atomenergomash
COMPANY OF ROSATOM

# 10 YEARS OF PROGRESS

2006
2016

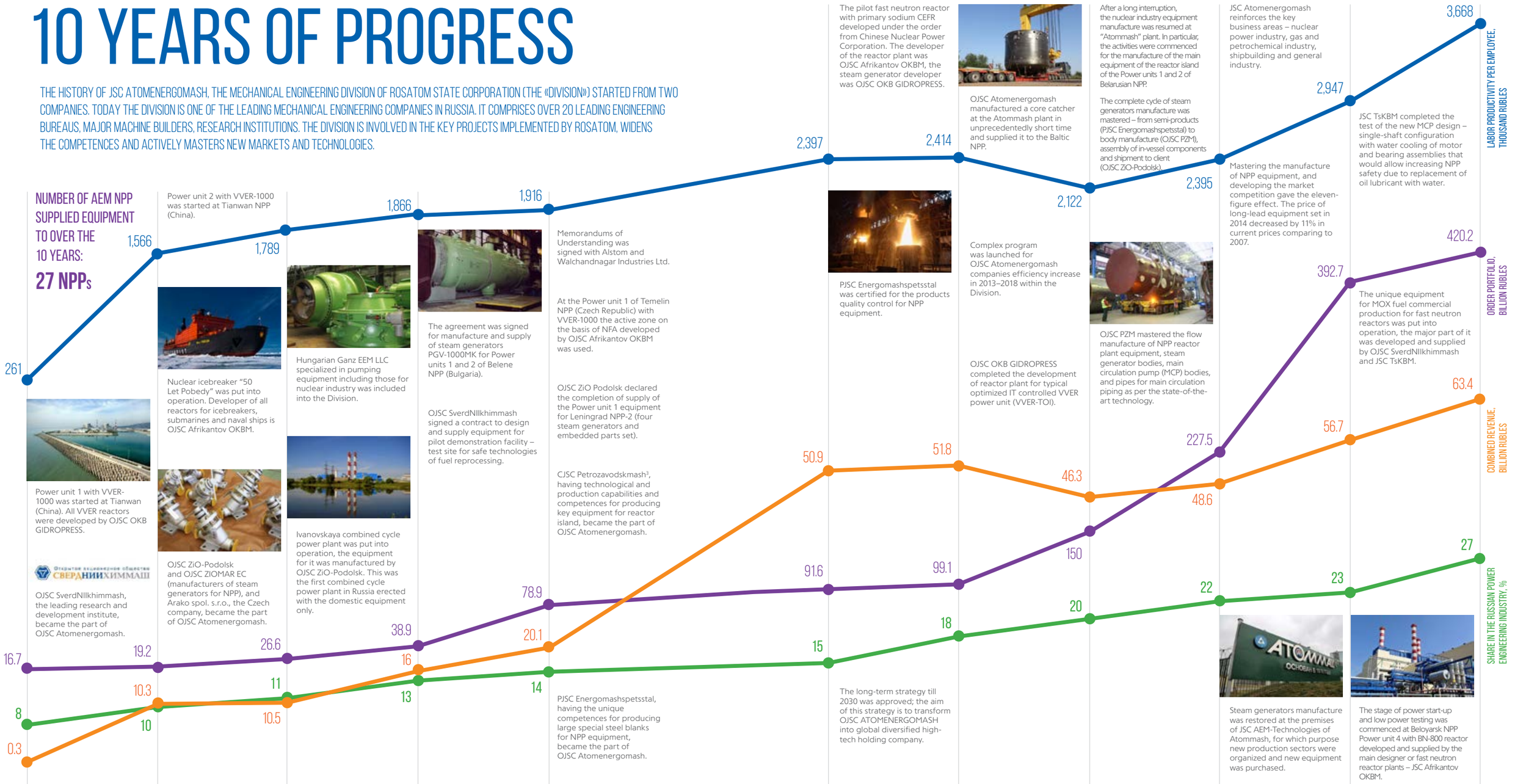
## RESULTS OF 2016

# JSC ATOMENERGOMASH RESULTS OF 2016[1]

1 The brochure data are valid as of April 26, 2017.

# 10 YEARS OF PROGRESS

THE HISTORY OF JSC ATOMENERGOMASH, THE MECHANICAL ENGINEERING DIVISION OF ROSATOM STATE CORPORATION (THE «DIVISION») STARTED FROM TWO COMPANIES. TODAY THE DIVISION IS ONE OF THE LEADING MECHANICAL ENGINEERING COMPANIES IN RUSSIA. IT COMPRISES OVER 20 LEADING ENGINEERING BUREAUS, MAJOR MACHINE BUILDERS, RESEARCH INSTITUTIONS. THE DIVISION IS INVOLVED IN THE KEY PROJECTS IMPLEMENTED BY ROSATOM, WIDENS THE COMPETENCES AND ACTIVELY MASTERS NEW MARKETS AND TECHNOLOGIES.




Power unit 1 with VVER-1000 was started at Tianwan NPP (China). All VVER reactors were developed by OJSC OKB GIDROPRESS.

Power unit 2 with VVER-1000 was started at Tianwan NPP (China).

Nuclear icebreaker "50 Let Pobedy" was put into operation. Developer of all reactors for icebreakers, submarines and naval ships is OJSC Afrikantov OKBM.

OJSC SverdNIIkhimmash, the leading research and development institute, became the part of OJSC Atomenergomash.

OJSC ZiO-Podolsk and OJSC ZIOMAR EC (manufacturers of steam generators for NPP), and Arako spol. s.r.o., the Czech company, became the part of OJSC Atomenergomash.

Hungarian Ganz EEM LLC specialized in pumping equipment including those for nuclear industry was included into the Division.

Ivanovskaya combined cycle power plant was put into operation, the equipment for it was manufactured by OJSC ZiO-Podolsk. This was the first combined cycle power plant in Russia erected with the domestic equipment only.

The agreement was signed for manufacture and supply of steam generators PGV-1000MK for Power units 1 and 2 of Belene NPP (Bulgaria).

OJSC SverdNIIkhimmash signed a contract to design and supply equipment for pilot demonstration facility – test site for safe technologies of fuel reprocessing.

Memorandums of Understanding was signed with Alstom and Walchandnagar Industries Ltd.

At the Power unit 1 of Temelin NPP (Czech Republic) with VVER-1000 the active zone on the basis of NFA developed by OJSC Afrikantov OKBM was used.

OJSC ZiO Podolsk declared the completion of supply of the Power unit 1 equipment for Leningrad NPP-2 (four steam generators and embedded parts set).

CJSC Petrozavodskmash[3], having technological and production capabilities and competences for producing key equipment for reactor island, became the part of OJSC Atomenergomash.

PJSC Energomashspetsstal, having the unique competences for producing large special steel blanks for NPP equipment, became the part of OJSC Atomenergomash.

The pilot fast neutron reactor with primary sodium CEFR developed under the order from Chinese Nuclear Power Corporation. The developer of the reactor plant was OJSC Afrikantov OKBM, the steam generator developer was OJSC OKB GIDROPRESS.

PJSC Energomashspetsstal was certified for the products quality control for NPP equipment.

The long-term strategy till 2030 was approved; the aim of this strategy is to transform OJSC ATOMENERGOMASH into global diversified high-tech holding company.

OJSC Atomenergomash manufactured a core catcher at the Atommash plant in unprecedentedly short time and supplied it to the Baltic NPP.

Complex program was launched for OJSC Atomenergomash companies efficiency increase in 2013–2018 within the Division.

OJSC OKB GIDROPRESS completed the development of reactor plant for typical optimized IT controlled VVER power unit (VVER-TOI).

After a long interruption, the nuclear industry equipment manufacture was resumed at "Atommash" plant. In particular, the activities were commenced for the manufacture of the main equipment of the reactor island of the Power units 1 and 2 of Belarusian NPP.

The complete cycle of steam generators manufacture was mastered – from semi-products (PJSC Energomashspetsstal) to body manufacture (OJSC PZM), assembly of in-vessel components and shipment to client (OJSC ZiO-Podolsk).

OJSC PZM mastered the flow manufacture of NPP reactor plant equipment, steam generator bodies, main circulation pump (MCP) bodies, and pipes for main circulation piping as per the state-of-the-art technology.

JSC Atomenergomash reinforces the key business areas – nuclear power industry, gas and petrochemical industry, shipbuilding and general industry.

Mastering the manufacture of NPP equipment, and developing the market competition gave the eleven-figure effect. The price of long-lead equipment set in 2014 decreased by 11% in current prices comparing to 2007.

Steam generators manufacture was restored at the premises of JSC AEM-Technologies of Atommash, for which purpose new production sectors were organized and new equipment was purchased.

JSC TsKBM completed the test of the new MCP design – single-shaft configuration with water cooling of motor and bearing assemblies that would allow increasing NPP safety due to replacement of oil lubricant with water.

The unique equipment for MOX fuel commercial production for fast neutron reactors was put into operation, the major part of it was developed and supplied by OJSC SverdNIIkhimmash and JSC TsKBM.

The stage of power start-up and low power testing was commenced at Beloyarsk NPP Power unit 4 with BN-800 reactor developed and supplied by the main designer or fast neutron reactor plants – JSC Afrikantov OKBM.

**2006**

ON MARCH 29, OJSC ATOMENERGOMASH WAS ESTABLISHED IN THE SYSTEM OF THE FEDERAL ATOMIC ENERGY AGENCY (ROSATOM). THE PURPOSE OF OJSC ATOMENERGOMASH WAS ENSURING THE SUSTAINABLE DEVELOPMENT OF NUCLEAR INDUSTRY DOMESTICALLY AND INTERNATIONALLY AS WELL AS WIDENING THE PROCESS POTENTIAL OF POWER INDUSTRY COMPLEX OF RUSSIA.

**2007**

CREATION OF TARGET STRUCTURE OF OJSC ATOMENERGOMASH. FORMATION OF INDUSTRIAL AND ENGINEERING COMPETENCES, AND CORPORATE PERIMETER.

**2008**

THE COMPANY CONTINUES ITS ACTIVITIES IN THE FIELD OF MECHANICAL ENGINEERING ASSETS CONSOLIDATION BOTH IN RUSSIA AND ABROAD. THE DIVISION STRUCTURE INCLUDES 16 COMPANIES IN TOTAL.

**2009**

THE ESTABLISHMENT OF PROCESS COMPLEX FOR MANUFACTURING THE COMPLETE RANGE OF EQUIPMENT FOR THE REACTOR PLANT (NSSS[2]) HAS BEEN COMMENCED.

**2010**

OJSC ATOMENERGOMASH EXTENDS THE INTERNATIONAL COOPERATION AND FORMS THE VERTICAL INTEGRAL STRUCTURE FOR MANUFACTURING KEY EQUIPMENT FOR NPP.

**2011**

THE FORMATION OF PRODUCTION CHAIN FOR LONG-LEAD EQUIPMENT MANUFACTURE WAS CONTINUED IN OJSC ATOMENERGOMASH COMPANIES.

**2012**

RESTORING FACILITIES OF ATOMMASH, THE SOVIET BIGGEST MANUFACTURER OF NPP EQUIPMENT, WAS STARTED AS WELL AS MASTERING THE MANUFACTURE OF NUCLEAR ISLAND EQUIPMENT INCLUDING REACTOR, STEAM GENERATOR, ETC.

**2013**

OJSC ATOMENERGOMASH COMPANIES SUCCESSFULLY MASTERED THE COMPLETE CYCLE OF MANUFACTURE OF NPP LONG-LEAD EQUIPMENT.

**2014**

FOR THE FIRST TIME IN ITS HISTORY, JSC ATOMENERGOMASH BECAME THE SUPPLIER OF COMPLETE NUCLEAR STEAM SUPPLY SYSTEMS AND TURBINE HALL EQUIPMENT.

**2015**

AFTER 30 YEARS, THE FIRST REACTOR BODY MANUFACTURED AT ATOMMASH (BRANCH OF JSC AEM-TECHNOLOGIES) PREMISES WAS SUPPLIED TO BELARUSIAN NPP. BESIDES, THAT WAS THE FIRST VVER REACTOR BODY MANUFACTURED BY THE ROSATOM STATE CORPORATION COMPANY[4].

**2016**

*2 Nuclear Steam Supply System.*

*3 Petrozavodskmash is the branch of JSC AEM-Technologies.*

*4 Earlier Rosatom State Corporation used to purchase those products from an external source.*

# THE COMPANY IN BRIEF



JSC Atomenergomash, is one of the biggest mechanical engineering holding companies in Russia that provides the complete range of equipment design, manufacture and supply solutions for nuclear and thermal power industry, gas and petrochemical industries, shipbuilding, and special steels market.

The Division comprises the major power industry businesses including manufacture, research, and engineering companies located in Russia, Ukraine, the Czech Republic and Hungary.

The company fully controls the production chain of the key nuclear island and turbine hall equipment, from research and detailed design development to process design and equipment manufacture.

## JSC ATOMENERGOMASH IS ONE OF THE BIGGEST MECHANICAL ENGINEERING HOLDING COMPANIES IN RUSSIA.

# 2016 PERFORMANCE HIGHLIGHTS

## ECONOMIC PERFORMANCE

- Combined revenue – **63.4 billion rubles**
- EBITDA – **6.7 billion rubles**
- Share of revenue from new businesses – **44%**

## OPERATING PERFORMANCE

- Timely supply of equipment under existing contracts – **100%**
- Products shipped **to 20 Nuclear Power Plants**

## COMMERCIAL ACTIVITIES

- Total value of concluded contracts – **135.1 billion rubles**
- Order portfolio at the year-end – **420.2 billion rubles**
- Share of new product orders in the total order portfolio – **47%**

## EFFICIENCY IMPROVEMENT

- Effect of the RPS introduction – **841 million rubles**
- Labor productivity growth – **25%**
- Income from sales of non-core assets – **694 million rubles**

## SKILL POOL DEVELOPMENT

- Share of specialists under 35 years old – **34%**
- Share of employees with the Company for over 5 years – **71%**

## SCIENTIFIC ACTIVITIES

- **81** patents and intellectual property certificates
- **301** scientific publications
- R&D investments – **258 million rubles**

## SOCIAL RESPONSIBILITY

- Paid to the budget – **5.8 billion rubles**
- Charity expenses – **258 million rubles**

## ENVIRONMENTAL RESPONSIBILITY

- Reduction of total waste mass – **9%**
- Environmental protection costs – **151 million rubles**





# KEY EVENTS IN 2016

## NUCLEAR POWER

- JSC Atomenergomash manufactured and shipped the body of VVER-1200 reactor for Belarusian NPP Power unit 2.
- JSC SNIIP first obtained the certificate of management compliance to ISO 9001:2008.
- JSC OKB GIDROPRESS concluded the contract for developing technical design documentation for VVER-1200 reactor plant for Hanhikivi-1 NPP (Finland).
- The innovative Power unit 6 of 3+ generation was started up at Novovoronezh NPP; the key equipment for it was supplied by JSC Atomenergomash companies.

## THERMAL POWER

- PJSC ZiO-Podolsk and NEM Energy B.V. (the Netherlands), the part of Siemens AG conglomerate, signed the Agreement on extension of the Contract on cooperation in the area of engineering and manufacturing steam generating equipment with power under 50 MW.
- At Kirovskaya TPP, the wastewater treatment plant was successfully put into operation; it was developed and supplied by JSC SverdNIIKhimmash within the framework of priority investment project for the power plant refurbishment.

## GAS AND PETROCHEMICAL INDUSTRY

- JSC SverdNIIKhimmash won the tender for the supply of wastewater treatment complex for the subsidiary of PJSC SIBUR Holding, the major gas and petrochemical holding company.

## SPECIAL STEELS

- PJSC Energomashspetsstal cast the unique steel ingot of 125 tons for manufacturing the high-pressure steam generator shell for Kudankulam NPP (India).
- JSC TsNIITMASH presented the first domestic industrial 3D printer for metal products that was developed jointly with JSC "Science and Innovation".

## SHIPBUILDING AND FNPP[5]

*5 Floating Nuclear Power Plant.*

- JSC Atomenergomash completed manufacturing the state-of-the-art reactor plants RITM-200 for the new-generation icebreaker Arktika, and supplied it to the client.
- PJSC Energomashspetsstal specialists developed and mastered the production of new products within the Shipbuilding and FNPP business area - Hall's anchors for various vessels.

## MINI HYDRO POWER PLANTS[6]

*6 Equipment for small scale hydro power generation (container type mini hydro power plants).*

- GANZ EEM LLC concluded the first formal contract for the supply of container type mini hydro power plants with International Energy Company, LTD (Georgia) what develops hydro power area.

# MESSAGE FROM COMPANY MANAGEMENT

## THE SHARE OF REVENUE FROM NEW BUSINESSES AMOUNTED TO 43.7% IN 2016

Dear colleagues,

In the reporting year, JSC Atomenergomash celebrated its 10-years anniversary. During those years, the enormous job was done by the management, and thanks to it the minor company turned into a diverse holding with neatly defined specialization of enterprises, clear management structure and explicit development strategy.

Over the recent five years, the order portfolio increased more than fourfold – from 99 to 420 billion rubles. The combined revenue grew substantially and amounted to 63.4 billion rubles in 2016.

The Company consistently works at increasing the efficiency and decreasing the costs and duration of the operation processes. In particular, in 2016 the possibilities were found to shorten the lead time for nuclear steam supply system by 20%, the days' sales in inventory were reduced by the manufacturing facilities. The Company has exceeded the targets on sales of non-core assets and raised about 700 million rubles in total. In general, thanks to the measures taken to improve the efficiency the EBITDA profit margin grew by 7% to reach 11% in 2016.

One of the important achievements of the Company in 2016 was the timely shipment of reactor plants RITM-200 for Arktika, the first-in-class new generation icebreaker. In compliance with the client's request, the reactor body for the Belarusian NPP Power unit 2 was manufactured and shipped ahead of the schedule. During the reporting year, the world's first 3+ generation Power unit was connected to the grid at Novovoronezh NPP; and the Unit with BN-800 fast neutron reactor was put into operation at Beloyarsk NPP. The enterprises within the Company took active part in the development of the unique power units by designing reactor plants and supplying main and auxiliary equipment to the power plants.

I would also like to highlight the success of JSC Atomenergomash and its companies in the area of new products development for the non-nuclear industries. In particular, the major gas and petrochemical tender was won for the design and complete supply of water treatment plant for the refinery works intended for processing crude hydrocarbons, now under construction in Tobolsk. In total, the share of revenue from new businesses amounted to 43.7% in 2016.

The mainstay of the accomplishments of the Mechanical Engineering Division and the pillar of the future achievements is our brilliant team joining the best scientists, designers, engineers, and workers. On behalf of Rosatom State Corporation, I thank the Company for the work done in 2016, and the management and employees for their commitment and professionalism. I am sure that whatever is achieved will become the new good headstart for the further development of JSC Atomenergomash as one of the world's mechanical engineering leaders!

Yekaterina V. Lyakhova

Chairperson of the Board of Directors of JSC Atomenergomash

Director of Investment Management and Operational Efficiency at Rosatom State Corporation

Dear shareholders, clients, and colleagues,

The reporting year has become the anniversary for JSC Atomenergomash, and we can look at some results of the first decade. First of all, I would like to underline that we managed to build the really efficient and professional team, truly committed to the Company's development and outcome-driven. Thanks largely to this, JSC Atomenergomash transformed from a disjointed assets set to the united structured holding company with explicit specialization of enterprises, and clear development strategy.

Thanks to that, today the Company is the complete nuclear island and turbine hall equipment supplier for NPP, and one of the main players in the market of equipment manufacture for thermal power, gas and petrochemical industry, shipbuilding. This has the direct impact on the activity results. In just five recent years, the order portfolio increased more than fourfold and reached 420 billion rubles in 2016. The combined revenue grew substantially and amounted to 63.4 billion rubles at the end of the reporting period. At the same time, the revenue from the non-nuclear industries – thermal power, gas and petrochemical industry, shipbuilding – was the maximum in four years, and in total the share of the Division's revenue from new businesses amounted to 43.7%.

The measures taken over the recent years to improve the efficiency and to develop enterprises within the Company. In particular, JSC SNIIP gained the record-setting revenue of 3.9 billion rubles in 2016, which is 67% higher than that in 2015. Over five years, the revenue of this company increased by the factor of 9, and the productivity by the factor of 11. At JSC TsKBM the reconfiguration project was successfully implemented. As a result, since 2012 till 2016 its EBITDA grew by the factor of 11, and the productivity increased almost by 130%.

The reporting year was rich with events. The innovative reactor plants RITM-200 were supplied for the first-in-class new generation icebreaker Arktika. These were the first reactors of the new generation and the first marine plants completely – design to shipment – manufactured within the Division perimeter. JSC Afrikantov OKBM as the designer and complete scope supplier, PJSC ZiO-Podolsk as the shell equipment manufacturer, JSC TsNIITMASH with the materials engineering support, and other companies were involved in this project implementation. Several new technologies and tools were developed by specialists in the course of manufacturing operations. At present the activities on equipment manufacture for serial-built icebreakers are in progress in accordance with the schedule.

Volgodonsk Atommash confidently proves its competency of the NPP nuclear island equipment manufacturer. In October 2016, the second body of the reactor for Belarusian Nuclear Power Plant was shipped. In the course of manufacture, specialists carried out all tests that confirmed the product quality and reliability. The manufacture of steam generators for Belarusian NPP has been completed; the equipment manufacture has been started for multi-purpose fast neutron research reactor project (MBIR), the implementation of other major projects in Russia and abroad is ongoing. Besides, in 2016 JSC TsKBM shipped the last set of main circulation pumps for Power unit 1 of Belarusian Nuclear Power Plant.

In August, there was an event important not only for Rosatom State Corporation but for the entire global nuclear power industry. The 3+ generation Unit was connected to the grid at Novovoronezh NPP and produced the first megawatts to the country's power system. It has the improved performance indicators, ensures the absolute operation safety and fully meets the post-Fukushima requirements of IAEA. This is the great success of JSC OKB GIDROPRESS as designer and developer, which has among other supported all start-up operations, and that of all the Division companies, which supplied the main and auxiliary equipment of the reactor island.

There was a big breakthrough in the area of fast nuclear reactor. Fourth Power Unit with BN-800 reactor developed by JSC Afrikantov OKBM was put into operation at Beloyarsk NPP. This is a big step forward in nuclear cycle closure and in creation of a commercial product for international markets on the basis of fast neutron technology.

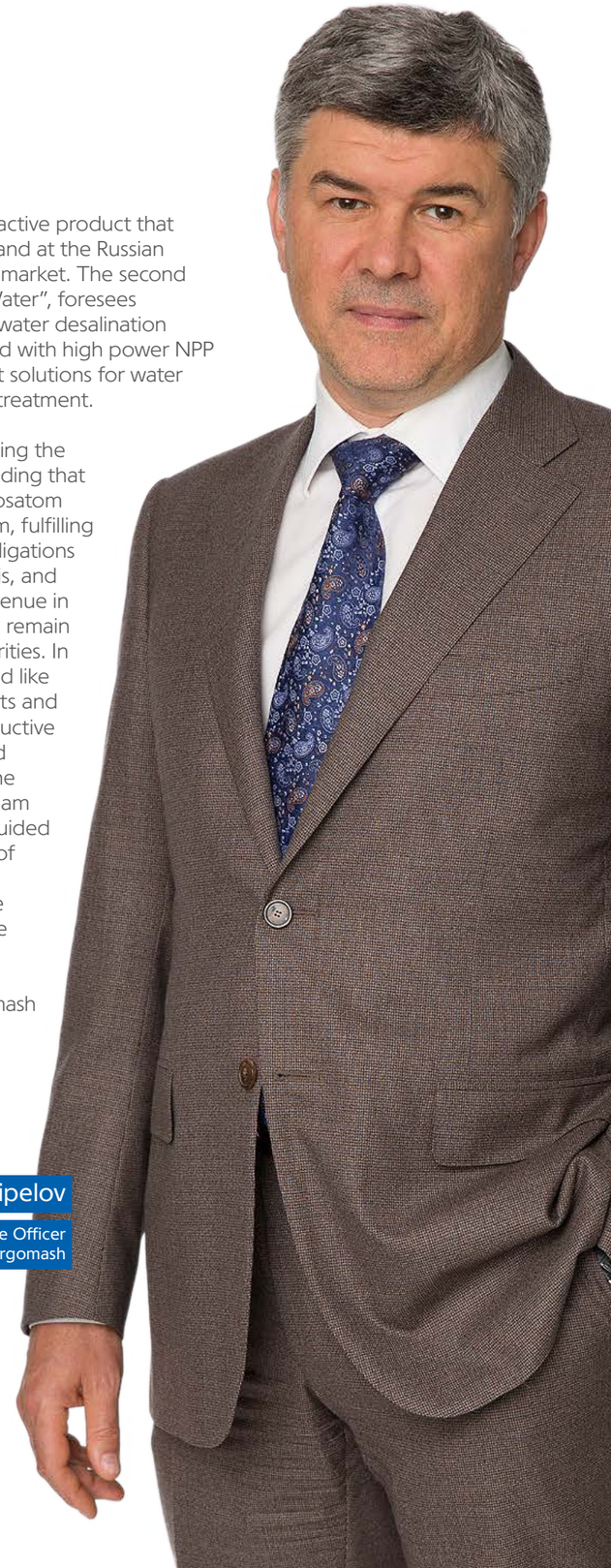
All the enterprises within the Company have carried out a lot of work for implementing the project on supply of complete set of the reactor island equipment for Hanhikivi NPP in Finland. All the client's audits planned for 2016 were a success, the positive result was achieved. Let me remind that the power plant will be constructed in compliance with the European norms and requirements, and the Finland's law regulating nuclear industry is considered to be one of the most stringent in the world. That is why at this stage our task is to pass all the remaining audit inspections successfully, and to finally prove our competencies of equipment manufacturer and supplier to the client, and to proceed with the manufacture.

Another important result is 100% fulfilment of the government defense order by all the enterprises within the Company.

The non-nuclear areas of business were substantially advanced in the reporting year. In particular, JSC SverdNIIKhimmash was awarded with a major contract the supply of waste water treatment complex for the refinery. Over 10 various companies participated in the tender that offered, among other items, European and American technologies of waste water treatment. At the JSC AEM-Technologies facilities the manufacture of column equipment is ongoing for refinery complexed in Moscow and other cities of Russia. The Hungarian company GANZ EEM Ltd. has concluded the first contract for the supply of their own mini hydro power plant; the major contracts are implemented in the thermal power industry.

Since 2016, the Company has become the head organization of the Rosatom State Corporation for development and implementation of two new projects. The first one is on creation of an optimized floating power unit that should consider the entire experience of FNPP Akademik Lomonosov and achieve the improved technical and economical parameters. This would allow to create the new commercially attractive product that would be in demand at the Russian and international market. The second project, "Clean Water", foresees establishment of water desalination facilities integrated with high power NPP as well as product solutions for water and waste water treatment.

In 2017, increasing the productivity, including that with the use of Rosatom Production System, fulfilling all contractual obligations on the timely basis, and increasing the revenue in all business areas, remain our strategic priorities. In conclusion, I would like to thank our clients and partners for productive collaboration, and all the team for the professionalism. I am sure that being guided by the principles of commitment and respect we will be able to ensure the same dynamic development of JSC Atomenergomash for the next 10 years of the company's life.



**Andrey V. Nikipelov**

Chief Executive Officer of JSC Atomenergomash

# KEY PERFORMANCE INDICATORS OF JSC ATOMENERGOMASH FOR 2016

| INDICATOR | TARGET VALUE LOWER LEVEL | TARGET VALUE TARGET LEVEL | TARGET VALUE UPPER LEVEL | ACTUAL VALUE |
|---|---|---|---|---|
| The Division's AFCF[7], bln rubles | 4.05 | 4.5 | **5.4** | **11.84** |
| Integral indicator of investment performance, % | 80 | 100 | **108** | **108** |
| Timeliness of equipment supplies under existing contracts, % | | **100** | | **100** |
| Semi-fixed costs, bln rubles | 23.85 | **22.7** | 16.95 | **19.98** |
| Labor productivity, bln rubles/pers. | **3.7** | 4.1 | 5.35 | **3.7** |
| Portfolio of overseas orders for ten years, mln USD | 69 | 77 | **97** | **149** |
| Foreign revenue, mln USD | **85** | 128 | 154 | **121** |
| Integral indicator for new products[8], % | 95 | 100 | **125** | **150.43** |
| *Revenue on new products outside and inside the perimeter[9], competitively, bln rubles* | 24.6 | **25.9** | 32.4 | **27.7** |
| *Rosatom State Corporation new products order portfolio for ten years, bln rubles* | 100.1 | 105.4 | **131.65** | **204.2** |
| LTIFR[10], % | | **0.54** | | **0.25** |
| Non-availability of failures of INES[11] level 2 and more | | No failures | | **No failures** |
| Fulfillment of the government orders, % | | **100** | | **100** |

*7 Adjusted Free Cash Flow*

*8 Characterizes development and commercial success of new products and business areas of strategic importance for Rosatom State Corporation.*

*9 Rosatom State Corporation perimeter.*

*10 Lost time injury frequency rate.*

*11 International Nuclear Event Scale.*





# TARGET MARKETS AND POSITION OF THE COMPANY

In 2016 the global power engineering market has shown the minor growth and amounted to approximately 110 billion USD. The market structure practically remained unchanged; and the most of new power plant investments were made in thermal power industry – about 60%. The share of gas and petrochemical equipment was about 25%, and that of nuclear power industry equipment – 15%.

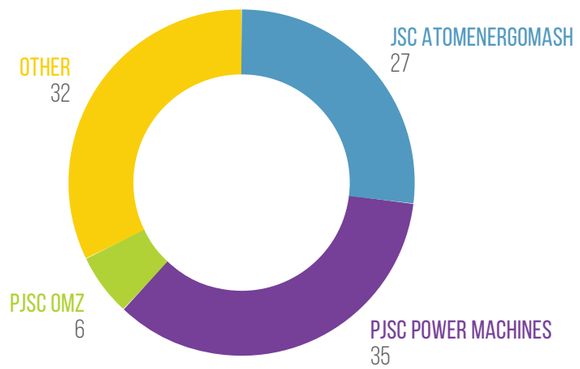
According to the Forecast of Global Power Industry Development till 2040[12] no drastic changes are expected in the power consumption per types of fuel. Hydrocarbons will retain the dominating position by 2040, their share will be 51.4% versus current 53%. The forecast of nuclear power industry development is moderately optimistic: the share of nuclear power industry will remain at the level of 6%, while the absolute values will grow. The Forecast data allows to mention keeping the market structure with prevailing share of thermal power generation equipment for the next few years.

*12 Institute for Energy Analysis of the Russian Academy of Sciences, Analytical Center at the Government of the Russian Federation.*

It is evident that certain countries and regions have their peculiar features in terms of power industry development, nevertheless, the trends at the Russian power engineering market are mainly in line with the global trends: 60% of investment is to equipment for thermal power industry, 29% – for gas and petrochemical industry, and 11% – for nuclear power industry.

The current Russian mechanical engineering market is evaluated as 350 billion rubles per year. Considering the forecast of the national economy development, the moderate decrease of energy demand may be observed in the next few years as well as the reduction of energy consumption growth in the country. Thus, in 2030 perspective the average annual growth of the domestic mechanical engineering market will be within 1–2%, and the main expected trend is the increased competition of national manufacturers and reduced importation of both power industry equipment and components for its manufacture.

Share of the Russian mechanical engineering industry, %



# THE COMPANY'S DEVELOPMENT STRATEGY

**AEM VISION**

MAIN NPP EQUIPMENT GUARANTEED COMPLETE SUPPLY PROVIDER

KEY ACTOR WITH SUSTAINABLE POSITION AT THE RELATED PRODUCTS MARKET

EFFICIENT MANUFACTURER AND SUPPLIER OF COMPETITIVE SOLUTIONS

**STRATEGIC GOALS OF AEM (2030 PLANNING HORIZON)**

PROVIDING SUPPLIES OF KEY EQUIPMENT FOR NEW UNITS CONSTRUCTION AT ROSATOM NPPS IN RUSSIA AND ABROAD

Target equipment market share no less than 50%

GROWTH OF REVENUE IN RELATED SECTORS

Share of revenue outside Rosatom State Corporation perimeter no less than 50%

ESTABLISHMENT OF THE GLOBAL POWER ENGINEERING COMPANY

Share of foreign operations revenue no less than 30%

EFFICIENCY INCREASE

EBITDA profit margin no less than 20%

Labor productivity no lower than average of global power engineering companies

**ROSATOM STATE CORPORATION GOALS**

- INCREASE OF INTERNATIONAL MARKET SHARE
- DECREASE OF PRODUCTS COST PRICE AND PROCESSES DURATION
- CREATION OF NEW PRODUCTS FOR RUSSIAN AND INTERNATIONAL MARKETS

THE DIVISION'S OBJECTIVE COMPLIANCE WITH ROSATOM STATE CORPORATION GOALS

✓ ✓ ✓ ✓

✓ ✓ ✓ ✓

**2016 CONTRIBUTION**

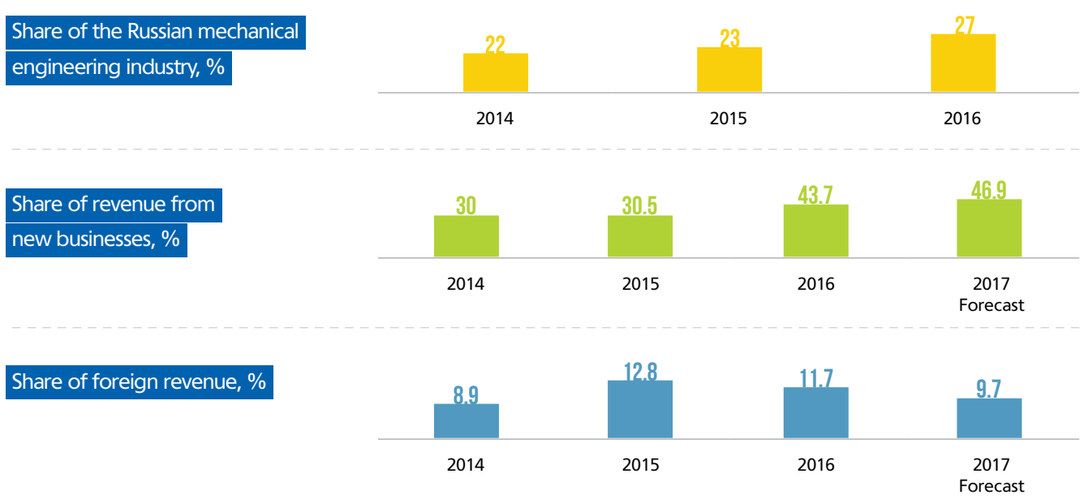
SHARE OF THE RUSSIAN MECHANICAL ENGINEERING MARKET – 27%

SHARE OF REVENUE FROM NEW BUSINESSES – 44%

SHARE OF FOREIGN REVENUE – 12%

EBITDA PROFIT MARGIN – 11%

LABOR PRODUCTIVITY – 3.7 MLN RUBLES/PERS.








# SUSTAINABLE DEVELOPMENT OF THE COMPANY

The Company recognizes that following the concept of sustainable development is one of the most important success factors in the medium and long term. The principles of sustainable development are deeply integrated into the Company's operations and are reflected in the mission of JSC Atomenergomash laid down in its corporate strategy.

The Company has developed its own agenda for sustainable development that takes into account both current and potential initiatives and projects. The agenda for sustainable development of JSC Atomenergomash is based on the results of the United Nations Conference on Sustainable Development, Rio+20, and the similar agenda of Rosatom State Corporation.

| RIO+20 | ROSATOM STATE CORPORATION | JSC ATOMENERGOMASH | RESULTS OF 2016 |
|---|---|---|---|
| Health and population | Ensuring nuclear radiation safety and security of nuclear facilities | Ensuring industrial safety | The Division's LTIFR – 0.25 (the 2016 target value – 0.54) |
| Disaster risk reduction | | | |
| Energy | Ensuring energy security | Implementing orders to provide the country with electricity | Timeliness of equipment supplies under existing contracts, 100% |
| Sustainable consumption | Minimizing the environmental impact | Consuming resources and energy in a responsible manner | Energy consumption volume decrease by 9% |
| Poverty eradication | Providing positive economic and social impacts on a regional, national and international scale | Implementing charitable and social projects in the regions of presence | Charity expenses – 24 mln rubles |
| Food security | | | |
| Human rights and equality | | | |
| Sustainable development financing | | Making payments to the budgets of all levels | Payments made to the budgets of all levels – 5.8 bln rubles |
| Promoting employment and social protection | | Providing stable jobs for the population in the regions of presence | Social payments per one employee – 19.2 thous. rubles |
| Human development | Improving the capital utilization efficiency | Skill pool development | Labor pool – 168 persons |
| Education | | | |
| Technologies | | Innovation and R&D | R&D costs - 6.8 bln rubles |
| Transparency | Ensuring development of the power industry in a publicly acceptable way | The Company's communications and public reporting | Media mentioning:<br>Positive – 32%<br>Negative – 5%<br>Neutral – 63% |

# KEY MARKETS – PROJECTS OF 2016

## Nuclear Power Industry

1. **Kurchatov, Russia**
   Kursk NPP, Kursk NPP-2
2. **Balakovo, Russia**
   Balakovo NPP
3. **Volgodonsk, Russia**
   Rostov NPP
4. **Sosnovy Bor, Russia**
   Leningrad NPP
   Leningrad NPP-2
5. **Novovoronezh, Russia**
   Novovoronezh NPP
   Novovoronezh NPP-2
6. **Zarechny, Sverdlovsk Region, Russia**
   Beloyarsk NPP
7. **Polyarniye Zori, Russia**
   Kola NPP
8. **Desnogorsk, Russia**
   Smolensk NPP
9. **Udomlya, Russia**
   Kalinin NPP
10. **Metsamor, Armenia**
    Armenian NPP
11. **Ostrovets, Belarus**
    Belarus (Ostrovets) NPP
12. **Kudankulam, India**
    Kudankulam NPP
13. **Tianwan, China**
    Tianwan NPP
14. **Pyhäjoki, Finland**
    Hanhikivi NPP
15. **Temelin, Czech Republic**
    Temelin NPP
16. **Paks, Hungary**
    Paks NPP
17. **Kozloduy, Bulgaria**
    Kozloduy NPP
18. **Belene, Bulgaria**
    Belene NPP
19. **Levice, Slovakia**
    Mochovce NPP
20. **Trnava, Slovakia**
    Bohunice NPP

## Thermal Power Industry

1. **Verkhniy Tagil, Russia**
   Verkhnetagilskaya GRES
2. **Svetly, Russia**
   Primorskaya TPP
3. **Arkhangelsk, Russia**
   Arkhangelskaya TPP
4. **Yaroslavl, Russia**
   Yaroslavskaya TPP
5. **Kaliningrad, Russia**
   Pregolskaya TPP
6. **Sharypovo, Russia**
   Berezovskaya GRES
7. **Taraz, Kazakhstan**
   Jambyl GRES
8. **Topar, Kazakhstan**
   Topar GRES

## Gas and Petrochemical Industry

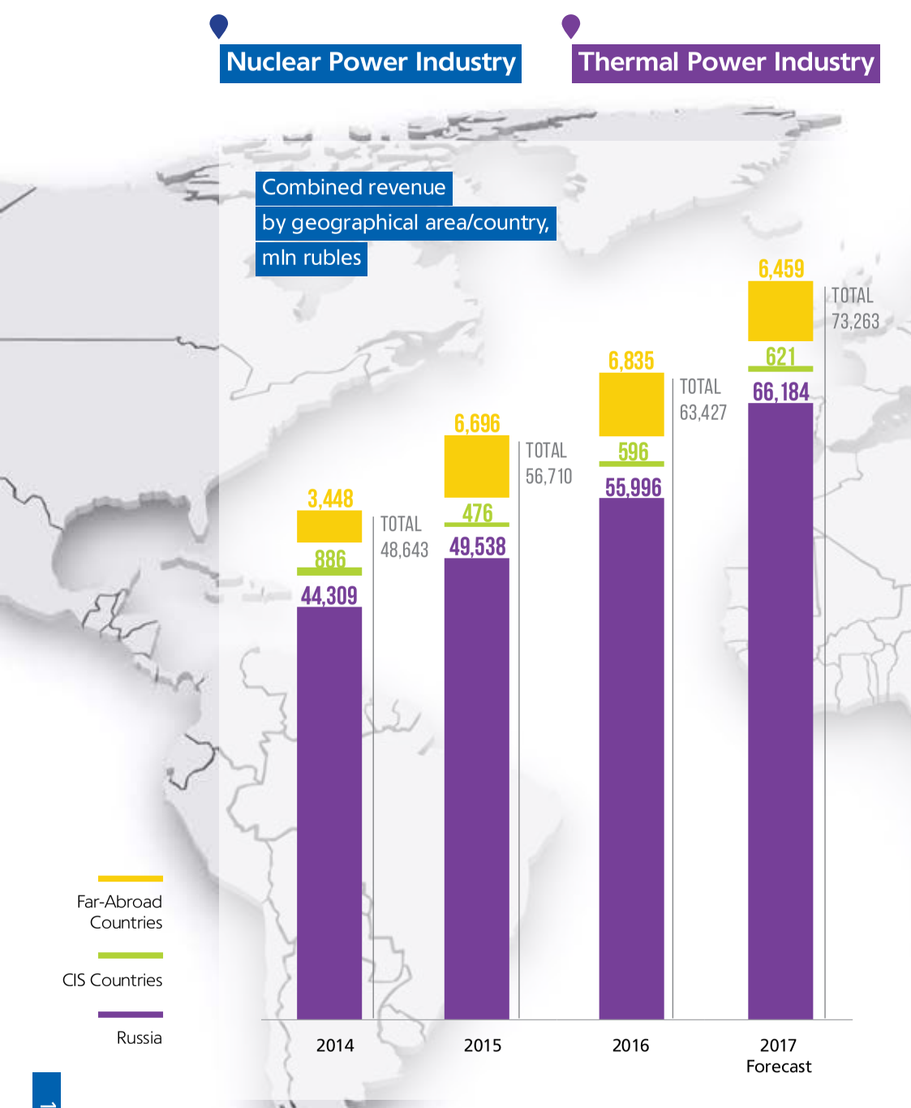
1. **Omsk, Russia**
   Omsk Refinery
2. **Tobolsk, Russia**
   Western-Siberian Complex for Crude Hydrocarbons Deep Conversion
3. **Kaliningrad, Russia**
   Varnitsa LLC
4. **Moscow, Russia**
   Moscow Refinery
5. **Nizhnekamsk, Russia**
   Nizhnekamsk Refinery
6. **Astrakhan, Russia**
   Filanovsky Field

# KEY ASSETS OF THE COMPANY

1. **Petrozavodsk, Russia**
   Petrozavodskmash branch of JSC AEM-Technologies
   LLC PZM LZ
2. **Nizhny Novgorod, Russia**
   JSC Afrikantov OKBM
3. **Nizhnyaya Tura, Russia**
   OJSC Venta
4. **Yekaterinburg, Russia**
   JSC SverdNIIKhimmash
5. **Volgodonsk, Russia**
   Atommash branch of JSC AEM-Technologies
6. **Podolsk, Russia**
   JSC OKB GIDROPRESS
   PJSC ZiO-Podolsk
   JSC ZIOMAR EC
7. **Saint-Petersburg, Russia**
   JSC TsKBM
   JSC AEM Technologies
   LLC AAEM
8. **Moscow, Russia**
   JSC Atomenergomash
   JSC NPO TsNIITMASH
   JSC VNIIAM
   JSC ATM
   JSC SNIIP
   JSC OKTB IS
   JSC OZTMiTS
9. **Dubna, Russia**
   JSC IFTP
10. **Kramatorsk, Ukraine**
    PJSC EMSS
11. **Budapest, Hungary**
    Ganz EEM LLC
12. **Opava, the Czech Republic**
    ARAKO spol. s.r.o.

**The Division Companies Specialization**

| The Division Companies | Nuclear power | Shipbuilding and FNPP* | TMES** | Thermal power | Gas and Petrochemical Industry | Special steels | General equipment | Desalination, water treatment and water purification | Mini hydro power plants | RAW/SNF*** |
|---|---|---|---|---|---|---|---|---|---|---|
| AEM-Technologies | ● | ● | | | ● | | | ● | | ● |
| ZiO-Podolsk | ● | ● | ● | ● | ● | | ● | ● | | |
| ZIOMAR | ● | | | ● | ● | | | | | |
| TsKBM | ● | | | | | | | | | |
| GIDROPRESS | ● | | ● | | | | | | | |
| Afrikantov OKBM | ● | ● | ● | | ● | | | | | |
| ARAKO | ● | ● | | ● | ● | | | | | |
| SverdNIIKhimmash | ● | | | | | | | ● | | ● |
| Ganz EEM | ● | | | | ● | | | | ● | |
| SNIIP | ● | ● | ● | | | | | | | |
| AAEM | ● | | | | | | | | | |
| EMSS | ● | | ● | ● | | ● | | | | |
| ATM | ● | | | ● | ● | | | | | |
| TsNIITMASH | ● | | | ● | | ● | | ● | | |




* FNPP – Floating Nuclear Power Plant

** TMES – transport and marine energy solutions

*** RAW/SNF – radioactive waste/spent nuclear fuel

# PUBLIC BUSINESS MODEL
## OF THE DIVISION

**MISSION:** TO ESTABLISH AND DEVELOP GLOBALLY COMPETITIVE TECHNOLOGICAL SOLUTIONS FOR THE POWER INDUSTRY IN ORDER FOR PEOPLE TO MAINTAIN A COMFORTABLE LIFE AND TO ACHIEVE GROWTH IN THE COMPANY'S BUSINESS RESULTS

## 01 RESOURCES

**Personnel Composition**
Human capital assets – over 18,000 skilled professionals

**Infrastructure**
Production capital – unique production facilities and state-of-the-art equipment fleet

**Financial and Economic Position**
Financial capital – growing revenue supported by order portfolio extension and business efficiency increase

**Technologies**
Innovative capital – balanced portfolio of actively developing conventional and advanced power engineering technologies

## 02 MAIN ACTIVITIES

PRODUCTS IN BUSINESS AREAS

**Nuclear Power Industry**
Equipment for reactor island and turbine hall, auxiliary equipment for NPP

**TMES**
Reactor plants for nuclear-power icebreakers and sea vessels, naval facilities

**Clean Water**
Equipment for desalination, water treatment and water purification for municipal and industrial use

**Shipbuilding and FNPP**
Various types of equipment for shipbuilding and FNPP

**Special Steels**
Special steel cast and forged items

**General equipment**
Special machinery and heavy machinery components for defense industry

**RAW/SNF**
Equipment for storage, transportation and processing of RAW/SNF

**Thermal Power Industry**
Boilers and auxiliary equipment for thermal power industry

**Gas and Petrochemical Industry**
Equipment for oil and gas processing at refineries and offshore platforms

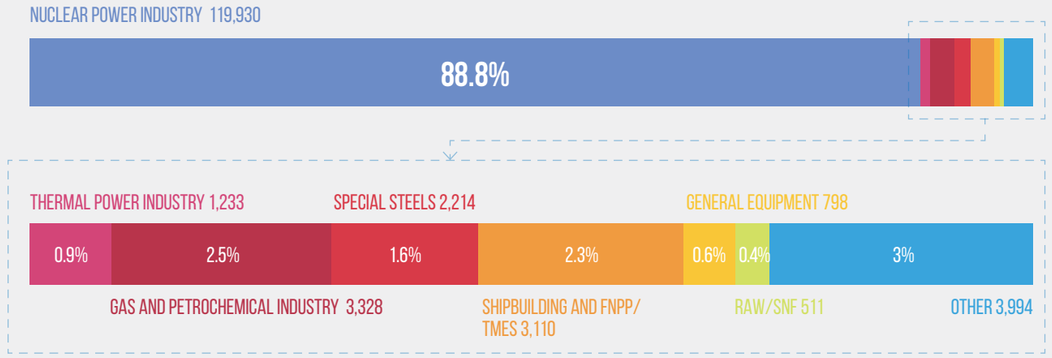
**Mini hydro power plants**
Equipment for small scale hydro power generation (container type mini hydro power plants)

## 03 SALES

1. EQUIPMENT DESIGN
2. EQUIPMENT MANUFACTURE
3. EQUIPMENT SUPPLY
4. INSTALLATION AND COMMISSIONING
5. SERVICE AND UPGRADING

**TOTAL ORDER PORTFOLIO AMOUNT – 420.2 BLN RUBLES EXCLUDING VAT**

Structure of contracts concluded in the reporting year per business areas:




**TOTAL: 135,118 MLN RUBLES**

## 04 CREATION OF VALUE FOR THE COMPANY:

**Personnel Composition**
Personnel efficiency increase and human resource development:

- Increase of share of employees with higher education – 3%
- Labor productivity increase – 24%

**Infrastructure**
Increase of production facilities efficiency and flexibility:

- Amount of investments – over 4.2 bln rubles
- Production plan fulfilment increase – 12%

**Financial and Economic Position**
Ensuring business cost-effectiveness and sustainability:

- Combined revenue growth – 12%
- Income from sales of non-core assets – 694 mln rubles

**Technologies**
Ensuring products competitiveness and technological leadership:

- 81 patents and intellectual property certificates
- 301 scientific publications

## CREATION OF VALUE FOR STAKEHOLDERS:

**Natural capital:**
- Reduction of total waste mass – 9%
- Reduction of $N_2O$ emissions – 32%

**Social capital:**
- Payments to the budget (accrued) – 5.9 bln rubles
- Charity expenses – 24 mln rubles

# PRODUCTION CHAIN
## IN THE NUCLEAR POWER BUSINESS FIELD

### RESEARCH AND DEVELOPMENT

- Basic and applied research
- Development of new materials and processes
- Prototypes and tests

- Afrikantov OKBM
- GIDROPRESS
- TsNIITMASH
- TsKBM
- SNIIP
- SverdNIIKhimmash

1

### DESIGN AND ENGINEERING

- Development of reactor equipment for all Russian design NPPs
- Reactor plants for nuclear-power icebreaker fleet
- Advanced research for manufacture of reactor plants for medium and minor power NPPs

- GIDROPRESS
- Afrikantov OKBM
- ZIOMAR/ ZiO-Podolsk
- AEM-Technologies

2

### METAL SEMI-PRODUCTS AND SPECIAL STEELS

- Production of metal semi-products for nuclear, power and other industries
- Development of new structural materials
- Design and manufacture of customized equipment

- EMSS
- LLC PZM LZ
- TsNIITMASH

3

### EQUIPMENT MANUFACTURE

- Manufacture of reactor and turbine islands equipment
- Manufacture of NPP auxiliary equipment
- Unique process and production concepts

- GIDROPRESS
- GANZ EEM
- Afrikantov OKBM
- ZIOMAR/ ZiO-Podolsk
- Atommash branch of AEM-Technologies
- Petrozavodskmash branch of AEM-Technologies
- SNIIP
- TsKBM
- ATM
- SverdNIIKhimmash

4

### COMPLETE SUPPLY

- NSSS equipment
- Turbine hall equipment
- Marine reactor plants

- Atomenergomash

5

### CLIENT

- Supply of equipment for units under construction and units put into operation
- Supply of equipment for research reactors
- Support of supplied equipment throughout its life cycle
- Supply of equipment for nuclear-powered fleet

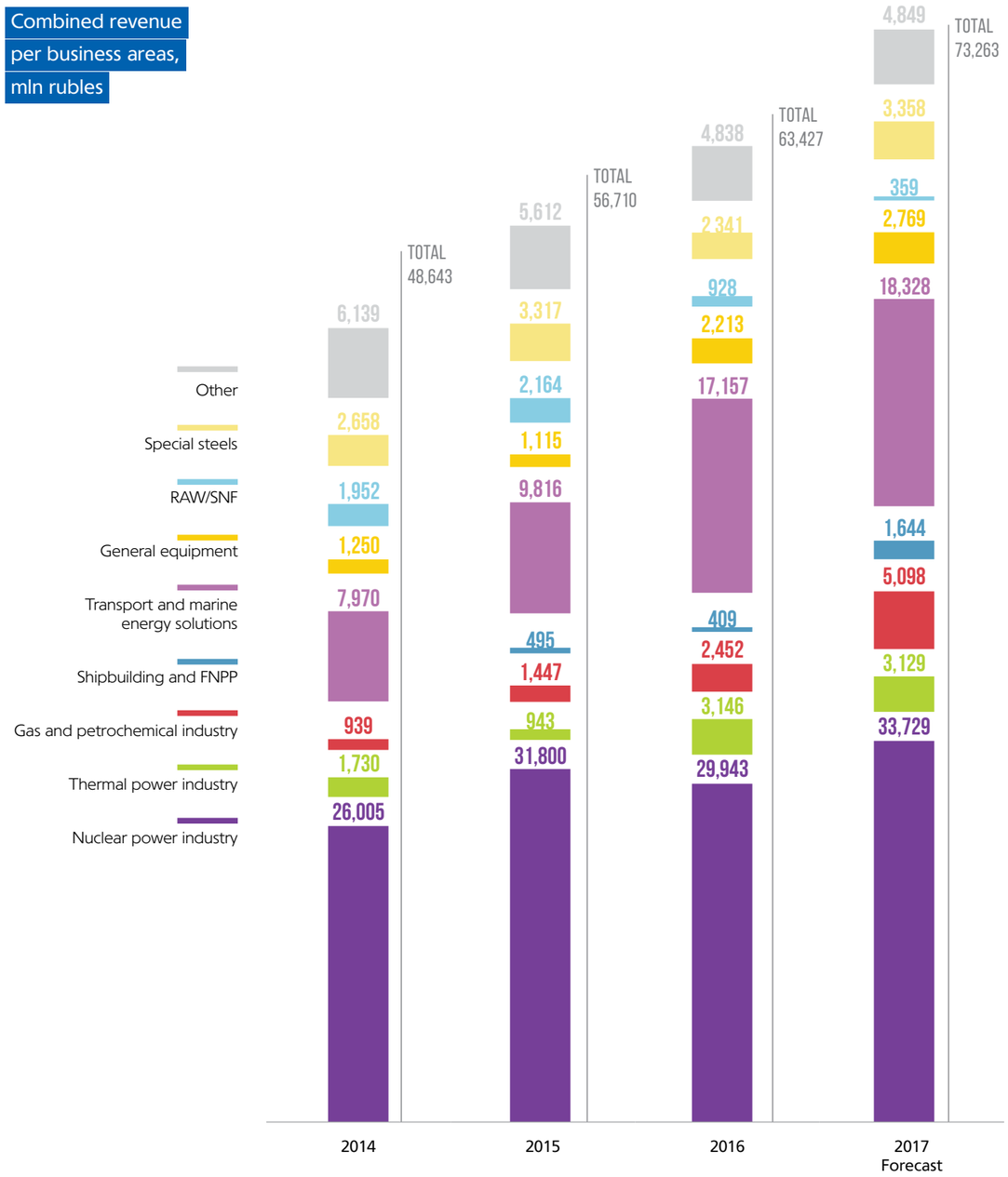
- ASE Group (NPP abroad)
- Rosenergoatom Concern (NPP in Russia)
- Atomflot
- Rusatom Service
- International power holding companies and corporations
- International partners and clients for nuclear power industry solutions



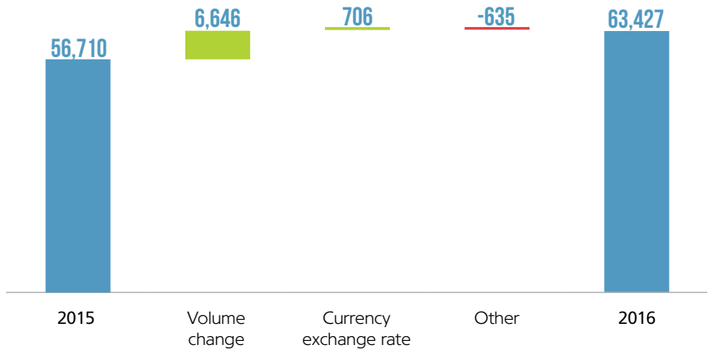


# ECONOMIC PERFORMANCE

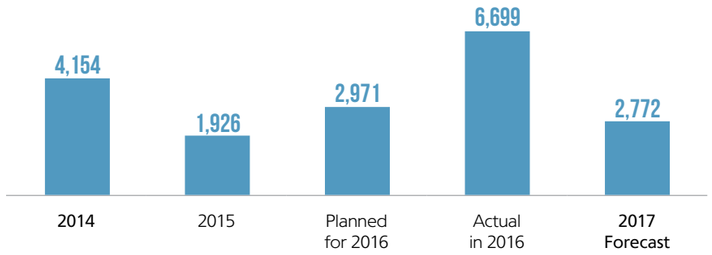
Combined revenue per business areas, mln rubles



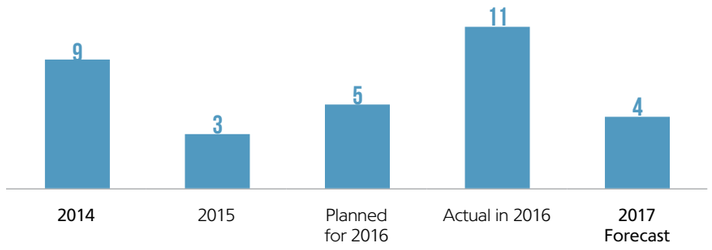
## Factor analysis of the change in combined revenue, mln rubles



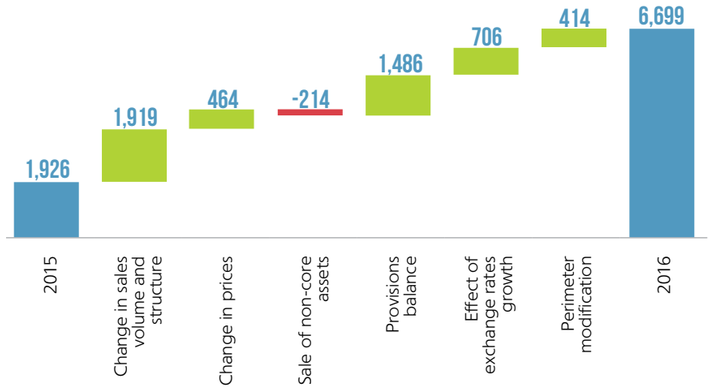

## EBITDA, mln rubles




## EBITDA profit margin, %

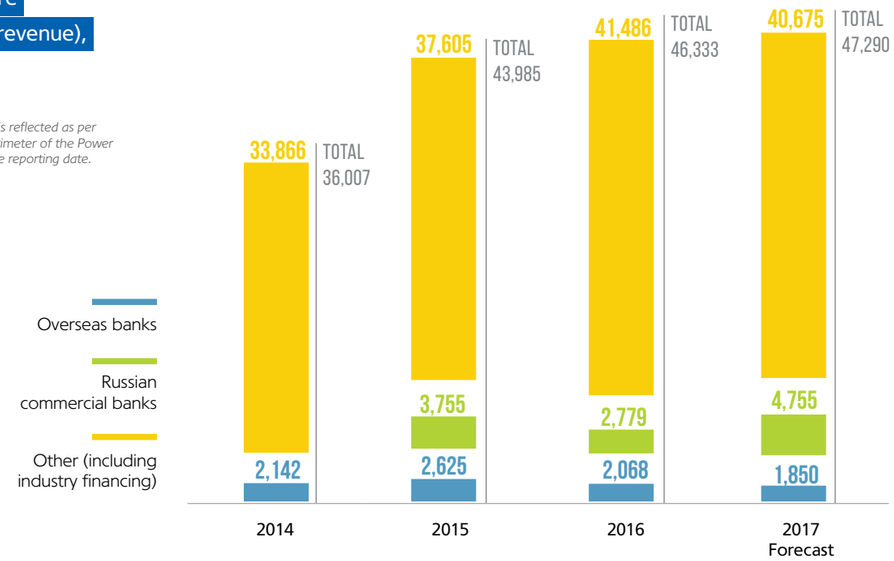



## Factor analysis of the change in EBITDA, mln rubles



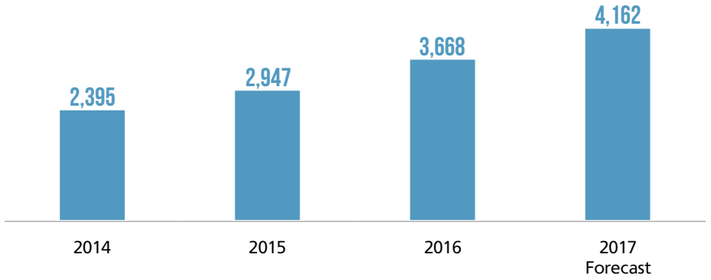

## Loan book structure (as per combined revenue), mln rubles[13]

*13 The debt portfolio structure is reflected as per the budget consolidation perimeter of the Power Engineering Division as of the reporting date.*

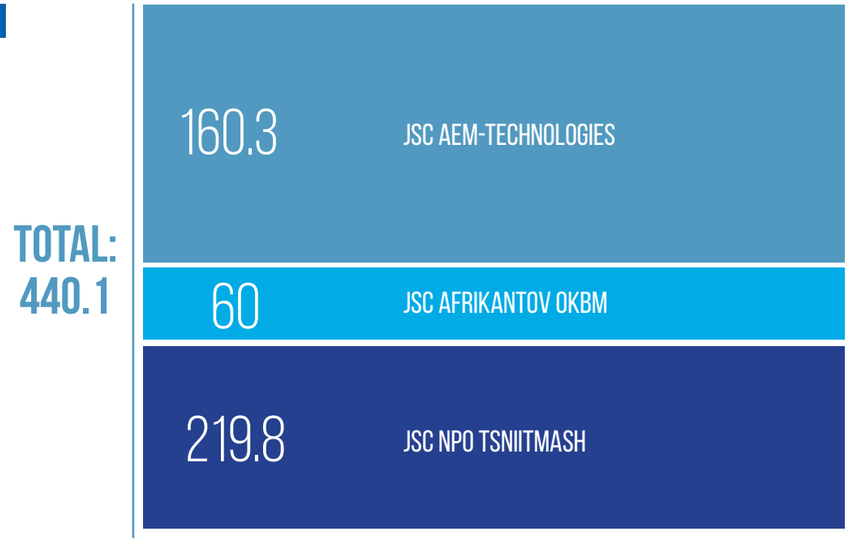



## Labor productivity in the Division, thousand rubles/pers.[14]

*14 The indicator shall be consolidated as per the budget perimeter.*

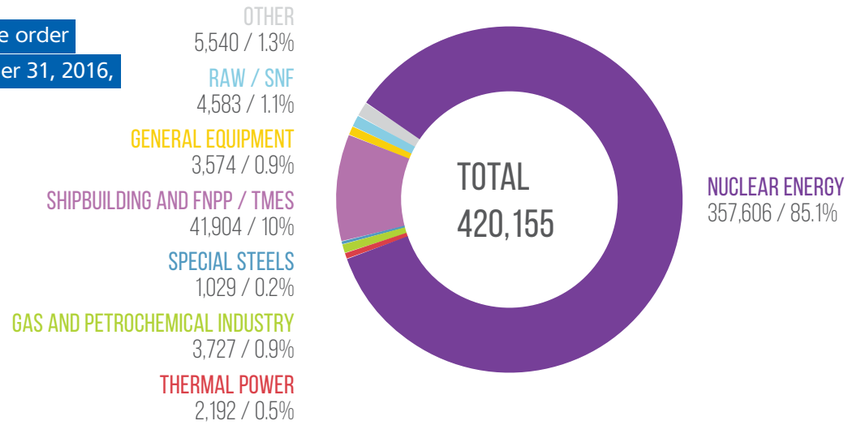



## Government assistance in 2016, mln rubles

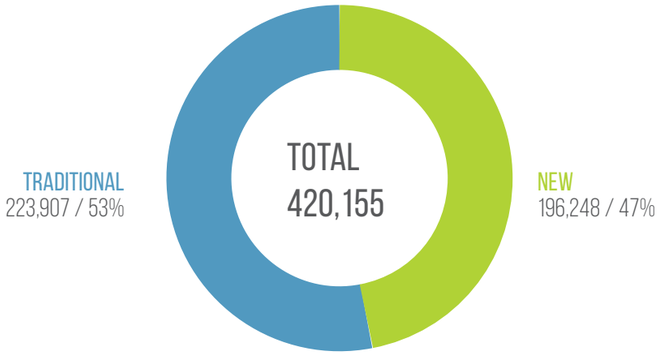


# COMMERCIAL ACTIVITIES

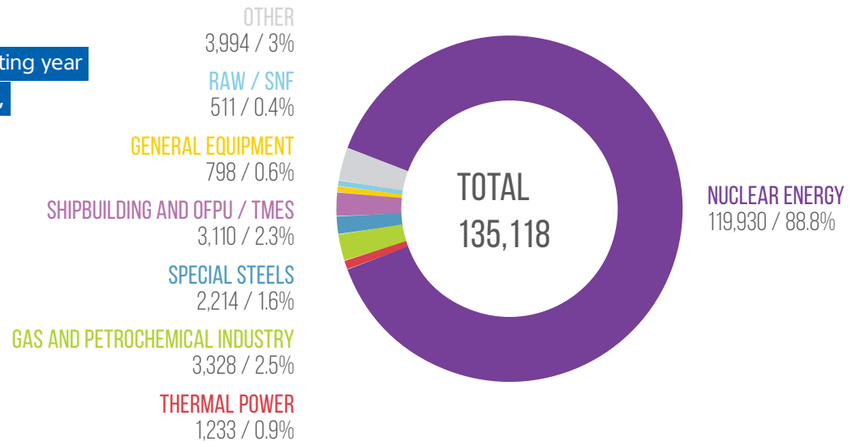
**Sectoral structure of the order portfolio as of December 31, 2016, mln rubles**




**Structure of the order portfolio by business type, mln rubles**




**Structure of contracts concluded in the reporting year by operating segments, mln rubles**








# INVESTMENT ACTIVITIES

*15 The level of implementation shown by the indicator is associated with the discontinuing of part of the project activities due to the loss of relevance, as well as postponing the implementation of key projects because of the suppliers' failure to deliver the equipment on time, and savings made during the procurement procedures.*

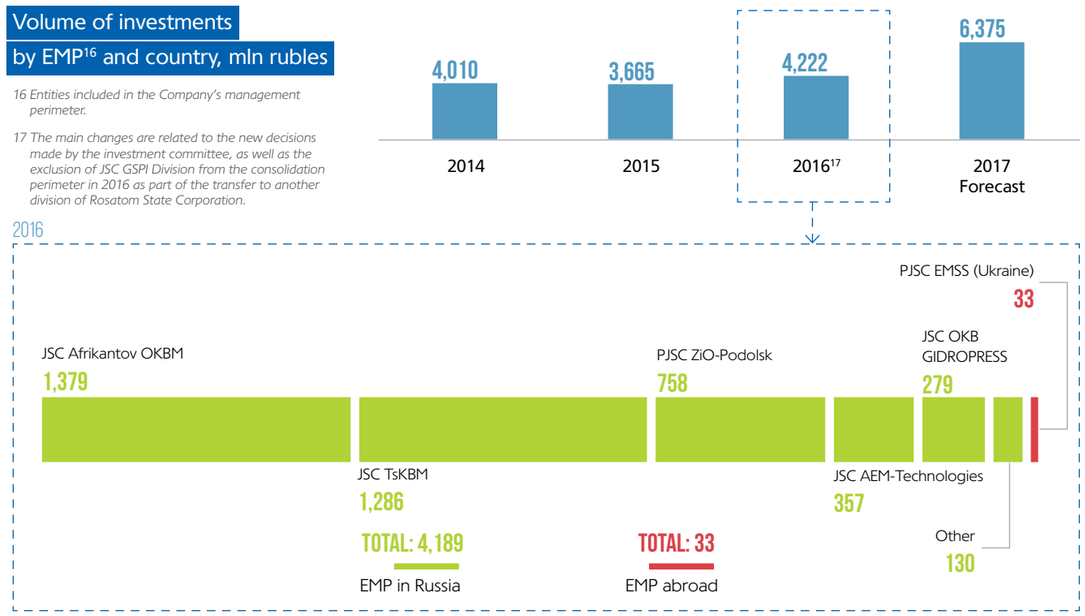
The purpose of the investment program of the Division is the execution of contracts for the supply of equipment within the framework of the implementation of the Road Map for the construction of nuclear power plants in Russia and abroad, the production of State Defense Order products and the fulfillment of obligations under the delivery of gas, petrochemical and thermal power equipment.

In the reporting year, the volume of financing of the Company's Investment Program amounted to 4.2 billion rubles. The implementation level of the Investment Program for the Division in 2016 was about 70%[15].

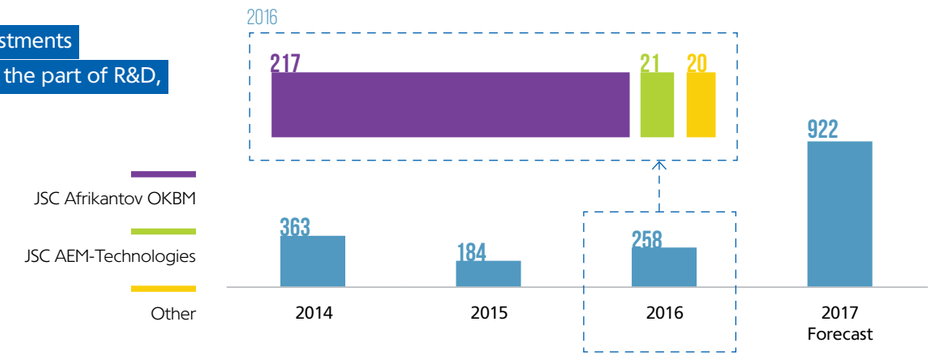
**Volume of investments by EMP[16] and country, mln rubles**

*16 Entities included in the Company's management perimeter.*

*17 The main changes are related to the new decisions made by the investment committee, as well as the exclusion of JSC GSPI Division from the consolidation perimeter in 2016 as part of the transfer to another division of Rosatom State Corporation.*




**Attracted investments and capital on the part of R&D, mln rubles**



# RESULTS OF PRODUCTION ACTIVITIES

## KEY PERFORMANCE RESULTS OF PRODUCTION ACTIVITIES BY BUSINESS AREAS IN 2016:

### NUCLEAR ENERGY

- Supply of products to the following Nuclear Power Plants: Beloyarsk NPP (power units No. 3 and No. 4), Kola NPP, Rostov NPP (power units No. 3 and No. 4), Kalinin NPP, Smolensk NPP, Balakovo NPP, Novovoronezh NPP, Novovoronezh NPP-2, Kursk NPP, Leningrad NPP, Leningrad NPP-2, Belorusian NPP, Armenian NPP, Bohunice NPP, Mokhovce NPP, Kozloduy NPP, Tianwan NPP (power units No. 3 and No. 4), Temelin NPP (power units No. 1 and No.2), Paks NPP.

### THERMAL POWER

- Supply of products to the production sites of Verkhnetagilskaya TPP, Berezovskaya TPP, Zhambyl TPP, Toparskaya TPP, Arkhangelsk CHPP, Yaroslavl CHPP, Pregolskaya TPP, Primorskaya TPP, and others.

### GAS AND PETROCHEMICAL INDUSTRY

- Carrying out of JSC AEM-Technologies contracts for the supply of column and reactor equipment for:
  - Orsk Refinery;
  - JSC Gazpromneft – Moscow Refinery;
  - JSC Gazpromneft – Omsk Refinery.
- Implementation of the agreement signed with JSC SverdNIIkhimmash for the design and supply of a vacuum-evaporator installation for the production of "Extra" grade table salt in the Kaliningrad Region.

### SPECIAL STEELS

- Shipment of products for the ArcelorMittal plants (Germany, Luxembourg, France, Romania, Belgium, Poland, Spain), and the following companies: General Electric International Inc. (USA), BHEL (India), Fabbrica Italiana Lamiera (Italy), Alstom Renewable (Poland), Iron Acciai Speciali s.r.l. (Italy), Iron Acciai Speciali (Italy), Bhushan Power (India), ABB (Estonia, Poland, Finland), AH Industries (Denmark), Perfect Concept Trading (Russia, India), Aperam Stainless Belgium (Belgium), ThyssenKrupp Rothe Erde (Germany) and other leading European companies.

### SHIPBUILDING AND FNPP / TMES

- Supply of equipment for the shipbuilding industry of the Russian Federation, including the Russian Navy.
- Mastering, manufacturing and shipping of the new generation RITM-200 reactor for the nuclear-powered icebreaker LK-60 (project 22220).





# QUALITY AND INDUSTRIAL SAFETY

One of the values that Rosatom State Corporation treasures most is the security. The main condition for achieving safety in the operation of nuclear facilities is the product quality control at the Division enterprises, because of that the safety of nuclear facilities is directly related to the quality of products.

The growing safety requirements for nuclear facilities both in operation and under construction impose special obligations on all enterprises of the Division in regards of product quality, with quality assessment becoming an integral part of manufacturing process of all types of products.

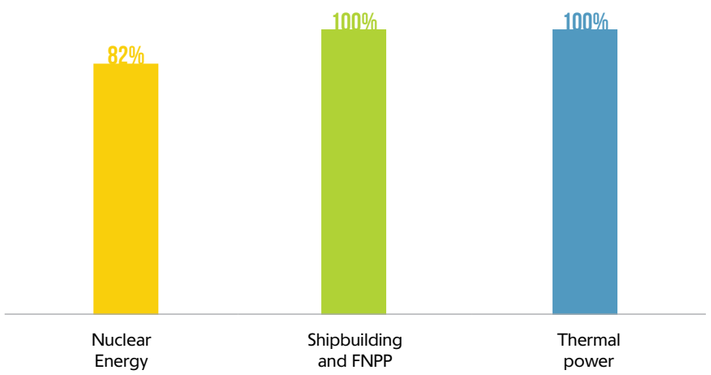
The high quality of products manufactured by EMPs is provided by the certified proprietary quality management system of the EMPs that meets the requirements of ISO 9001.

**Enterprises holding ISO 9001 certificates for quality management system**

| NAME OF THE ENTITY | NAME OF CERTIFICATION SYSTEM AND CERTIFICATE'S VALIDITY PERIOD |
|---|---|
| ARAKO spol. s.r.o. | TÜV SÜD, to September 14, 2018 |
| Ganz EEM LLC | TÜV SÜD, to September 14, 2018 |
| JSC Atomenergomash | IQNet (the Russian Register of St Petersburg), to December 28, 2019 |
| JSC OKB GIDROPRESS | BUREAU VERITAS Certification, to October 23, 2017 |
| JSC Afrikantov OKBM | TÜV Thüringen, to September 14, 2018 |
| JSC NPO TsNIITMASH | BUREAU VERITAS Certification, to March 11, 2017 |
| JSC ATM | AFNOR Certification, to September 14, 2018 |
| JSC AEM-Technologies | IQNet (the Russian Register of St Petersburg), to September 15, 2018 |
| OJSC Venta | GOST R VCS, to December 24, 2017 |
| JSC VNIIAM | Evro-Reestr VCS, to July 17, 2018 |
| PJSC ZiO-Podolsk | Lloyd's Register Quality Assurance, to September 14, 2018 |
| JSC SverdNIIkhimmash | Management System Register VCS, to September 01, 2018 |
| JSC SNIIP | TÜV CERT, to September 15, 2018 |
| JSC TsKBM | IQNet (LLC Test – St Petersburg), to June 30, 2017 |
| LLC AAEM | IQNet (the Russian Register of St Petersburg), to September 14, 2018 |
| PJSC EMSS | TÜV Thüringen, to September 14, 2018 |

**The percentage of products that passed consumer input control on the first application[18]**

*18 A low percentage of products that passed the consumer input control on the first application at the Nuclear Power Plant is associated with a lengthy processing procedure for the decision-making on the use of the imported equipment at LLC ARAKO.*

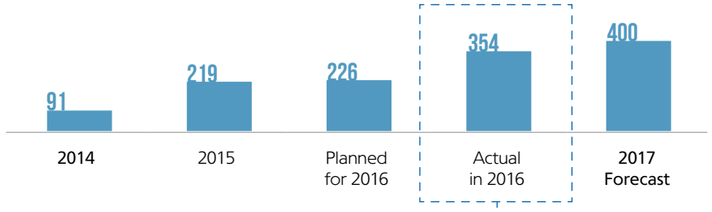


# OPTIMIZATION OF PRODUCTION PROCESSES

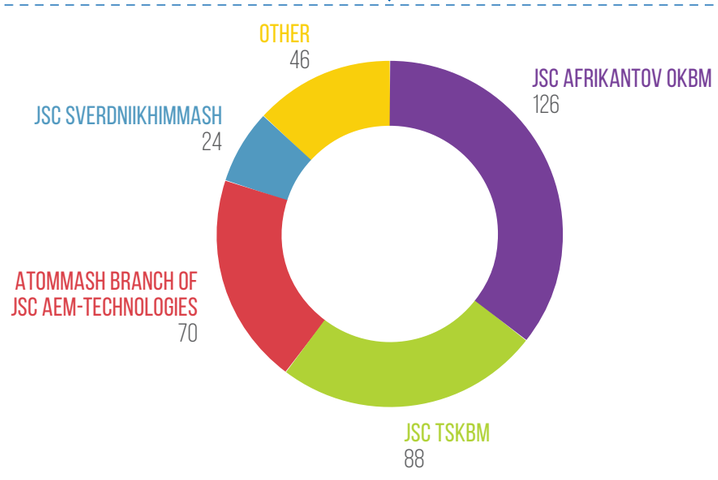
The implementation of the ROSATOM production system is an industry project aimed at creating, in the light of the best examples of domestic and foreign experience, of a universal system for managing complex optimization of production and management processes of the Rosatom State Corporation enterprises.

**Number of RPS[19] projects, pcs.**

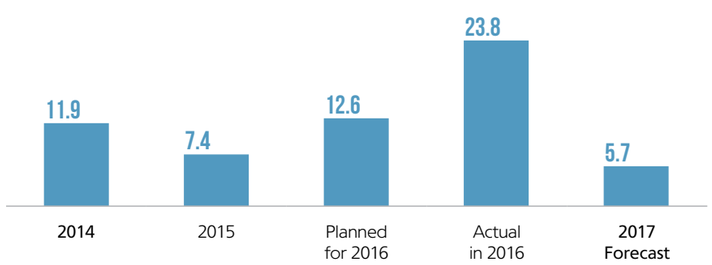
*19 Rosatom Production System.*




2016 ACTUAL




**The RPS project implementation costs, mln rubles**

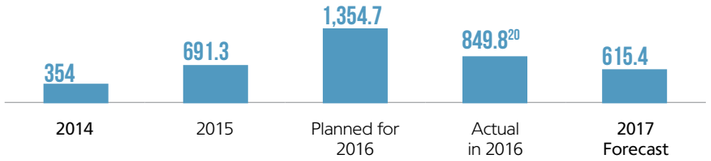




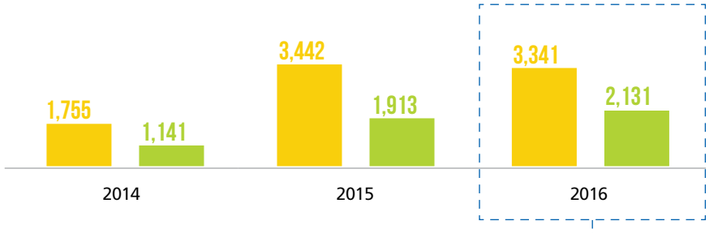



**Economic effect of RPS projects, mln rubles**

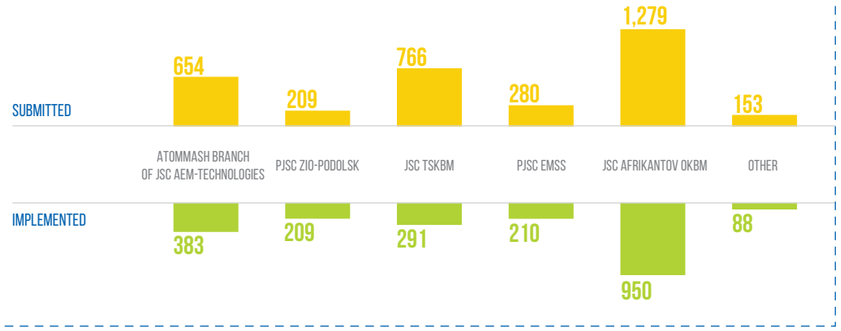
*20 The reason for failure to comply with the plan is the changes in the target indicator for unfinished production in the RPS-streams due to changes in the production program, as well as the suspension of two large RPS-projects due to changes in contract terms.*




**Number of submitted and implemented proposals**



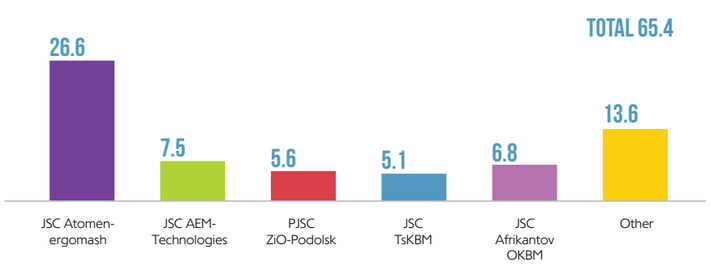

2016



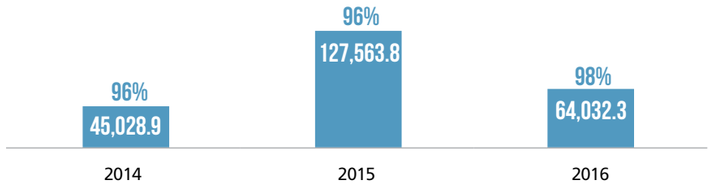

# PROCUREMENT ACTIVITIES

Procurement activities of JSC Atomenergomash are targeted at carrying out measures for the implementation by Atomenergomash JSC, being a machine building division of Rosatom State Corporation, of customer functions in relation to conducting procurement procedures and the authorized body in respect to EMPs procurement.

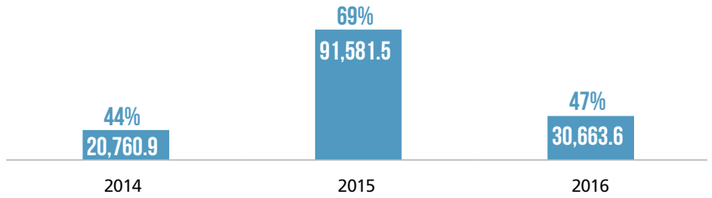
**Total value of contracts concluded in 2016, bln rubles**



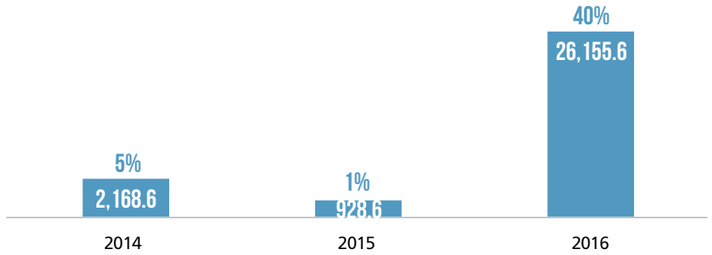
Share of purchases from Russian suppliers, mln rubles



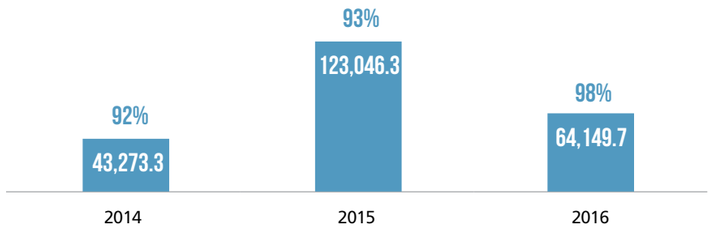

Share of purchases within the Division, mln rubles



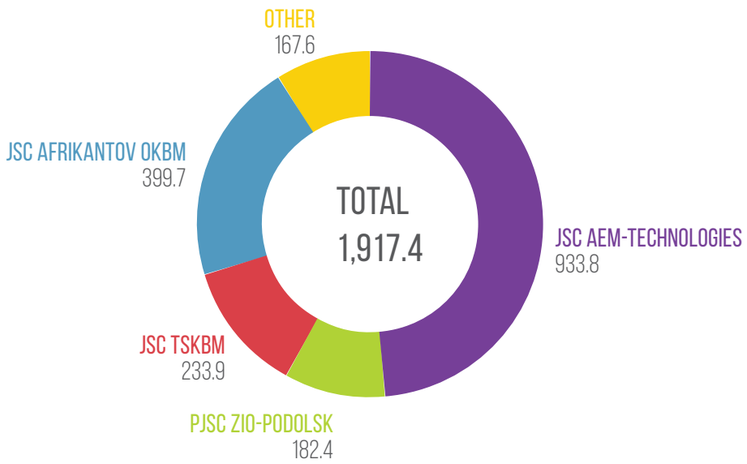

Share of purchases from small and medium-sized businesses (SMB), mln rubles




Share of public procurement procedures, mln rubles




The amount of funds saved by using public competitive procurement procedures, mln rubles



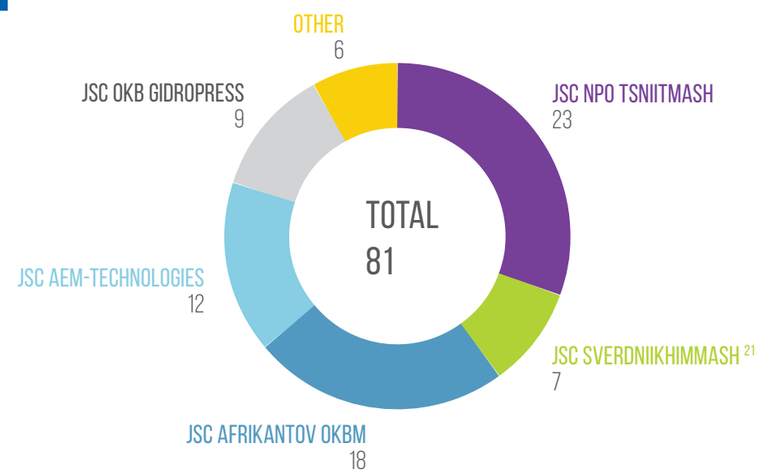





# INNOVATION ACTIVITIES

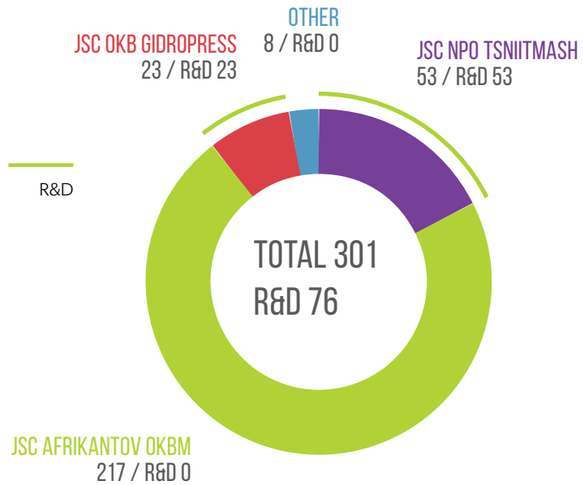
One of the main factors of competitiveness in the field of power engineering is the investment into innovation, research, and development. Being aware of the importance of this field JSC Atomenergomash set implementation of R&D projects as one of its priorities.

Number of patents and noticeable results of intellectual activity, pcs.

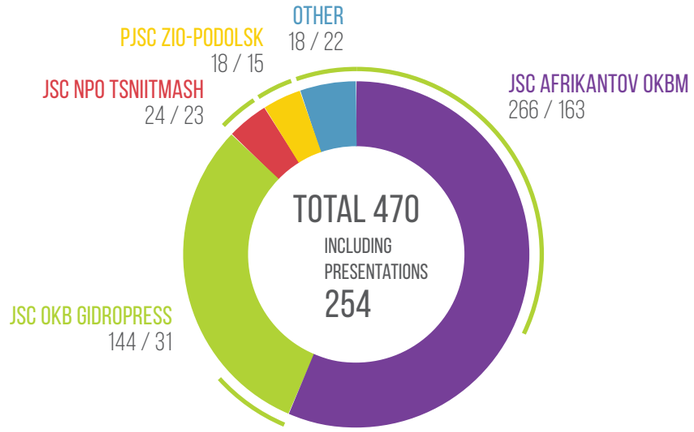



21 The reason for failure to comply with the plan is the disruption of work with subcontractors on the Proryv project.

Number of published scientific papers and articles, including subjects of R&D, pcs.



## Participation in scientific conferences, including presentations, pcs.




# ENVIRONMENTAL MANAGEMENT

Environmental safety issues are an essential part of the positioning of the Division's enterprises both in terms of operation in the market for advanced energy solutions and in terms of environmental protection in their business activities.

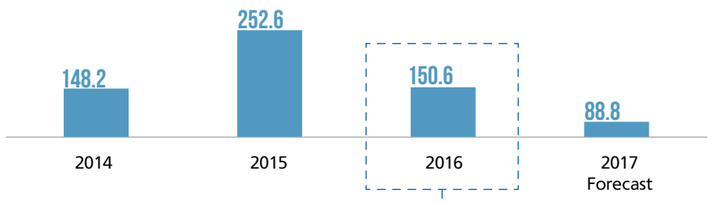
## Enterprises holding ISO 14001 certificates[22]

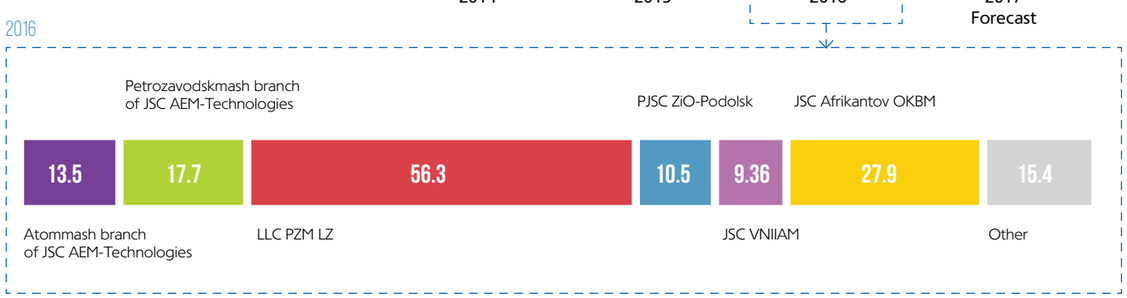
| COMPANIES | AVAILABILITY OF ISO 14001 CERTIFICATE |
|---|---|
| JSC SNIIP | Yes |
| PJSC Energomashspetsstal | Yes |
| PJSC ZiO-Podolsk[23] | Certification is planned in 2017 |

*22 ISO 14001 is a series of international standards on environmental management.*

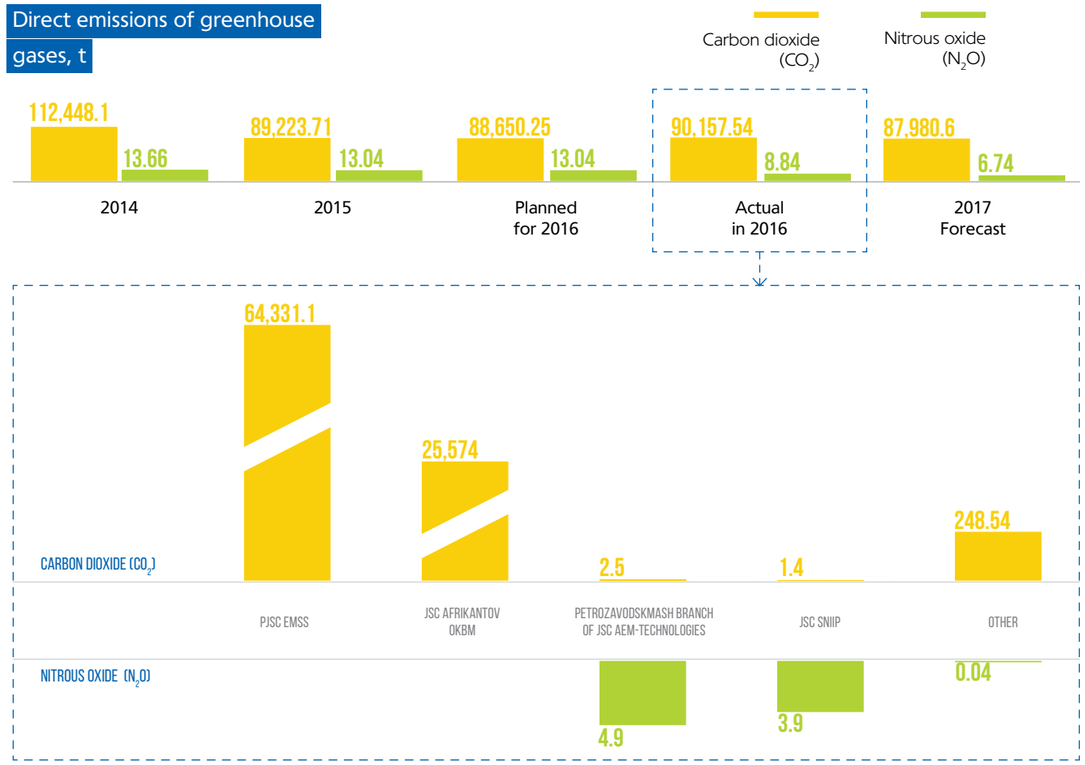
*23 Currently, PJSC ZiO-Podolsk is implementing an environmental management system in accordance with the international standard ISO 14001:2015. The first stage of the audit is set for March 2017.*

## Expenses for the prevention of impact on the environment and for the environmental management system, mln rubles




## Direct emissions of greenhouse gases, t



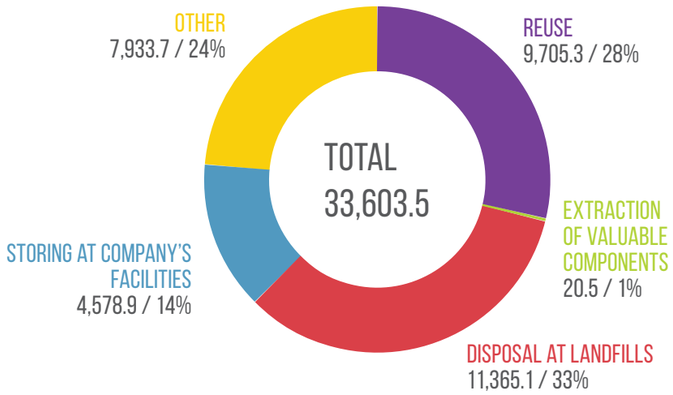

## Emissions of ozone-depleting substances, t

| COMPANY | SUBSTANCE TYPE | 2014 | 2015 | 2016 PLANNED | 2016 ACTUAL | 2017 FORECAST |
|---|---|---|---|---|---|---|
| PJSC ZiO-Podolsk | Carbon tetrachloride | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 |
| | Trifluorochloromethane | 0.1 | - | - | - | - |
| JSC SverdNIIkhimmash | Carbon tetrachloride | 0.04 | 0.04 | 0.04 | 0.04 | 0.01 |
| JSC Afrikantov OKBM | Carbon tetrachloride | 0.02 | 0.018 | 0.022 | 0.018 | 0.018 |

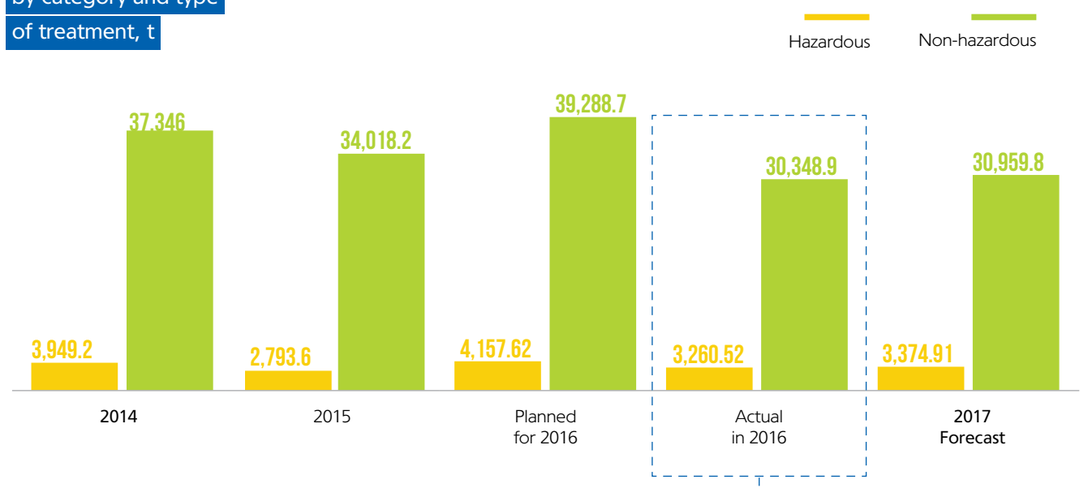
## Atmospheric emissions of NOx, SOx, and other significant pollutants, t

| GAS NAME | 2014 | 2015 | 2016 PLANNED | 2016 ACTUAL | 2017 FORECAST |
|---|---|---|---|---|---|
| NOx | 320.1 | 281.3 | 528.2 | 394.8 | 390.2 |
| SOx | 26.8 | 46.2 | 45.5 | 44.8 | 41.6 |
| Persistent organic pollutants (POP) | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| Volatile organic compounds (VOC) | 179.3 | 117.9 | 145.2 | 106.3 | 104.6 |
| Hazardous air pollutants (HAP) | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| Solid particles (SP) | 123.4 | 94.8 | 105.2 | 93.0 | 87.7 |
| Other | 281.2 | 198.1 | 197.3 | 160.6 | 161.1 |

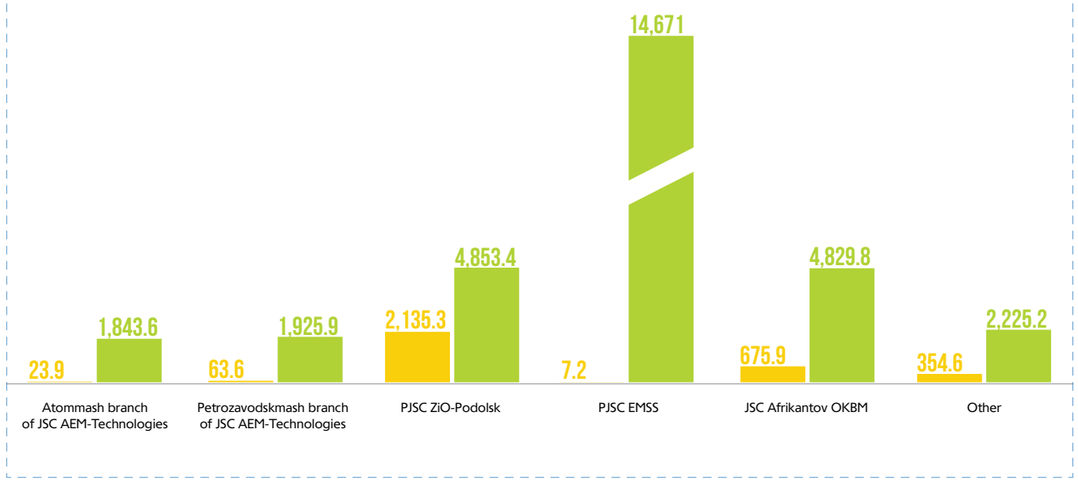
Waste volume by type of treatment, t




Total weight of waste by category and type of treatment, t




2016 ACTUAL





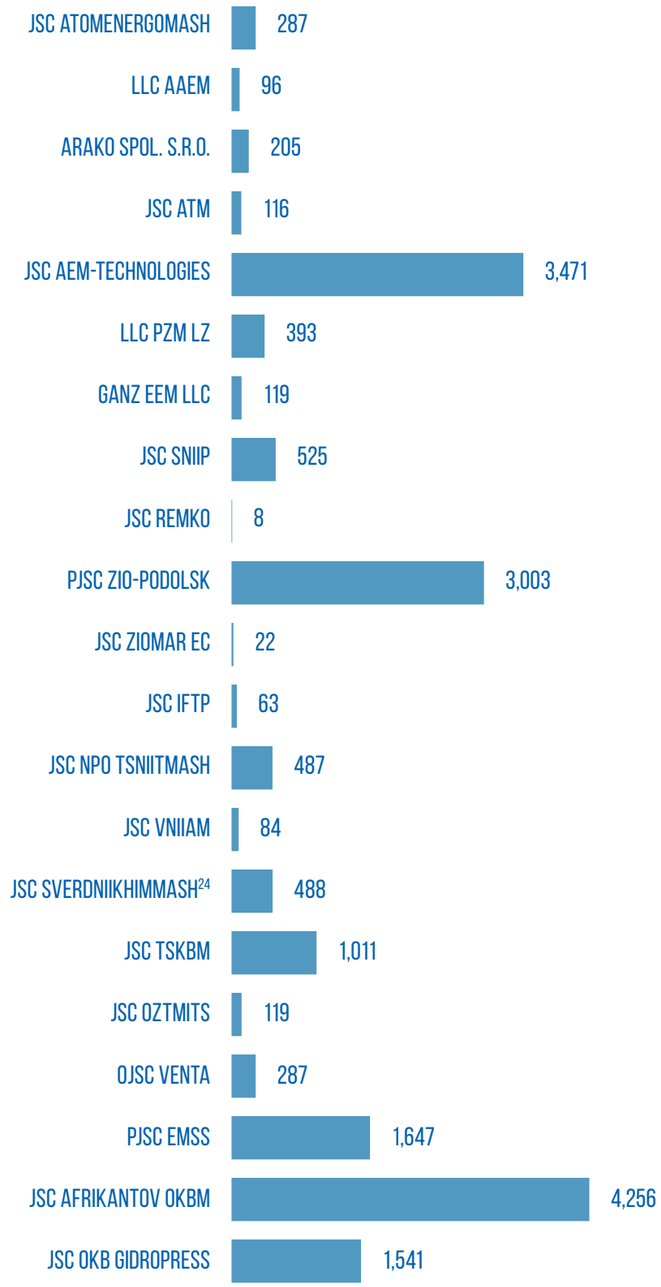



# PERSONNEL COMPOSITION

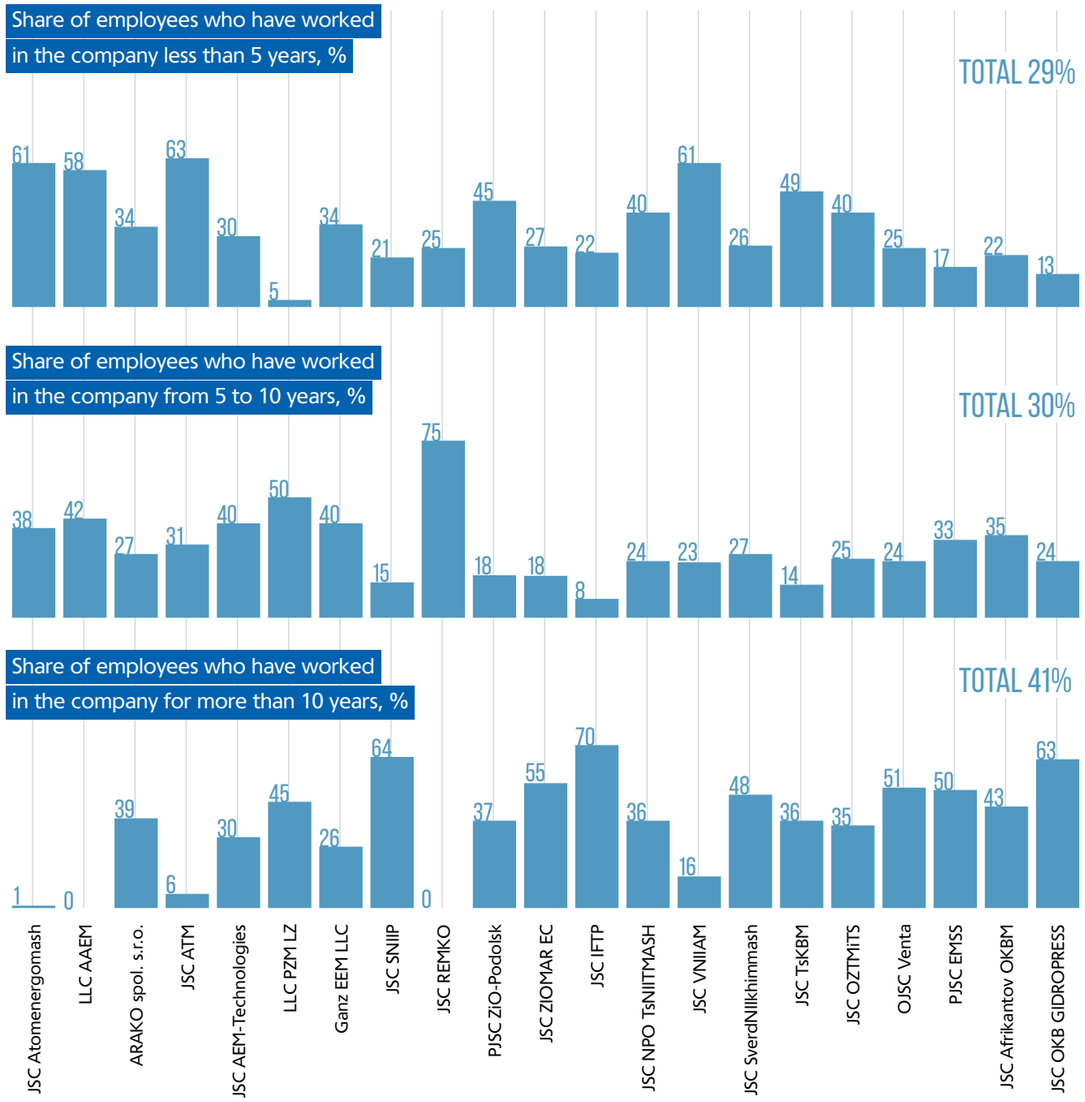
Personnel management is based on the principles of the rule of law, safety culture, corporate and professional ethics, social responsibility, and the balance between the Atomenergomash strategic priorities and personal interests of every employee.

Number of employees, pers.

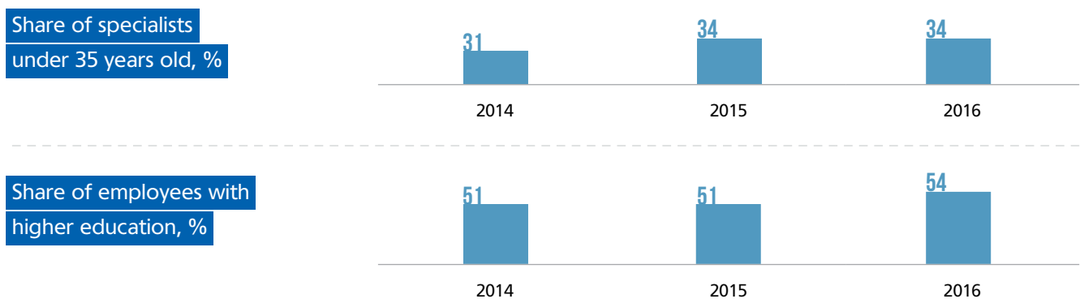
TOTAL 18,228



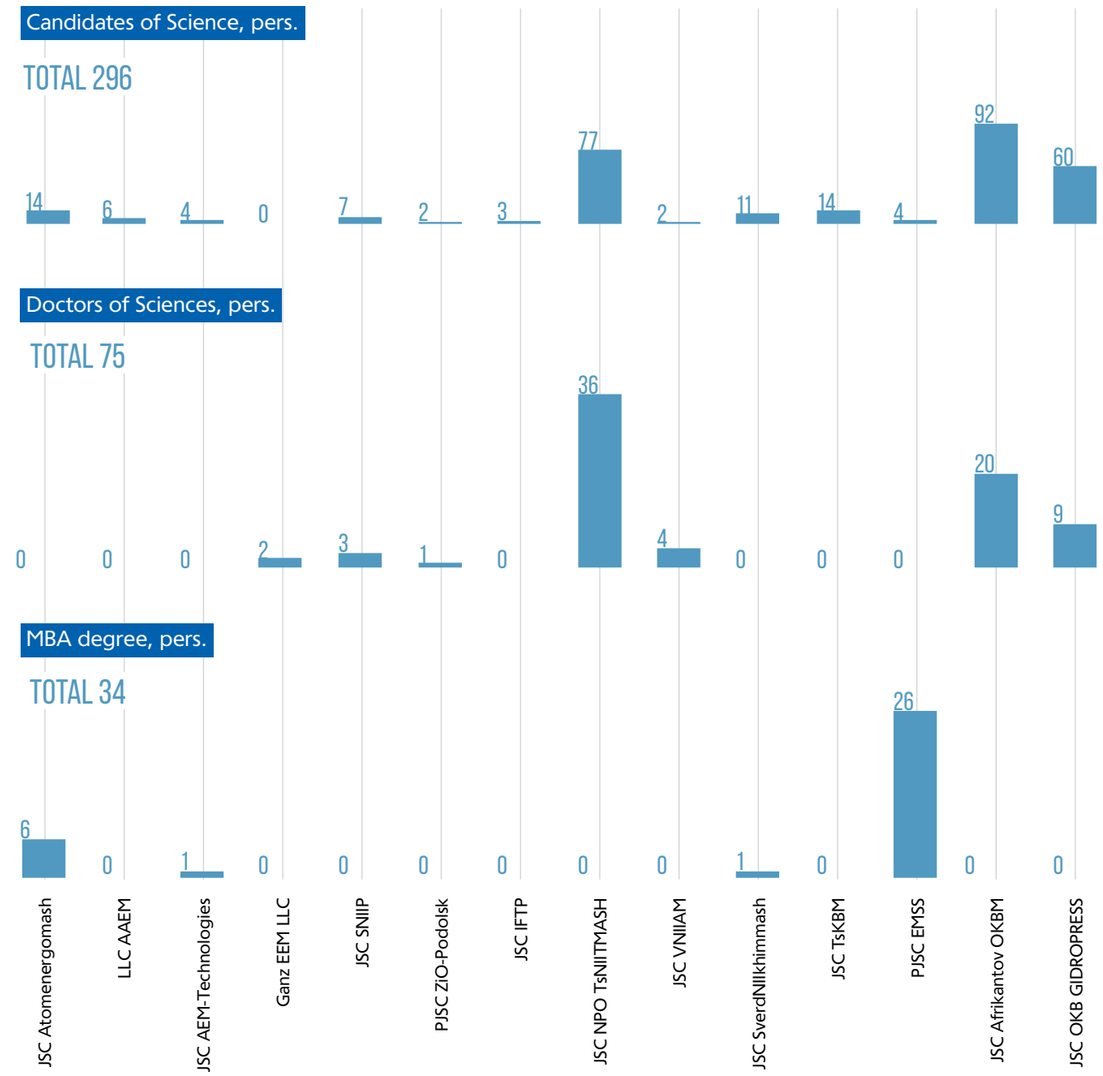

*24 In 2016, employees changed over to part-time schedule at their own discretion.*




## THE AVERAGE AGE OF EMPLOYEES IN THE DIVISION IS 45 YEARS




JSC Atomenergomash includes as its members some leading scientific institutes and design bureaus that have unique experience in developing innovative solutions for the power industry. Many specialists employed at the enterprises of the Division have scientific degrees and state awards for their achievements.




Academicians of the Russian Academy of Sciences, professors, pers.

| ACADEMICIANS | | PROFESSORS |
|---|---|---|
| - | JSC Atomenergomash | 1 |
| 1 | JSC NPO TsNIITMASH | 20 |
| 1 | JSC Afrikantov OKBM | 6 |
| 2 | JSC OKB GIDROPRESS | 2 |
| 4 | TOTAL | 29 |

# OCCUPATIONAL SAFETY

The main objective of the Division enterprises is the compliance with all industrial and occupational safety and health requirements.

Within the scope of the presented activities, the Company is guided by applicable provisions of the current regulatory documents, including the Labor Code of the Russian Federation, the Federal Law No. 116-FZ "On industrial safety at hazardous production facilities", the Decree of the Ministry of Labor of the Russian Federation, as well as by relevant GOST, SNIP, PB, RD, Occupational Safety Standards, and OHSAS 18001 requirements.

## Enterprises holding OHSAS 18001 certificates

| EMP | AVAILABILITY OF OHSAS 18001 CERTIFICATE |
|---|---|
| PJSC ZiO-Podolsk / JSC ZIOMAR EC | Yes |
| JSC SNIIP | Yes |
| JSC VNIIAM | Yes |

## LTIFR total for the Division

0.54
TARGET VALUE FOR 2016

0.42
TARGET VALUE FOR 2017

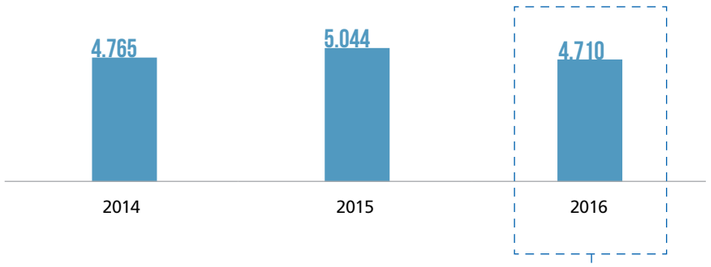
0.25
RESULT FOR 2016

## Frequency of occupational accidents and occupational diseases

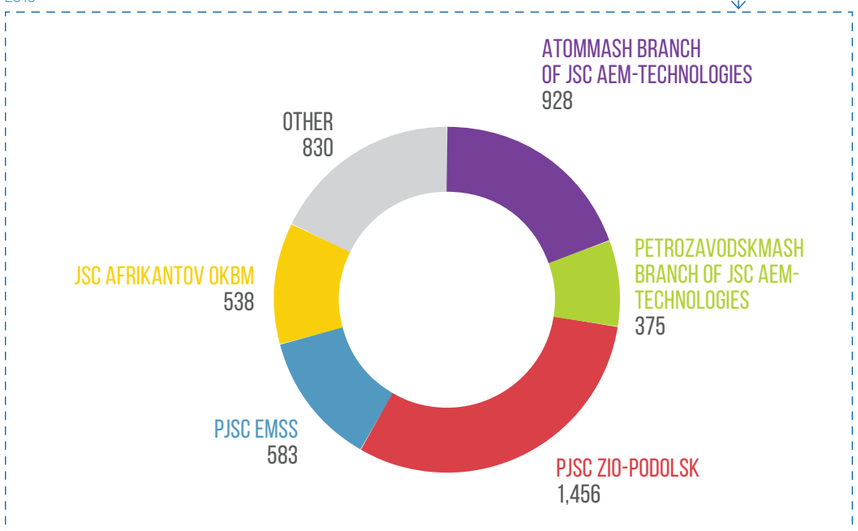
| INDICATOR | 2014 MALE | 2014 FEMALE | 2015 MALE | 2015 FEMALE | 2016 MALE | 2016 FEMALE |
|---|---|---|---|---|---|---|
| Number of injuries | 21 | 1 | 10 | 4 | 10 | - |
| Number of days lost as the result of injuries, total | 1,614 | | 1,073 | | 542 | |
| Cases of occupational diseases | 2 | - | 1 | - | 1 | - |
| Number of fatal accidents | 1 | - | - | - | 1 | - |
| LTIFR, total | 0.49 | | 0.44 | | 0.25 | |

| COMPANY | INDICATOR | MALE | FEMALE |
|---|---|---|---|
| Petrozavodskmash branch of JSC AEM-Technologies | Number of injuries | 2 | - |
| | Number of days lost as the result of injuries, total | 128 | |
| | Cases of occupational diseases | - | - |
| | Number of fatal accidents | - | - |
| | LTIFR, total | 0.51 | |
| LLC PZM LZ | Number of injuries | 3 | - |
| | Number of days lost as the result of injuries, total | 34 | |
| | Cases of occupational diseases | 1 | - |
| | Number of fatal accidents | 1 | - |
| | LTIFR, total | 5.06 | |
| PJSC ZiO-Podolsk | Number of injuries | 2 | - |
| | Number of days lost as the result of injuries, total | 138 | |
| | Cases of occupational diseases | - | - |
| | Number of fatal accidents | - | - |
| | LTIFR, total | 0.38 | |
| PJSC EMSS | Number of injuries | 3 | - |
| | Number of days lost as the result of injuries, total | 242 | |
| | Cases of occupational diseases | - | - |
| | Number of fatal accidents | - | - |
| | LTIFR, total | 0.85 | |

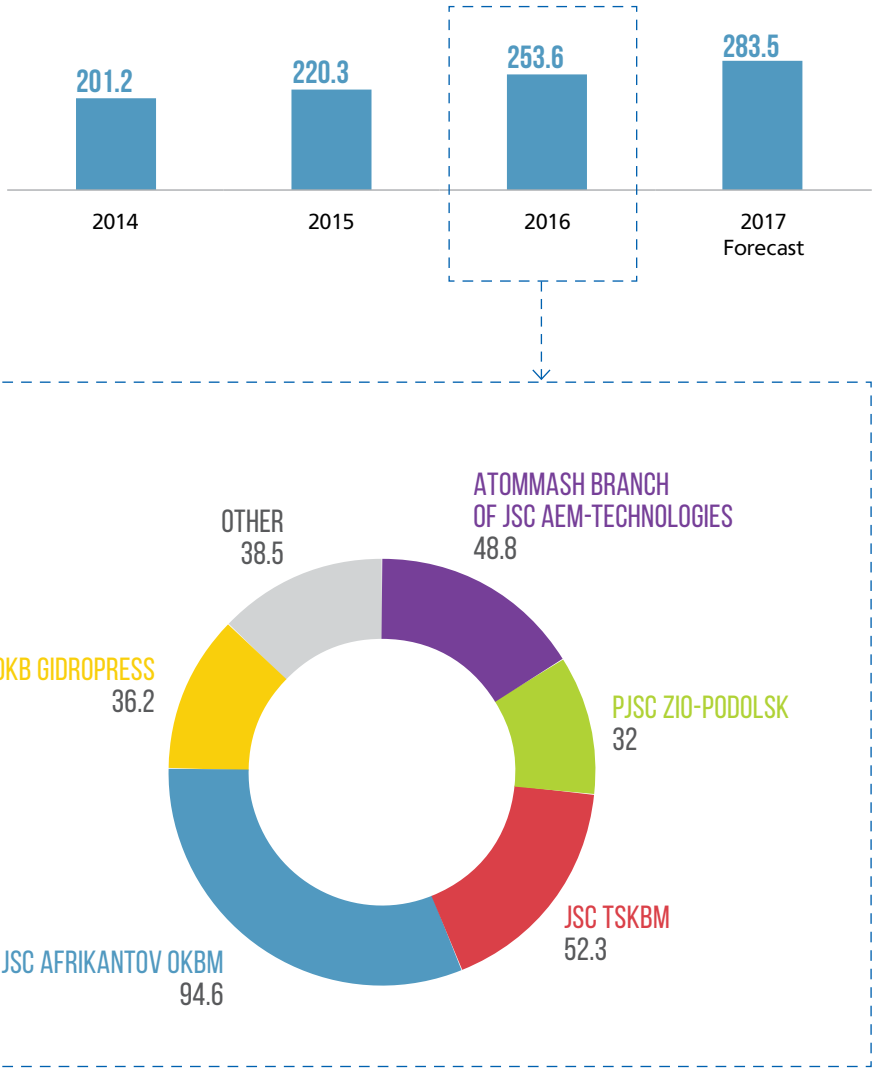
## Number of employees working under harmful conditions, pers.




2016



The amount of occupational safety costs, mln rubles




# CONTACT INFORMATION

FAX + 7 (495) 668-20-95
PHONE +7 (495) 668-20-93
E-MAIL AEM@AEM-GROUP.RU
WEBSITE WWW.AEM-GROUP.RU

PUBLIC ANNUAL REPORTS WWW.AEM-GROUP.RU/ABOUT/REPORTS/
THE OFFICIAL GROUP AT "VKONTAKTE" VK.COM/ATOMENERGOMASH
THE OFFICIAL FACEBOOK COMMUNITY WWW.FACEBOOK.COM/AEMGROUP

GRYZUNOV DMITRY ALEKSEYEVICH
HEAD OF CORPORATE COMMUNICATIONS DEPARTMENT
DAGRYZUNOV@AEM-GROUP.RU
+7(495) 668-20-93 (EXT. 1350)

VAVULINA INNA PETROVNA
PRESS SECRETARY
IPVAVULINA@AEM-GROUP.RU
+7 (495) 668-20-93 (EXT. 1040)

JOINT STOCK COMPANY «NUCLEAR AND POWER ENGINEERING» (JSC ATOMENERGOMASH)

PRINCIPAL STATE REGISTRATION NUMBER (OGRN CODE): 1067746426439,

REGISTERED ON MARCH 29, 2006 BY THE INTERDISTRICT INSPECTORATE NO. 46 OF THE FEDERAL TAX SERVICE IN THE CITY OF MOSCOW

LEGAL ADDRESS: 119017, MOSCOW, UL. BOLSHAYA ORDYNKA, 24.

MAILING ADDRESS: 115184, MOSCOW, OZERKOVSKAYA NAB., 28, BLDG. 3.

Created by Downstream Technologies