compacting and granulating powders  $UO_2$   $U_3O_8$ ; to create equipment for washing and cutting fuel tubes.
- To develop a process flow diagram for processing SNF of fast neutron reactors and RW conditioning; to develop a continuous dissolution unit. To develop draft and engineering designs of a non-technological LRW processing unit.
- To develop a manufacturing technology for ball valves for the oil and gas industry, track valves and throttle control valves for the nuclear industry.



5

CONTRIBUTION TO THE  
TECHNOLOGICAL SOVEREIGNTY.  
NEW PRODUCTS AND BUSINESSES

6

SAFETY OF OPERATIONS

RUB 115  
BILLION (+ 18%)  
CONSOLIDATED REVENUE



## CONTRIBUTION TO THE TECHNOLOGICAL SOVEREIGNTY. NEW PRODUCTS AND BUSINESSES

**GRI 2-6** JSC Atomenergomash has extensive capabilities for equipment manufacture and technologies for various sectors of the domestic industry. In addition to nuclear engineering, the Division contributes to ensuring reliable supplies of equipment for energy projects by providing national power machine engineering capabilities as they have smooth-running fully integrated production facilities for the manufacture of large-sized equipment for the gas, oil, chemical, metals and thermal power industries.

### Nuclear power industry

The Division is a reference supplier of a wide range of equipment for reactor and turbine islands of NPPs. In the reporting year, the Division's enterprises produced and shipped mechanical engineering products to 18 NPPs on schedule.

The volume and geography of nuclear power markets are determined by ROSATOM's plans to build new NPP units in Russia and abroad.

Key events in the business area in 2022:

- As part of the audit of the enterprises of JSC Atomenergomash, a certificate was issued for the manufacture of equipment for Paks II NPP, and a permit was obtained for the manufacture of the reactor vessel for the plant.
- A permit was obtained to start manufacturing blanks for the reactor vessel following an inspection conducted by JSC ASE, Paks-II.Ltd.
- The enterprises of JSC Atomenergomash received certificates for the manufacture of equipment and the development of documentation. In addition, documents were submitted to obtain a license for the manufacture of the upper block, a fence, a block of protective pipes, and an internal shaft.
- The supply of the bulk of NSGP equipment was completed for power unit No. 1 of Kursk NPP 2. Equipment is being manufactured for power unit No. 2.
- The Division supplied a set of cooling pipelines, reinforcement grids for a power unit with a BREST-OD-300 reactor. The Division delivered a large-sized plate with a support weight of 156 tonnes through the Northern Sea Route.

### Thermal power industry

Thanks to the capabilities of its enterprises, the Division can be involved in CHPP construction projects at all stages from design to post-sale services. In 2022, the Division's key activities in the thermal power industry were focused on the Energy from Waste pilot project, which provides for the construction of four plants in the Moscow Region capable of disposing of 700,000 tonnes of waste per year and producing 70 MW of electricity per plant, and a plant in the Republic of Tatarstan with a capacity of 490,000 tonnes and 49 MW of electricity.

As part of the Energy from Waste project, technological transfer was carried out, and new technologies were localised in Russia. They include an air-condensing unit, boiler equipment, and special means of protecting boiler elements by applying a low-carbon alloy of nickel, chromium and molybdenum Inconel 625. Such

technologies are advanced, unique in Russia and will also be used in the manufacturing of products not only in the nuclear industry but also in other sectors.

### Gas and petrochemical industry

JSC Atomenergomash's enterprises produce a wide variety of process equipment for processing and production of oil, gas and gas condensate, process equipment for refineries. The Division continued to intensively explore the possibilities of supplying a wide range of equipment as part of the import substitution programme.

In the reporting period, a prototype of the ENK 2000/241 large-capacity LNG pump was tested for the Arctic LNG 2 project at the test bench for critical LNG production equipment at JSC Efremov Institute of Electrophysical Apparatus (NIEFA). In 2022, contracts were signed for the development, manufacture and supply of LNG loading arms for the Baltic GCC, as well as with Russia's largest natural gas producer for the preparation of documentation for a set of CWHE using mixed refrigerants.

### Special steels

This business area comprises production and R&D assets specialising in the design of new structural materials and technologies and in the manufacture of finished products for the power industry, the metals industry and mechanical engineering.

The Special Steels business area is represented by the AEM-Spetsstal metallurgical plant, a branch of JSC AEM-Technology. In 2022, the enterprise has become an operating production site of AEM-Technology. The company specialises in the production of metallurgical blanks and rolled sheets made of steels with special properties for power machine engineering, metallurgy, and general mechanical engineering.

The business area is aimed at providing the Russian market with large blanks, forgings of special steels. In 2022, the demand for domestic products in this segment has grown significantly.

Key events in the business area in 2022:

- Steel blanks and rolled sheets were manufactured and delivered for foreign nuclear power plants under construction.
- The Division is involved in the implementation of the state programme of modernisation of the thermal power industry in terms of providing blanks for turbine and generator rotors. 55 rotors were delivered in the reporting period.
- Contracts were signed for the production of discs, rings and other products with a total weight of 1,800 tonnes for the GT-170 and GT-65 projects, stationary gas turbine units intended for technical reequipment of operating power plants and construction of new ones. Previously, foreign-made products were used in such projects.
- A contract was concluded for the supply of blanks for the manufacture of gas pipeline compressors, as well as blanks and the construction of a multipurpose fast neutron research reactor (MBIR).
- A contract was concluded for the supply of a support roll for the 5000 sheet rolling mill. The metallurgical enterprise developed the technology of production of solid-forged support rolls in 2017 and 2021, when two similar products were produced.
- Contracts were signed for the supply of forgings for die tooling of forging and pressing equipment.





## Contribution to the technological sovereignty

### NPP turbine islands

The Division is developing its capabilities in the design of turbine islands with Arabelle turbines and the design of licensed equipment that forms part of the turbine islands; it adapts the documentation of foreign suppliers to align it with Russian standards and assists industry enterprises in organising the manufacture of licensed equipment.

JSC ZiO-Podolsk has adopted unique technologies for mechanical assembly of equipment for the turbine island with VVER-1200 reactors for Akkuyu NPP (Turkey).

The following technologies have been developed and introduced as part of project implementation:

- equipment manufacture for a low-speed steam turbine island for NPPs with VVER-1200 and VVER-TOI reactors;
- equipment manufacture for a high-speed steam turbine island for NPPs with VVER-1000 and VVER-1200 reactors, including unique technologies for the drilling of deep holes in SHS, HPH and LPH vessels and for the press-fitting of heat exchange tubes into them;
- manufacture of SHSs with cross-fin tubes.

The technologies under development include:

- equipment manufacture for a turbine island for the BREST-OD-300 pilot power unit;
- equipment manufacture for the BN-1200M RU with a sodium-cooled fast neutron reactor, including unique technologies for the press-fitting of heat exchange tubes into reactor vessels with a high-pressure liquid jet.

### Hydrogen energy

#### A nuclear power engineering facility with HTGR for large-scale environmentally friendly production of hydrogen from water and natural gas

The global trend towards decarbonisation and carbon neutrality in energy supply for industry, transport and utilities can be supported through the development of hydrogen energy. The Division is developing a nuclear power engineering facility (NPEF) based on a modular high-temperature gas-cooled reactor (HTGR) using steam methane reforming technology. The project involves the implementation of large-scale environmentally friendly hydrogen production.

NPEFs can make a significant contribution to large-scale hydrogen production, replacing fossil fuels with high-temperature heat from the HTGR, which will reduce methane consumption compared to conventional processes and prevent emissions of methane combustion products into the atmosphere. The use of energy from nuclear reactors is one of the main areas of focus in the global transition to hydrogen energy.

In order to implement the project to develop a hydrogen production unit, which is a chemical processing facility forming part of the NPEF with an HTGR, The Division has signed a contract for the development of an engineering design for steam and steam-oxygen reforming reactors, as well as a steam/gas mixture heater (recuperator).

## Digitisation

### Replacing imported software tools and services for product life cycle management and process control

A project has been launched to replace imported solutions for an automated information system for requirements, change and configuration management (AIS RCCM). The information system makes it possible to manage engineering information (the regulatory framework, project requirements, technical documentation) throughout the life cycle of supplied equipment, track data versions, establish relationships, configure access rights, etc. The AIS RCCM is an integrated information environment of the Division enabling customers and manufacturers to share technical data.

Digitisation of engineering information management processes can help to speed up the implementation of ongoing projects and significantly improve their quality. In addition, this approach is mandatory for the implementation of certain current overseas NPP construction projects.

### Weld cladding technologies

JSC Experimental and Design Organisation GIDROPRESS has made a calculation that has helped to validate the 'leak-before-break' (LBB) concept by eliminating the intermediate weld at the junction of the main coolant line (MCL) and the reactor coolant pump (RCP). The application of this approach in design and the selection of materials prevents the complete destruction of a component with a through-wall crack without a pre-existing stable leak, which can be detected before the crack becomes critical in terms of instability.

The spherical body of the RCP, like the MCL, is to be made of 10GN2MFA grade metal with internal weld overlay cladding. The switch to a new metal for the RCP body has been necessitated by the introduction of requirements for the application of the LBB concept in Russian and international scientific and technical documentation. Certification tests of 10GN2MFA steel have shown that its properties are highly stable: its impact strength and mechanical characteristics do not change significantly after prolonged exposure and meet the relevant requirements.

For the weld cladding of the inner spherical surface of the RCP sphere body, an overlay welding machine was purchased and was put into pilot operation in the Petrozavodskmash branch of JSC AEM-Technology at the end of 2022.

### New pump type (RCP-1753)

JSC CDBMB has successfully completed life tests (with a total duration of 5,000 hours) of the prototype of a new type of pump unit, RCP-1753, developed using cutting-edge technologies. Its main feature is the water lubrication system for all pump and electric motor components, which eliminates the use of oil in the reactor compartment, thus significantly improving the fire safety of the reactor unit and the NPP as a whole.

The purpose of the life tests was to confirm the reliability of the RCP-1753 pump during continuous operation and to verify the possibility of its shutdown for 72 hours under conditions that fully simulate an emergency loss of power at an NPP power unit.

This design has a number of advantages and improved characteristics compared to previous types of pump units, especially in terms of reliability and efficiency, and is unique in the world.

Large-capacity LNG equipment

In the reporting period, Europe’s first and the world’s third test bench for critical liquefied natural gas equipment was put into operation. The development of a line of LNG pumps was initiated; in addition, a project was launched to develop and manufacture LNG loading arms and spiral heat exchangers for LNG production using mixed refrigerants. The development of equipment for the domestically developed Arctic Cascade 2 natural gas liquefaction process was started.

Plans and objectives for 2023:

- To increase revenue from new products and sales in foreign markets.
- To carry out existing contracts and develop cooperation with foreign companies and industrial partners.
- To consolidate the Division’s position in target markets.
- To expand the range of equipment supplied by the Division and its sales footprint.

Nuclear power industry:

- To ensure the supply of key equipment and perform work as part of NPP construction.
- To assess the possibility for the Division to manufacture NPP equipment previously produced by enterprises outside the industry: multi-stud tensioners for main reactor joints and flange connectors of steam generators; inspection cavity equipment and embedded parts; main steam valve units; storage pool racks (for sealed fuel storage) and storage racks for fuel assemblies (for fresh fuel).
- To increase the volume of servicing contracts.
- To explore the possibility of supplying a wide range of equipment as part of the import substitution programme.

Gas and petrochemical industry:

- To produce and supply LNG<sup>1</sup> pumps for the Arctic LNG 2 and Baltic GCC<sup>2</sup> projects, produce and test pilot cryogenic LNG pumps for gas carriers.
- To implement the project to develop and manufacture LNG loading arms for the Baltic GCC.
- To implement the project to develop and manufacture coil-wound heat exchangers for LNG production with mixed refrigerants for process lines supported by gravity-based structures (GBSs).
- To implement the project to develop and manufacture ethane evaporators for the Arctic Cascade 2 process.

Thermal power industry:

- To complete the supply of equipment for waste-to-energy plants in the Moscow Region and prepare the first two plants for commissioning.
- To develop the project to build a municipal waste incineration plant in the Republic of Tatarstan.
- To participate in tenders for the supply of equipment as part of the programme to upgrade thermal power facilities and for new construction projects.

1. Liquefied natural gas.  
2. Gas Chemical Complex.

Special steels:

- To manufacture and supply steel blanks and rolled sheets for foreign nuclear power plants under construction.
- To increase the supply of turbine and generator rotor blanks as part of the Russian thermal power industry modernisation programme.
- To expand the supply of discs and other products made of special steels for stationary large-capacity gas turbine units for the thermal power industry.
- To conduct R&D to develop technology for the manufacture of compressor and turbine blanks in order to ensure the subsequent supply of blanks for Russian-made follow-on gas turbine engines.
- To develop supplies of rolled steel products for Russian metallurgical plants as part of import substitution.



## 6 | SAFETY OF OPERATIONS

GRI 2-23  
GRI 2-24  
GRI 2-25  
GRI 2-26  
GRI 403-1  
GRI 403-2  
GRI 403-3  
GRI 403-7  
GRI 403-8  
GRI 403-9  
GRI 403-10

### Occupational health and safety

One of the Division’s priorities is to reduce the number of accidents, incidents, fatalities and injuries. The Company is fully aware of its responsibility towards its employees, their families, and towards society as a whole and, accordingly, seeks to provide the most favourable and comfortable working conditions.

The Division’s enterprises comply with all industrial safety and occupational health and safety requirements. Performance in this area is assessed through the Lost Time Injury Frequency Rate (LTIFR) KPI. In the reporting year, it stood at 0.19, with the target of 0.36. Industrial injuries were not completely eliminated. There were 7 injuries, including two fatal injuries and one serious injury, at the enterprises<sup>1</sup> of the Mechanical Engineering Division. In the reporting year, the injuries were caused mainly by the risks identified earlier during the occupational risk assessment, namely the impact of moving elements of process equipment.

To prevent injuries and occupational diseases, the Division’s enterprises take preventive measures stipulated by local regulations. Some enterprises have undergone certification to the ISO 45001 international standard stipulating requirements for an occupational health and safety management system. In the reporting year, no occupational diseases were registered in the organisations of the Mechanical Engineering Division.

#### Workplace injuries and occupational diseases

Indicator	Gender	2020	2021	2022
Number of injuries in the Division, total	male	2	2	5
	female	0	0	2
Days lost because of injuries	Total	10	119	457
Occupational diseases	male	1	0	0
	female	0	0	0
Fatalities	male	0	0	2
	female	0	0	0
LTIFR	Total	0.07	0.07	0.19

The Division’s enterprises continue to actively invest in occupational health and safety activities. In 2022, occupational health and safety costs totalled RUB 890.5 million.

#### Occupational health and safety costs (RUB million)

2020	2021	2022
535.1	464.9	890.5

1. They carry out their occupational health and safety activities according to Russian legislation, regardless of their location, if they are not economic entities controlled by other states.

All employees working in hazardous working conditions (5,805 people) regularly undergo periodic medical examinations and are entitled to extra medical examinations.

#### Number of employees working in hazardous working conditions (persons)

2020	2021	2022
4,860	4,846	5,805

When entering into contractual relations, JSC Atomenergomash signs an occupational health and safety agreement with contractors, distributing occupational health and safety duties and rights. The requirements emphasise the mandatory compliance with laws, ROSATOM’s orders, and local occupational health and safety regulations of JSC Atomenergomash. An occupational health and safety agreement is an integral part of every service contract.

### Environmental management

For many years, the Division’s enterprises have been implementing a well-considered and responsible environmental and radiation safety policy. They focus on sustainable development of the nuclear industry and are fully aware of their responsibility towards society for environmental preservation and sustainability. In the course of its operations, JSC Atomenergomash adheres to the environmental policy approved by the order of its Chief Executive Officer. Provisions of the environmental policy are mandatory for all employees of the Division.

As part of implementing foreign projects and enhancing environmental responsibility, JSC Atomenergomash and its controlled organisations introduced environmental management systems and received certificates of conformity to ISO 14001.

Every year, the Division’s enterprises assess environmental aspects and impacts and determine so-called reference points related to increased environmental risks. For critical risks and rising environmental impacts, they set environmental targets and develop measures to meet them.

An important priority is to minimise the negative environmental impact of nuclear facilities. As part of their large-scale projects, the Division’s enterprises incur costs related to measures aimed at preventing and minimising the environmental impact and to the operation of the environmental management system. In 2022, the total environmental costs exceeded RUB 334 million.

#### Expenses for prevention of the environmental impact and for the environmental management system (RUB million)

2020	2021	2022	2023 (estimated)
169.382	184.48	334.11	351.449

The Division’s enterprises regularly undertake initiatives to reduce the emission of pollutants to air and water. As part of these initiatives, the following measures are implemented on the premises of the enterprises:

- industrial environmental control and monitoring of pollutant emissions into the atmosphere;
- monitoring of compliance with standards and the requirements of environmental legislation;
- pollutant monitoring in buffer areas;
- maintenance, servicing and cleaning of gas scrubbers.

GRI 302-1  
GRI 302-4  
GRI 303-3  
GRI 303-4  
GRI 305-1  
GRI 305-6  
GRI 305-7  
GRI 306-2  
GRI 306-3  
GRI 306-4  
GRI 306-5



Energy efficiency

Mechanical engineering enterprises need an uninterrupted and efficient energy supply for the production process. Energy is needed for the operation of machine tools, heating and lighting in buildings, as well as for heat treatment of finished products and blanks.

Energy consumption ('000 GJ)

2020	2021	2022				2023 (estimated)
		Heat	Electricity	Gas	Total	
5,216.2	5,106.9	920.1	1,602.8	7,233.4	9,756.2	9,755.1

To assess the benefits from measures to improve energy efficiency, a differentiated target is set in the Division for the reduction in the consumption of resources.

Energy savings ('000 GJ)<sup>1</sup>

2020	2021	2022			
		Heat	Electricity	Gas	Total
481.9	-14.9	332.3	-51.2	182.8	463.8

Water use

Water resources are required for the business operations of the enterprises and are used in industrial processes (in cooling / heating systems, when checking whether products are leakproof, as part of process fluids). Pipelines, flotators, tanks of treatment facilities for industrial wastewater containing petroleum products and mechanical impurities are flushed to increase the efficiency of industrial wastewater treatment. Compared to 2021, water consumption grew due to new assets included in the scope of consolidation.

Water consumption ('000 m³)

Source	2020	2021	2022
Municipal water supply	622.4	871	1,438.133
Wastewater	980.8	951.6	148.641
Groundwater	328	361.7	206.76
Surface water	969.3	972.8	142.253
TOTAL	2,900.5	3,157.2	1,935.7

1. 2020 is the base year.

Total water withdrawal ('000 m³)

Source	2020	2021	2022
Municipal water supply	214.4	162.2	1,515.8
Wastewater	2.3	2.7	0
Groundwater	0.22	0.23	207
Surface water	0	0	0
Fresh surface water, including rivers, marshes and lakes	2.906170	2.0	2,750
TOTAL	219.8656	167.1	4,470

Volume of recycled and reused water

Source	2020	2021	2022
Total volume of recycled and reused water (million m³)	9.29	9.76	28.2
Water withdrawal ('000 m³) (% of recycled and reused water)	566.17	634.87	491.01
Share of recycled and reused water in water withdrawal (%)	6.09	6.51	1.7
TOTAL	575.46	644.62	519.23

Wastewater discharges ('000 m³):

Destination	2020	2021	2022
Municipal sewerage systems	2,040.902	2,156.933	2,087.89
Surface water	295.7	296.6	207.50
TOTAL	2,219.102	2,340.343	2,295.40

Water category	2020	2021	2022
Clean water compliant with regulatory requirements	0	0	0.00
Treated wastewater compliant with regulatory requirements	40.275	47.607	49.07
Contaminated wastewater	1,909.948	2,004.101	1,962.80
TOTAL	1,950.223	2,051.708	2,011.46

Greenhouse gas emissions

As for estimated greenhouse gas emissions, in 2022, the Division participated in the industry-wide pilot calculation of greenhouse gas emissions in accordance with international methodologies (Scope 1 and Scope 2) conducted by ROSATOM. Cumulative GHG emission estimates are presented in section 1.2 'Sustainable Development Management' of ROSATOM's report for 2022. The reporting of GHG emission data by division is expected from 2023, when an industry-wide GHG emission management system is implemented.

Emissions of pollutants

In accordance with Russian legislation, enterprises develop draft standards for waste generation and disposal limits, as well as draft maximum allowable emission targets. As a result, the enterprises receive documents for the disposal of production and consumption waste and permits for the emission of pollutants. The Division’s enterprises regularly undertake initiatives to reduce the emission of pollutants. Ozone-depleting substances were not exported/imported in the reporting year.

Emissions of ozone-depleting substances (tonnes)<sup>1</sup>

Substance	2020	2021	2022 (target)	2022 (actual)
Tetrachloromethane	0.032	0.03	0	0
Chlorodifluoromethane (Freon 22)	0.906	0.906	0.907	0.906
Tetrafluoroethane	0.019	0.019	0.019	0.019

As part of the action plan to minimise ROSATOM’s environmental impact until 2025, in the reporting period, emissions of pollutants into the atmosphere were reduced by up to 99.5% by installing three cantilever exhaust devices at the welding site of the building.

As for the planned measures to reduce the enterprises’ emissions of pollutants, the Division implements the following tasks: modernisation and commissioning of new gas scrubbers, development and implementation of environmental efficiency improvement programmes, reduction of boiler fuel consumption by 62,320.8 m³ per year and emissions of pollutants in the atmosphere by 0.1950 tonnes per year.

Pollutant emissions into the atmosphere (tonnes)

Pollutant	2020	2021	2022 (target)	2022 (actual) <sup>2</sup>
NO <sub>x</sub>	349.849	314.371	400.87	403.534
SO <sub>x</sub>	30.702	20.241	7.302	6.538
Volatile organic compounds (VOCs)	87.351	82.253	94.331	101.5640
Hazardous air pollutants (HAPs)	0.124	0.12	0.11	0.02
Particulate matter (PM)	79.497	75.817	73.657	133.078
Other	189.997	156.588	170.764	236.92

Waste management

Waste sorting has been introduced (this involves collecting waste paper, cardboard, polyethylene). The enterprises are replacing mercury-containing light bulbs with LED light bulbs, which will reduce hazard class I waste. Oil transformers have been replaced with dry-type equipment to reduce the risk of damage to the soil due to transformer oil spills and leaks in case of breakdown.

1. CFC-11 equivalent.  
2. The increase in emissions of pollutants into the atmosphere in the reporting year, as well as in the estimations for 2023, is due to the updating of the inventory of emissions of pollutants into the atmosphere and their sources with an overall increase in the utilisation of production capacities.

Total weight of waste (tonnes)

Waste	2020	2021	2022 (target)	2022 (actual)
Hazardous	5,009.112	5,066.065	6,276.849	12,877.617
Non-hazardous	32,944.308	30,029.954	17,010.859	21,638.107
TOTAL	37,953.42	35,096.019	23,287.708	34,515.724

The main waste processing methods used by the Division’s enterprises include reuse and disposal at a landfill.

Share of waste by disposal method

Disposal method	Volume of waste (tonnes)	Share of waste (%)
Reuse	8,717.768	52.7
Disposal at a landfill	4,307.253	26.1
On-site storage	0	0
Recovery of valuable components	5.075	0.03
Other	3,499.841	21.2

Industrial and consumer waste management by hazard class in 2022 (tonnes):

Waste hazard class	Waste generated and received during the year (tonnes)	Recycling		Treatment		Waste transfer to third-party organisations (tonnes)	Waste stored at the sites operated by ROSATOM during the year (tonnes)	
		tonnes	%	tonnes	%		Total	Disposed
I	6.462	0	0	0	0	5.346	0	0
II	19.984	0	0	0	0	1.021	0	0
III	1,717.363	0	0	0	0	1,711.218	0	0
IV	14,045.799	873.14	6.22	0	0	14,044.15	308.1	308.1
V	14,422.993	68.44	0.47	0	0	14,423.093	1,786.1	1,786.1
TOTAL	30,212.601	941.58	3.12	0	0	30,184.828	2,094.2	2,094.2





**7** DIGITISATION

**8** DEVELOPING THE  
HUMAN CAPITAL

**20,479 PERSONS**  
AVERAGE HEADCOUNT



## 7 | DIGITISATION

The Mechanical Engineering Division implements a Digitisation Programme based on the Division's Business Strategy, the Unified Digital Strategy of the Nuclear Industry, and ROSATOM's Digital Vision 2030.

The Division's digitisation programme is updated annually taking into account the results achieved, changes in the internal and external requirements, the tasks of the Unified Technical Policy in IT and automated control systems, as well as priority IT and Digital projects in the industry. Digitisation contributes to the development of the Division's core and new business areas, helps to increase the intensity of production processes, reduce costs, and get additional economic effects powered by digital technologies.

In financial and economic activities, the Division's key digitisation tasks are the introduction of business intelligence (BI) technologies and the transition to 'data as value' management.

In production activities, the Division is tasked with digitising processes to increase the output and reduce production time, decrease non-production time and increase the useful time of machine tools.

### Key results in 2022:

- A community of digitisation leaders was formed. The Division held two digital conferences and determined the key digitisation tasks according to business needs.
- A programme was created to develop the Production Equipment Monitoring System (PEMS). The capacity utilisation status and the capacity potential are analysed, the quality of planning is improved, investment decisions are made taking into account the potential.
- An equipment vibration diagnostics system was introduced. Equipment wear and breakdowns are predicted, machine downtime is reduced.
- The Project Management Information System (PMIS) is being operated. The speed and quality of management decisions made in case of risks of deviation were improved.
- An automated financial planning system (AFPS) was implemented.
- Consolidation of management reporting, budgeting, KPI monitoring, project forecasting, data exchange with ROSATOM and industry customers were automated.

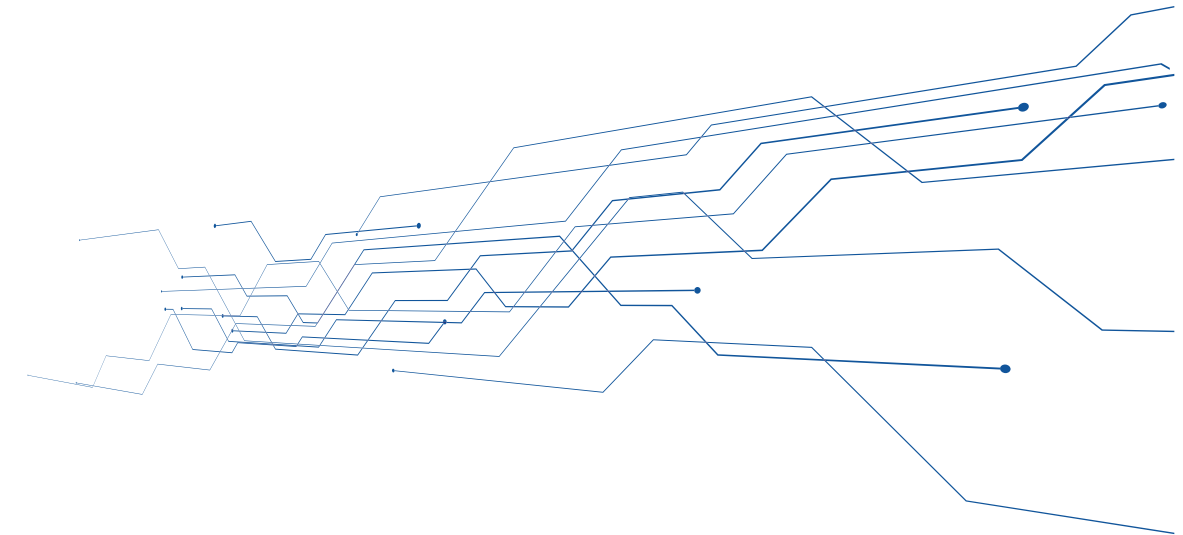
## Plans for 2023

### Development of digital systems to improve management efficiency

- A production and project management platform: 100% coverage, smart optimisation of production programmes, modelling of divisional cooperation, integration with Mes (PEMS), maximisation of the target function, a single data flow for management.
- A digital model of production in metallurgy (Metallurgy 4.0): optimisation of smelting formulations, a physical model of ingot cooling. Reduction of costs up to 10%, reduction of terms by 3-5 times, elimination of rejects.
- Video analytics for industrial safety: monitoring the use of personal protective equipment, keeping people away from dangerous areas.

### Digital solutions to improve the product offering

- A digital product passport: fast certification, acceleration of quality control, data model, and customer service.
- Design-to-cost: improving the quality of market offerings by developing products with optimal consumer characteristics and competitive price, reducing cost by 10–20%.



## 8 | DEVELOPING THE HUMAN CAPITAL

GRI 2-7  
GRI 2-20  
GRI 2-23  
GRI 2-24  
GRI 2-25  
GRI 2-26  
GRI 2-30  
GRI 401-2  
GRI 402-1  
GRI 403-6

### Personnel composition<sup>1</sup>

Staffing of enterprises is one of the most important elements of effective business management and, undoubtedly, one of the key development priorities for the Division. The Company does business in a socially responsible manner and provides equal opportunities for employees in different gender and age groups.

The special features of their operations, namely the fact that jobs in these manufacturing enterprises are physically demanding, have resulted in the relevant predominance of men over women, with an average ratio of 2 to 1.

#### Headcount by gender (persons)

Headcount	2020		2021		2022	
Actual	19,018		18,961		21,490	
	male	female	male	female	male	female
	12,519	6,499	12,431	6,530	14,201	7,289
Average	17,978.41		18,455.50		20,479.35	
	male	female	male	female	male	female
	12,081	5,897	12,338	6,117	13,751	6,728

#### Gender balance by job levels (persons)<sup>2</sup>

Position	2020		2021		2022	
	male	female	male	female	male	female
Executives	1,596	392	1,616	395	1,828	435
Specialists	4,413	4,201	4,347	4,284	4,841	5,293
White-collar workers	9	99	10	88	8	43
Blue-collar workers	6,501	1,807	6,458	1,764	7,524	1,518

#### Personnel rotation in the Division in 2020-2022 (%)

2020	2021	2022
7.00	15.03	11.38

The majority of employees work full-time (98.1%).

1. The indicators according to the APR/QPR are presented in Appendix 4.

### Personnel structure by employment type

Employee category	2020		2021		2022	
	male	female	male	female	male	female
Number of fixed-term contracts (persons)	233	242	235	220	197	253
Share of fixed-term contracts (%)	2.6		2.4		2.1	
Number of part-time employees (persons)	107	103	82	55	107	316
Share of part-time employees (%)	1.1		0.7		1.9	

The Division's enterprises successfully maintain an optimal balance between the number of highly qualified and experienced employees of retirement age (about 12%) and young promising employees (28%).

### Personnel structure by age group (persons)

Age and gender	2020			2021			2022		
	male	female	%	male	female	%	male	female	%
Under 35	4,164	1,790	31.3	3,929	1,737	29.8	4,319	1,883	28.3
<b>Total</b>	<b>5,955</b>			<b>5,666</b>			<b>6,202</b>		
Retirement age (women over 60 / men over 65)	1,454	1,336	15.5	1,328	1,153	13.4	1,472	1,314	11.9
<b>Total</b>	<b>2,790</b>			<b>2,481</b>			<b>2,786</b>		

### Structure by work experience in the company (persons, %)

Up to 5 years	%	5 to 10 years	%	Over 10 years	%
10,289	43.75	3,897	16.5	7,304	31.06

### Number of women in leadership positions (persons) (average headcount)

Number of female managers	2020	2021	2022
senior management	36.97	31.6	21.781
mid-level management	124.2366	191.382724	235.958
first-line management	177.8805	163.9	152.92

### Employee turnover (%)

2020	2021	2022
9.6	12.5	12.7

The increase in the Division's turnover rate in 2021 compared to 2020 is primarily due to a decrease in labour market activity of both employers and employees during the pandemic. In 2022, the rate remained almost unchanged. In addition, the dynamics of turnover were influenced by measures to attract young workers to the positions of retired employees and the growth of competition for highly qualified personnel given limited labour resources in the domestic market.

1. The indicators according to the APR/QPR are presented in Appendix 4.

Training<sup>1</sup>

Competence development and personnel training are vital prerequisites for the Division’s steady growth and competitive strength. The enterprises are regular participants of professional skills and managerial competence development programmes. Special emphasis is placed on the onboarding of new employees and transfer of key knowledge from experienced mentors to ensure that young specialists quickly demonstrate high performance and preserve the unique and valuable proprietary information within the Division. 75.54% of employees across the Division underwent training in 2022.

Share of trained employees of the Division

Category	Share	Gender	Share
Executives	89.17%	Male	62.66%
Specialists and white-collar workers	82.91%	Female	37.34%
Blue-collar workers	71.76%		

The share of distance learning in total training stood at 35%.

Annual budget for training (RUB million)

2020	2021	2022
128.5	145.5	187.22

Training hours

Indicator	2020		2021		2022	
	male	female	male	female	male	female
Training hours (h/person)	1596	392	1616	395	1828	435
Average training hours per employee	44.76		42.26		37.17	

In 2022, the fire safety basics concept was abolished. Fire safety basics training had been conducted annually at fire-hazardous units and once every three years at non-fire-hazardous ones. As a result, the number of related training hours was reduced. However, the volume of training in key areas, such as Safety Culture and Digital Competencies, increased significantly.

At the enterprises of the Division, senior students of institutions of secondary vocational and higher education annually undergo an internship. In 2022, 521 students of universities and vocational schools underwent the internship (in 2021: 634). In 2023, 386 students are expected to be accepted as interns.

All employees have received appropriate education necessary to obtain the relevant qualifications: at production sites, employees with secondary vocational education prevail, while employees in design bureaus and holding companies have higher vocational education. In 2022, the share of employees with higher education in the Division’s enterprises stood at 54.84% (11,604 people). A number of employees have academic degrees and the titles of professors. The Division employs two academicians of the Russian Academy of Sciences, 15 professors, 62 Doctors of Sciences, 257 Candidates of Sciences, and 25 MBA graduates.

Respecting labour and human rights of employees

In the reporting year, the Division adopted the Uniform Industry-Wide Human Rights Policy. In 2022, 2,989 men and 1,430 women completed human rights training courses. Thirteen requests were received, with feedback provided for all the requests. Requests are accepted via the Hotline.

1. The indicators according to the APR/QPR are presented in Appendix 4.

Working conditions and work organisation<sup>1</sup>

In order to make the remuneration system more transparent and increase the level of motivation, the Division has introduced an Integrated Standardised Remuneration System, which makes it possible to establish equal remuneration for employees holding positions comparable in terms of their value to ROSATOM, and to ensure that a significant part of the total financial remuneration received by employees is linked to the achievement of KPI targets. The main goal of the current system is to encourage efficient work and guarantee social security for the Company’s employees.

Average salary / wage<sup>2</sup>

Indicator	2020	2021	2022	2023 (estimated)
Average salary / wage (RUB ‘000 per month) in the Division	90.33	96.12	109.30	119.45
Average salary / wage growth (%)	101%	106%	114%	109%
Share of employees covered by salary / wage indexation (on or above inflation level)	98%	98%	100%	100%
Share of variable remuneration in the salary / wage structure of employees (except for senior executives)	25%	25%	25%	25%

In terms of remuneration, the key regulatory document is the Regulation on Remuneration, which determines the structure of salaries / wages and its components. The Division complies with labour laws, the Industry-Wide Agreement on Nuclear Power, Industry and Science for 2020–2023 concluded between ROSATOM, the Russian Union of Employers in the Nuclear Industry, Power and Science and the Russian Trade Union of Nuclear Power and Industry Workers. It establishes general principles for regulating social and labour relations in the nuclear industry, including mutual obligations of the parties related to matters concerning remuneration, working conditions and occupational health and safety, the work-life balance, employment, social guarantees, benefits and compensation for employees.

More than 80% of the Division’s enterprises have in place collective agreements that cover all employees of the enterprises.

Share of employees covered by collective agreements

Region/country	Share, %
Moscow	55
Moscow Region	67
Nizhny Novgorod Region	100
Rostov Region	89
Saint Petersburg	22
Sverdlovsk Region	100
Orenburg Region	0
Czech Republic	100
Hungary	0
Total	62

1. The indicators according to the APR/QPR are presented in Appendix 4.  
2. Data includes accrued provisions and excludes bonuses based on KPI results and vacation pay..



Number of employees by gender and type of employment (persons)

Category	Male	Female	Total
Number of employees	14,345.00	7,396	21,741
Number of regular employees	13,600.45	7,414.77	21,015.22
Number of temporary employees <sup>1</sup>	2	0	2
Number of full-time employees	14,094	6,973	21,067
Number of part-time employees	107	316	423

In accordance with the Labour Code of Russia, employees in all enterprises of the Division are notified of organisational changes at least two months in advance.

Region/ country	Number of employees	Number of regular employees	Number of temporary employees	Number of full-time employees	Number of part-time employees
Republic of Karelia	1,339	1,289	0	1,272	61
Leningrad Region	5,223	5,080.47	1	5,107	77
Moscow Region	6,024.00	5,719.22	1.00	5,714	127
Rostov Region	3,857.00	3,738.03	0	3,729	118
Nizhny Novgorod Region	4,457	4,370	0	4,446	0
Sverdlovsk Region	403	383.5	0	366	35
Orenburg Region	13	13	0	13	0
Hungary	233	230	0	228	5
Czech Republic	192	192	0	192	0
Total	21,741	21,015	2	21,067	423

There are no non-guaranteed hours employees in the Division.

The Division’s enterprises provide all their employees with a package of social welfare payments and benefits, including:

- health insurance;
- pension schemes;
- housing programmes;
- health resort treatment and recreation for employees and their children;
- sporting and other events;

1. Employees hired for up to two months or up to four months in case of replacement of a temporarily absent employee.

- catering for employees;
- provision of financial assistance;
- subsidised gym membership.

Indicator	2020	2021	2022
Share of employees covered by vaccination and voluntary health insurance (VHI) programmes (%)	93.85	95.74	97.04
Costs of VHI programmes for employees (RUB million)	191.63	243.83	284.49

In 2022, social expenses per employee grew by 18% and totalled almost RUB 40,000.

Indicator	2020	2021	2022
Annual social welfare payments per employee (RUB ‘000)	26.38	32.89	39.80
Social expenses (RUB ‘000)	467,780.09	598,821.98	810,590.70

Employee performance management

The Division has in place a single employee performance management policy that includes:

- developing standardised principles and tools for setting KPI targets and evaluating their achievement by employees;
- evaluating the level of employees’ skills, including for the payment of bonuses ;
- preparing recommendations for forming the talent pool;
- preparing individual development plans for employees to plan further training.

Employee engagement surveys are an important driver of employee performance. Based on the findings of the survey, the Division’s management can gain an insight as to whether employees in the industry are motivated to address prioritised tasks and can identify the key levers for increasing employee engagement and motivation. In 2022, the engagement rate of young employees increased and amounted to 91% (+7 p. p. since 2019).

Development of professional competence

The Division’s enterprises are active participants of professional skill and managerial competence development programmes. Industry-specific training programmes help to build a unified management system and improve the interaction between various departments and enterprises of the Division. In 2022, employees took part in local, divisional, industry-wide, federal and international events and won 9 top awards at the WorldSkills championships.



Event	Award	Nomination
AtomSkills, an industry-wide professional skills championship according to the WorldSkills methodology	Gold	Milling operations on CNC machines
		Lifecycle management
		Welding technology
	Bronze	Corporate protection against internal threats
WorldSkills Hi-Tech National Competition of Cross-Industry Skilled Professions for Workers in High-Technology Industries	Gold	Industrial mechanics and installation
		Milling operations on CNC machines
		Lifecycle management
	Silver	Welding technology

Representatives of the Mechanical Engineering Division were included in the top-30 of the industry-wide management talent pool programme (ROSATOM Capital tier and ROSATOM Talents tier) based on the results of the 2019-2022 training streams.

Awards of employees of the Mechanical Engineering Division in 2022

JSC Atomenergomash's awards	
Commendation from JSC Atomenergomash's Chief Executive Officer	226
JSC Atomenergomash's certificate of appreciation	108
JSC Atomenergomash's For Impeccable Work badge of distinction	41
ROSATOM's awards	
Letter of acknowledgement from ROSATOM's Chief Executive Officer	78
Commendation from ROSATOM's Chief Executive Officer	48
ROSATOM's certificate of appreciation	36
ROSATOM's badges of distinction	44
Veteran of Nuclear Power and Industry badge of distinction	38
Russia's state awards	5
TOTAL	624

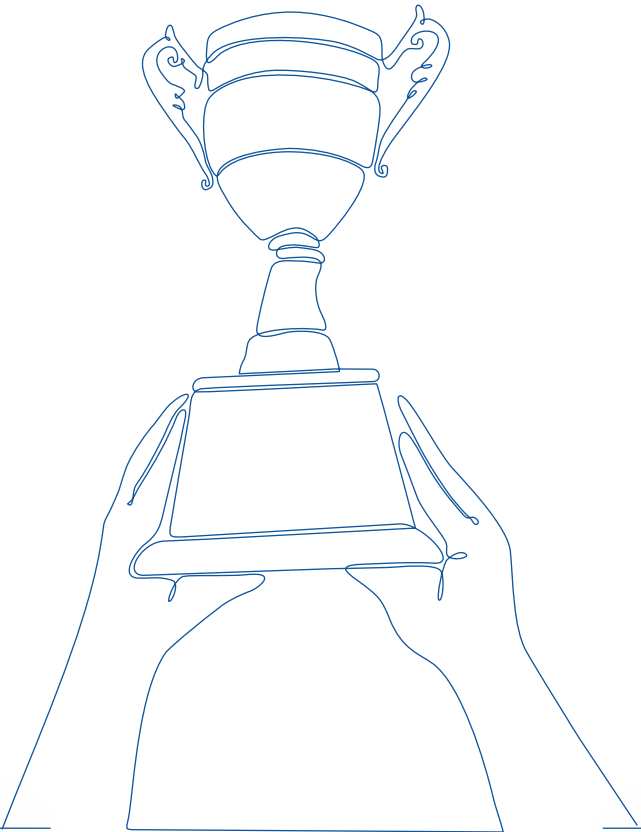
Executive succession pool and assessment of successors

In order to ensure succession and train employees to be appointed to managerial positions, an executive succession pool (ESP) is being formed and developed in ROSATOM. ESP members are included in the succession pool through the career and succession planning process. The ESP level is determined based on the target position.

Number of employees in the executive succession pool

Gender	Cohort 2018–2020		Cohort 2019–2021		Cohort 2020–2022	
	Number	Share	Number	Share	Number	Share
Male	23	74 %	29	85 %	33	87 %
Female	8	26 %	5	15 %	5	13 %

In order to facilitate rapid competence development, which is one of the priorities of the Company's HR policy, an innovative approach to assessing high-potential employees has been introduced in the Russian nuclear industry. As part of this approach, executives are involved in talent pool assessment and have a greater personal responsibility for developing succession plans and reducing the duration and cost of assessments. In 2022, 344 candidates for executive positions in 8 organisations were assessed by executives of the enterprises and holding companies.





9

DEVELOPING THE REGIONS  
OF OPERATION

10

SPECIFIC RISKS AND MANAGEMENT  
APPROACHES

RUB **9,288.5** MILLION  
PAYMENTS TO BUDGETS  
OF DIFFERENT LEVELS



## 9 | DEVELOPING THE REGIONS OF OPERATION

### GRI 2-29 Social responsibility and charity in the regions of operation

The Division actively supports organisations and residents in its host towns and cities. Regional enterprises of JSC Atomenergomash are involved in urban improvement and infrastructure development in their host towns and cities. Assistance is provided annually for free to strengthen the capabilities of educational and healthcare institutions, improve their areas, reconstruct their buildings and premises.

The Division contributed to the healthcare infrastructure. In the reporting year, it helped to reconstruct premises of the City Polyclinic No. 3 in Volgodonsk, which is the main healthcare facility for residents of the city and surrounding areas. An X-ray tomography system was purchased as part of the charity initiative. The Division repaired and equipped six boxes of the admissions unit of the St. Petersburg State Children's Hospital No. 22.

In addition, the Division assisted in the installation of modern multifunctional sports grounds in several districts of Volgodonsk. The development of such infrastructure gives residents significantly more opportunities to engage in sports activities, allowing them to lead a healthy lifestyle and promoting the well-being for all ages. The Division continues to support people with disabilities. Various equipment was purchased for the Korsar disability sports club in Podolsk.

The Division is aware of the significance of education and attaches great importance to its promotion. The Company helped the St. Petersburg State Maritime Technical University by overhauling its premises and equipping the language classroom for free. In addition, in the reporting year, extra scholarships were paid to students of NNSTU n.a. R.E. Alekseev in the form of gratuitous targeted financing. There are other additional and individual social support measures.

#### Charity expenses (RUB million)

2020	2021	2022
85.24	92.69	110.05

The Division pays special attention to former employees and veterans of the industry. In accordance with the current local regulations of enterprises, the Division is taking support measures, such as financial assistance, pension supplements, partial compensation for health resort treatment and recreation vouchers, various payments timed to holidays.

### Volunteer programmes

JSC Atomenergomash not only participates in charity events and organises them, but also involves employees and their families in volunteering. In the reporting year, the Division implemented 43 social projects with about 3,500 volunteer employees of the Division's enterprises and 235 students and schoolchildren involved.

In the reporting year, the Division's enterprises collected 40 tonnes of waste paper during the #BoomBattle All-Russian Waste Paper Collection Campaign held as part of the communication support of the Ecology national project. The event is aimed at developing an ecological culture in Russia and encouraging people to care for nature. The enterprises of JSC Atomenergomash conduct environmental lectures and lessons

for children of their employees, voluntary clean-ups, campaigns to collect waste paper, batteries, plastic.

The Division pays special attention to the location of natural ecosystems affected by production factors. River stocking is a common practice to maintain a favourable balance of aquatic organisms, preserve ecological well-being and species diversity. As part of the environmental campaign, over 22,000 carp fry were released into the Don River in the village of Topolki, Rostov Region. The Division also supports animal shelters. Employees of the enterprises collected almost 1.5 tonnes of products, purchased medicines for animals, collars and other necessary things.

The Division's enterprises are involved in training and career guidance activities for schoolchildren and students, contributing to improving educational programmes. During the year, leading experts held a series of nuclear power lectures for students of secondary school No. 18 in Volgodonsk.

The well-being of residents of regions of operation is one of the key priorities in JSC Atomenergomash's social agenda.

#### Payments to budgets of different levels (RUB million)

Indicator	2020		2021		2022	
	Accrued	Paid	Accrued	Paid	Accrued	Paid
<b>Total taxes and duties:</b>	<b>10,203.1</b>	<b>7,630.2</b>	<b>7,672.9</b>	<b>8,400.3</b>	<b>5,497.8</b>	<b>9,288.5</b>
Federal budget	9,458.7	6,822.2	7,278.2	8,094.2	5,133.8	8,923.3
Regional budgets	704.7	763.6	344.8	268.5	303.7	305.0
Local budgets	41.6	48.3	47.9	37.7	60.3	60.2

## 10 | SPECIFIC RISKS AND MANAGEMENT APPROACHES

A Risk Management Group has been formed in JSC Atomenergomash, acting on the basis of the Regulation on the Risk Management Group of JSC Atomenergomash. It is tasked with forming the Corporate Risk Management System (CRMS) and coordinating activities in the field of risk and insurance management, as well as the settlement of insurance claims. The Group's responsibilities include regular risk audit and verification of compliance with the established risk limits, organisation of communication and cooperation between all participants of the risk management process, from the level of controlled organisations to ROSATOM, in the course of decision-making related to risks and insurance.

In 2022, JSC Atomenergomash developed and approved the following key local regulations on risk management:

- Roadmap for the Development of the Risk Management System of the Mechanical Engineering Division for 2022–2023;
- Regulation on the Risk Management System of the Mechanical Engineering Division;
- Regulations on Risk Management in the Mechanical Engineering Division.

In 2022, the Division's key risks were macroeconomic (a sharp change in exchange rates, an increase in inflation and interest rates), regulatory (changes in the terms of transactions and payments), operational (disruption or postponement of equipment sales, the need to change logistics chains), and credit risks (counterparty risks).

The main risk factors include the sharply increased macroeconomic and foreign policy uncertainty, the deterioration in the market environment and the financial position of existing and potential counterparties.

The most effective methods and measures for risk management at year-end 2022 included operational changes in procurement schemes, payments, transportation of components and finished products, the monitoring of purchases made in foreign currencies or in roubles at the foreign exchange rate, reducing settlements in the currencies of Western countries, rescheduling the start of production, implementing RPS projects, achieving savings from procurement procedures, changes in the volume of overhead costs, reducing the consumption of raw materials, analysing counterparty risks when concluding contracts, and monitoring debt risks throughout the entire life cycle of projects.

The Division regularly improves the risk management system and assesses its compliance with international standards (GOST R ISO 31000 – 2021), best industry and international practice. In 2022, the system was successfully audited by external professionals.

## APPENDICES

### APPENDIX 1. INFORMATION ON THE REPORTING MATERIALS

**GRI 2-2** In accordance with Russian legislation, the Annual Reporting Standard of JSC Atomenergomash and the  
**GRI 2-3** GRI Sustainability Reporting Standards (GRI Standards), JSC Atomenergomash publishes these Reporting  
**GRI 2-4** Materials, which disclose key performance indicators of the Mechanical Engineering Division of ROSATOM  
**GRI 2-14** for the period from January 1, 2022 through December 31, 2022 and long-term development prospects.  
**GRI 2-29** The publication deadline of the report: September 1, 2023.

**GRI 3-1** JSC Atomenergomash uses an annual reporting cycle; the previous Reporting Materials covering  
**GRI 3-2** performance in the 2021 reporting year were released in 2022. The Reporting Materials were prepared taking into account the requirements of the following external regulatory documents (in the current versions):

- Federal Law No. 208-FZ dated December 26, 1995 on Joint-Stock Companies;
- The Uniform Industry-Wide Methodological Guidelines for Public Reporting of ROSATOM and Its Organisations;
- Letter from the Bank of Russia No. 06-52/2463 dated April 10, 2014 on the Corporate Governance Code;
- The AA1000 AP AccountAbility Principles Standard (2018);
- The Global Reporting Initiative (GRI 2021) Sustainability Reporting Standards;
- The International Integrated Reporting Framework.

Responsibility for the preparation of the Reporting Materials has been assigned to the Strategy and Development Department of JSC Atomenergomash.

The Division's Public Reporting Materials (hereinafter referred to as the 'Reporting Materials') are intended to inform all stakeholders of the Company's objectives, activities and achievements. The Reporting Materials contain information about the Company's economics, occupational health and safety activities, environmental activities, climate effects and energy efficiency, interaction with stakeholders and local communities, corporate governance, supply chain management, innovative technology and other information for the period from January 1 to December 31, 2022. The scope of consolidation was approved by JSC Atomenergomash's Order No. 33/50-P dated January 25, 2023.

### Stakeholder engagement

The Company recognises stakeholder engagement as one of the fundamental prerequisites of sustainable development and, together with the enterprises of the Division, consistently promotes constructive engagement. This involves the following:



- analysing the mutual influence of the Company and its stakeholders with regard to various aspects of activities;
- defining stakeholder expectations and aspirations;
- responding to stakeholder expectations and seeking consensus on outstanding issues;
- building long-term partnerships with key stakeholders.

The Division regularly interacts with its stakeholders to determine their interests and expectations, list important aspects of the Company’s operations and analyse material topics through questionnaires. Key stakeholder engagement formats include remote dialogues, press tours, and visits of environmental organisations, customers and other stakeholders to enterprises. Such an approach allows the Division to promptly react to potential risks, mainly social and reputational, related to stakeholder engagement. The Division held a remote dialogue with stakeholders in the form of a questionnaire on disclosure of socially significant aspects of its activities in the Reporting Materials, as well as organised a discussion of the draft Reporting Materials of JSC Atomenergomash.

The Reporting Materials are prepared in accordance with the Global Reporting Initiative Sustainability Reporting Standards 2021 (GRI SRS). Annual public reports give a comprehensive picture of the Division’s activities and strategic decisions and allow stakeholders to see the current level of the sustainable development agenda.

The Division held public dialogues in a remote format to interact with stakeholders in order to increase transparency and openness. Thus, at the beginning of the reporting campaign, a remote questionnaire survey was carried out among stakeholders concerning the content and relevance of the list of material topics to be disclosed and their prioritisation, as well as the approval of the concept of the Reporting Materials by the Company’s Chief Executive Officer.

The practice adopted by the Division does not involve updating the stakeholder map on an annual basis: information on stakeholder prioritisation was disclosed in reporting materials for 2014<sup>1</sup>. When preparing the Reporting Materials, the Company adhered to the principles established in the GRI Standards. There were no restatements of information as compared to the previous year.

Disclaimer

These Reporting Materials contain a number of forecasts and estimates regarding the future position of the Company on various topics, its plans and projected results. Due to their nature, forecasts and estimates are associated with inherent risk and uncertainty. The Company’s operations and its external environment can be influenced by a number of economic, political, social and other factors of a probabilistic nature. Accordingly, the Company would like to emphasise that actual results may differ from those stated, directly or indirectly, in the forward-looking statements contained in the Reporting Materials.

1. <https://ar2014.aem-group.ru/#/ru/1382>

APPENDIX 2. GRI CONTENT INDEX

Statement on the application of GRI standards	JSC Atomenergomash has prepared the reporting materials for the period from January 1, 2022 to December 31, 2022 in accordance with GRI standards.
GRI 1 used	GRI 1: Foundation (2021)
Applicable GRI Sector Standard(s)	Not applicable

GRI Standard / Indicator	Disclosure	Section in the Reporting Materials	Excluded information / comments
General information			
GRI 2: General Disclosures (2021)	2-1 Organisational details	2. Overview of the Division 3. Governance System Contact Details	
	2-2 Entities included in the organisation’s sustainability reporting	2. Overview of the Division Appendix 1. Information on the Reporting Materials	
	2-3 Reporting period, frequency and contact point	Appendix 1. Information on the Reporting Materials Contact Details	
	2-4 Restatements of information	Appendix 1. Information on the Reporting Materials	
	2-5 External assurance		Independent external expert assurance is not conducted
	2-6 Activities, value chain and other business relationships	2. Overview of the Division 5. Contribution to the Technological Sovereignty. New Products and Businesses	
	2-7 Employees	8. Developing the Human Capital	
	2-8 Workers who are not employees		Not recorded
	2-9 Governance structure and composition	3. Governance System	

GRI Standard / Indicator	Disclosure	Section in the Reporting Materials	Excluded information / comments
GRI 2: General Disclosures (2021)	2-10 Nomination and selection of the highest governance body	3. Governance System	
	2-11 Chair of the highest governance body		The Chair of the Board of Directors is not a person performing the functions of the sole executive body of the company.
	2-12 Role of the highest governance body in controlling the management of impacts	3. Governance System	
	2-13 Delegation of responsibility for managing impacts	3. Governance System	
	2-14 Role of the highest governance body in sustainability reporting	3. Governance System Appendix 1. Information on the Reporting Materials	
	2-15 Conflicts of interest	3. Governance System	
	2-16 Communication of critical concerns	3. Governance System	The Board of Directors is not informed on issues related to the economic, environmental, and social impacts, including complaints from stakeholders, since this is not provided for by the Company's Articles of Association. Such cases did not arise in the Company's activities in 2022.
	2-17 Collective knowledge of the highest governance body		The current composition of the Board of Directors in the key organisations of the Division is balanced in terms of the required competencies and professional experience. All members of the Board of Directors have a university degree and are highly professional and qualified, have experience in boards of directors and in senior positions, a positive business and personal reputation, the knowledge, skills and experience necessary to make decisions related to the competence of the Board of Directors and required for the effective performance of its functions.
	2-18 Evaluation of the performance of the highest governance body		There has been no evaluation (including self-assessment) of the Board's performance.

GRI Standard / Indicator	Disclosure	Section in the Reporting Materials	Excluded information / comments
GRI 2: General Disclosures (2021)	2-19 Remuneration policy	3. Governance System	
	2-20 Process to determine remuneration	3. Governance System 8. Developing the Human Capital	
	2-21 The ratio of the annual remuneration paid to the highest-paid employee of the organisation in each country of operation to the average annual remuneration of all employees		The amount and criteria of remuneration of the Chief Executive Officer is stipulated in the employment contract in accordance with Russian legislation and is based on the remuneration system adopted in ROSATOM's organisations. The annual bonus depends on progress in achieving KPI targets set every year. Information on declared income, property and liabilities is annually disclosed on ROSATOM's official website, in the Anti-Corruption section, in accordance with Russian legislation.
	2-22 Statement on sustainable development strategy	Statement from the Head of the Division	
	2-23 Policy commitments	3. Governance System. Commitment to sustainable development principles 6. Safety of Operations 8. Developing the Human Capital	
	2-24 Embedding policy commitments	6. Safety of Operations 8. Developing the Human Capital	
	2-25 Processes to remediate negative impacts	6. Safety of Operations 8. Developing the Human Capital	
	2-26 Mechanisms for seeking advice and raising concerns	3. Governance System 8. Developing the Human Capital	
	2-27 Compliance		In 2022, the Division's enterprises did not face significant fines or non-financial sanctions
	2-28 Membership of associations	3. Governance System	



GRI Standard / Indicator	Disclosure	Section in the Reporting Materials	Excluded information / comments
GRI 2: General Disclosures (2021)	2-29 Approach to stakeholder engagement	3. Governance System 9. Developing the Regions of Operation Appendix 1. Information on the Reporting Materials	
	2-30 Collective bargaining agreements	8. Developing the Human Capital	
Material topics			
GRI 3: Material Topics (2021)	3-1 Process to determine material topics	Appendix 1. Information on the Reporting Materials	
	3-2 List of material topics	Appendix 1. Information on the Reporting Materials Appendix 2. GRI Content Index	
Impact on the achievement of strategic goals in the context of global challenges			
GRI 3: Material Topics (2021)	3-3 Management of material topics	Statement from the Head of the Division 5. Contribution to the Technological Sovereignty. New Products and Businesses.	
Impact on the development of import substitution in Russia			
GRI 3: Material Topics (2021)	3-3 Management of material topics	5. Contribution to the Technological Sovereignty. New Products and Businesses.	
GRI 204: Procurement Practices (2016)	204-1 Proportion of spending on local suppliers		In 2022, the share of purchases from Russian suppliers amounted to 99% of the total purchases (in 2021: 98%).
Impact on water resources, including water withdrawal, consumption and discharge			
GRI 3: Material Topics (2021)	3-3 Management of material topics	6. Safety of Operations. Environmental management.	
GRI 303: Water and Effluents (2018)	303-1 Interactions with water as a shared resource	6. Safety of Operations. Environmental management.	
	303-2 Management of water discharge-related impacts	6. Safety of Operations. Environmental management.	
	303-3 Water withdrawal	6. Safety of Operations. Environmental management.	

GRI Standard / Indicator	Disclosure	Section in the Reporting Materials	Excluded information / comments
	303-4 Water discharge	6. Safety of Operations. Environmental management.	The main substances removed from wastewater include suspended solids, COD, BOD5, petroleum products, total nitrogen, chlorides, sulfates, metals (iron, copper, aluminium, lead, zinc, manganese, chromium, nickel, cadmium, arsenic, mercury), surfactants, VOCs.  The main pollutants are determined in the Government’s Resolution No. 644 On the Approval of the Rules of Cold Water Supply and Water Disposal.  Discharge standards are established by regulatory documents, regional requirements, requirements of organisations engaged in water disposal.
Environmental impact of enterprises’ operations during equipment production			
GRI 3: Material Topics (2021)	3-3 Management of material topics	6. Safety of Operations. Environmental management.	
GRI 302: Energy (2016)	302-1 Energy consumption within the organisation	6. Safety of Operations. Environmental management.	
	302-4 Reduction of energy consumption	6. Safety of Operations. Environmental management.	
GRI 305: Emissions (2016)	305-1 Direct (Scope 1) GHG emissions	6. Safety of Operations. Environmental management.	
	305-6 Emissions of ozone-depleting substances (ODS)	6. Safety of Operations. Environmental management.	
	305-7 Nitrogen oxides (NOX), sulphur oxides (SOX), and other significant air emissions	6. Safety of Operations. Environmental management.	
GRI 306: Waste (2020)	306-1 Waste generation and significant waste-related impacts	6. Safety of Operations. Environmental management.	
	306-2 Management of significant waste-related impacts	6. Safety of Operations. Environmental management.	
	306-3 Waste generated	6. Safety of Operations. Environmental management.	
GRI 306: Waste (2020)	306-4 Waste diverted from disposal	6. Safety of Operations. Environmental management.	
	306-5 Waste directed to disposal	6. Safety of Operations. Environmental management.	

GRI Standard / Indicator	Disclosure	Section in the Reporting Materials	Excluded information / comments
Impact on staff employment			
GRI 3: Material Topics (2021)	3-3 Management of material topics	8. Developing the Human Capital	
GRI 401: Employment (2016)	401-1 New employee hires and employee turnover	8. Developing the Human Capital	No breakdown by region.
	401-2 Benefits provided to full-time employees that are not provided to temporary or part-time employees	8. Developing the Human Capital	
GRI 402: Labour/ Management Relations (2016)	402-1 Minimum notice periods regarding operational changes	8. Developing the Human Capital	
Impact on the safety and health of personnel in the workplace			
GRI 3: Material Topics (2021)	3-3 Management of material topics	6. Safety of Operations. Occupational health and safety	
GRI 403: Occupational Health and Safety (2018)	403-1 Occupational health and safety management system	6. Safety of Operations. Occupational health and safety	
	403-2 Hazard identification, risk assessment, and incident investigation		
	403-3 Occupational health services	6. Safety of Operations. Occupational health and safety	
	403-4 Worker participation, consultation, and communication on occupational health and safety		Employees are instructed and trained in occupational health and safety

GRI Standard / Indicator	Disclosure	Section in the Reporting Materials	Excluded information / comments
GRI 403: Occupational Health and Safety (2018)	403-5 Worker training on occupational health and safety	3. Governance System	
	403-6 Promotion of worker health	8. Developing the Human Capital	
	403-8 Workers covered by an occupational health and safety management system		The reporting materials do not contain data on workers covered by an occupational health and safety management system since this data is not recorded
	403-9 Work-related injuries	6. Safety of Operations. Occupational health and safety	
	403-10 Work-related ill health	6. Safety of Operations. Occupational health and safety	
Impact of the Division on improving occupational health and safety in the entire supply chain (including the introduction of occupational health and safety requirements in procurement procedures, control of occupational health and safety in the process of equipment production)			
GRI 3: Material Topics (2021)	3-3 Management of material topics	6. Safety of Operations. Occupational health and safety.	
GRI 403: Occupational Health and Safety (2018)	403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	6. Safety of Operations. Occupational health and safety.	Number of injuries in contractor organisations, total: 0 in 2020; 1 in 2021; 0 in 2022. There were no fatal accidents among employees of contractor organisations.
Ensuring reliable supplies of equipment for energy projects by providing national power machine engineering capabilities			
GRI 3: Material Topics (2021)	3-3 Management of material topics	5. Contribution to the Technological Sovereignty. New Products and Businesses.	
Contribution to the country’s technological development through R&D to improve technology, optimise the timing and cost of equipment production			
GRI 3: Material Topics (2021)	3-3 Management of material topics	5. Contribution to the Technological Sovereignty. New Products and Businesses.	



APPENDIX 3. GLOSSARY

APR/QPR	annual / quarterly personnel reports
CHPP	combined heat and power plant
CO	controlled organisation
CRMS	corporate risk management system
CWHE	coil-wound heat exchangers
FNR	fast neutron reactor
GS	gas scrubber
GTU	gas turbine unit
HPH	high-pressure heater
IP	intellectual property
KPI	key performance indicator
LNG	liquefied natural gas
LPH	low-pressure heater
MCL	main coolant line
MPNI	multipurpose nuclear icebreaker
NFE	nuclear fuel element
NPP	nuclear power plant
NPU	nuclear power unit
NSGP	nuclear steam generating plant
OMPP	ore mining and processing plant
PEMS	Production Equipment Monitoring System
QMS	Quality Management System
R&D	research and development
RCP	reactor coolant pump
Refinery	refinery
RES	renewable energy sources
Research	research
RPS	ROSATOM Production System
RU	reactor unit
SHS	steam heater separator
SNPP	small-scale nuclear power plant
SRO NPP	Self-Regulatory Organisation and Non-Profit Partnership
STC	Scientific and Technical Council
VVER	water-cooled water-moderated power reactor
WEP	waste-to-energy plant

Terms used in the reporting materials

LTIFR	Lost Time Injury Frequency Rate
Incoming control	monitoring the quality and completeness of products delivered to an NPP site and intended for use in the course of its construction and operation
Top management (senior management)	employees of the Company who make decisions that have a significant impact on the operations of the enterprise as a whole (from the level of directors in functional areas up to the Chief Executive Officer)
Consolidated revenue	total revenue of organisations included in the consolidated financial statements in accordance with the methodology approved in the company, less intra-group revenue and other adjustments
Stakeholder	an individual, a group of persons or an organisation that is affected by the company
Significant regions of operation	regions where the production facilities and key personnel of the enterprise are located
Material topic	a topic that reflects a significant area of the Company’s business or impact on stakeholders

APPENDIX 4. PERSONNEL DATA ACCORDING TO ANNUAL AND QUARTERLY PERSONNEL REPORTS

Headcount by gender (persons)

Headcount	2020		2021		2022	
Actual	18,765		18,659		21,160	
	male	female	male	female	male	female
	12,339	6,426	12,077	6,582	13,970	7,190
Average	65.7%		34.3%		66%	
	67.26%		32.74%		67.14%	
	17,746.7		18,187.94		20,367.06	
	male	female	male	female	male	female
		11,935.91	5,810.79	12,149.38	6,038.56	13,674.82
		67.26%	32.74%	66.8%	33.20%	67.14%
		32.86%				

Gender balance by job levels (persons)

Position	2020		2021		2022	
	male	female	male	female	male	female
Executives	1,534	376	1,553	379	1,749	415
Specialists	4,295	4,132	4,158	4,250	4,689	5,214
White-collar workers	9	99	10	88	8	43
Blue-collar workers	6,501	1,819	6,356	1,865	7,524	1,518

Personnel rotation in the Division in 2019–2022 (%)

2020	2021	2022
7.00	15.03	11.38

Employee category	2020		2021		2022	
	male	female	male	female	male	female
Number of fixed-term contracts (persons)	231	241	233	219	195	253
Share of fixed-term contracts (%)	2.5		2.4		2.1	
Number of part-time employees (persons)	108	103	84	56	111	319
Share of part-time employees (%)	1.1		0.7		2.0	

Age and gender	2020			2021			2022		
	male	female	%	male	female	%	male	female	%
Under 35	4,092	1,763	31.2	3,819	1,727	29.7	4,229	1,851	28.7
Total	5,855			5,546			6,080		
Retirement age (women over 60 / men over 65)	1,444	1,336	14.8	1,315	1,153	13.2	1,450	1,304	13.0
Total	2,780			2,468			2,754		

Structure by work experience in the company (persons, %)

Up to 5 years	%	5 to 10 years	%	Over 10 years	%
10,087	47.7	3,824	18.0	7,249	34.3

Share of women in leadership positions (%) (average headcount)

Share of female managers (%)	2020	2021	2022
Senior management	8.00	21.14	17.50
Mid-level management	0.00	23.56	21.66
First-line management	6.00	14.21	14.37

Employee turnover (%)

Indicator	2020	2021	2022
Turnover	9.25	8.09	9.26

Share of women in senior management (%)

Indicator	2020	2021	2022
Share of women in senior management	17.94	18.25	17.99

Annual budget for training (RUB million)

2020	2021	2022
128.98	138.10	187.22

Training

Indicator	2020		2021		2022	
	male	female	male	female	male	female
Training hours (h/person)	50.19	35.94	45.96	34.62	39.71	32.38
Average training hours per employee	44.76		41.96		37.17	
Share of employees covered by training programmes (%)	74.71		91.64		78.43	

Share of trained employees of the Division

Category	Share	Gender	Share
Executives	89.17%	Male	62.66%
Specialists and white-collar workers	82.91%	Female	37.34%
Blue-collar workers	71.76%		

Average salary / wage

Employee category	2020	2021	2022
Average salary / wage (‘000 per month) in the Division	88,543	94,475	104,386
Average salary / wage growth (%)	101%	106%	113%
Share of variable remuneration in the salary / wage structure of employees (except for senior executives)	25.10	25.56	24.60



Share of employees covered by collective agreements

Region/country	Share (%)
Moscow	55
Moscow Region	67
Nizhny Novgorod Region	100
Rostov Region	89
Saint Petersburg	100
Sverdlovsk Region	100
Orenburg Region	0
Czech Republic	100
Hungary	0
Total	86.15

Number of employees by gender and type of employment (persons)

Category	Male	Female	Total
Number of employees	14,112	7,296	21,408
Number of regular employees	13,369.45	7,315.77	20,685.22
Number of temporary employees <sup>1</sup>	2	0	2
Number of full-time employees	13,865	6,878	20,743
Number of part-time employees	105	312	417

Region/country	Number of employees	Number of regular employees	Number of temporary employees	Number of full-time employees	Number of part-time employees
Republic of Karelia	1,339	1,289	0	1,272	61
Leningrad Region	4,897	4,755.47	1	4,787	72
Moscow Region	6,017	5,714.22	1	5,710	126
Rostov Region	3,857.00	3,738.03	0	3,729	118
Nizhny Novgorod Region	4,457	4,370	0	4,446	0
Sverdlovsk Region	403	383.5	0	366	35
Orenburg Region	13	13	0	13	0
Hungary	233	230	0	228	5
Czech Republic	192	192	0	192	0
Total	21,408	20,685.22	2	20,743	417

There are no non-guaranteed hours employees in the Division.

1. Employees hired for up to two months or up to four months in case of replacement of a temporarily absent employee.

Indicator	2020	2021	2022
Share of employees covered by vaccination and voluntary health insurance (VHI) programmes (%)	91.60	94.15	95.62
Costs of VHI programmes for employees (RUB million)	183.85	230.42	272.25

Annual social welfare payments per employee (RUB ‘000)

Indicator	2020	2021	2022
Annual social welfare payments per employee	26.36	32.92	39.80
Social expenses	467,780.09	598,821.98	810,590.70

GRI 2-1  
GRI 2-3

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Public annual reports: <https://report.rosatom.ru/aem>

Official group on Vkontakte: <https://vk.com/atomenergomash>





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