



OSTCHEM

CHERKASY
AZOT

PJSC “AZOT” (Cherkasy) is one of the largest chemical enterprises in Ukraine. Production capacities of PJSC "AZOT" can annually manufacture 1 million tons of liquid ammonia, 1 million tons of granulated ammonium nitrate, 660 thousand tons of urea and 500 thousand tons of UAN. Furthermore, chemical giant produces nitric acid, ammonium water, ion exchange resins, liquid and crystalline caprolactam, crystalline ammonium sulphate and carbon dioxide liquefied. The products by PJSC “AZOT” are in great favour on the domestic and global market.

PJSC “AZOT” is open to innovative projects as in production sphere as regional development and environment protection. Biological treatment facilities on the Dnieper River provided by PJSC “AZOT” are the essential attribute of a modern chemical complex. Being a city-forming enterprise of Cherkasy, PJSC “AZOT” aims to build and develop social partnership with the town and the region. Every year it invests a considerable fund in renovation of the streets and squares in Cherkasy as well as in social and educational institutions.

In 2011 PJSC “AZOT” became a part of OSTCHEM Group DF.



There was the first ammonia production shop startup and the first products were manufactured 50 years ago. The enterprise half –century production history is full of striking examples of token labour achievements, purposeful collective hard work and remarkable success. The chemists working in the period of construction, startup and establishment of the plant passed on the gained traditions, competence and experience to next generations. The key to success was in their common goal, high professional level and good faith.

Today PJSC “AZOT” (Cherkasy) is a part of OSTCHEM Group DF holding company and one of the most powerful producers of mineral fertilizers in Ukraine as well as a supplier of high-quality products to the inner market. Concerted actions of experts allow to keep these standards. It is the today’s generation of chemists who is responsible for maintenance and strengthening of the enterprise positive image, implementation of energy-efficient technologies and target markets development.

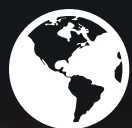
Our enterprise success is a guaranty of social and economic welfare of Cherkasy region and the whole country. In the framework of corporate social responsibility we are able to realize our projects that cover different life spheres in the district region ranging from regional development and education to ecology and cultural diplomacy.

Permit me to offer my sincere congratulations to dear employees of PJSC “AZOT”, honoured senior workers on the fiftieth anniversary of our native enterprise. Wish you feel confident about the future and be professional at your work. Let it bring you satisfaction and pride for important and necessary business you have dedicated your life to. May your life be filled with everyday lavishness, good health and emotional harmony, prosperity, new wishes and plans.

Vitaliy Sklyarov

PJSC “AZOT” Chairman of the Board

PJSC “AZOT” (Cherkasy)



1 million
tonnes

of ammonium
nitrate per year.
It is the highest rate
in Ukraine



5,7 UAH
billion

products
realization sum
in 2014



297 UAH
million

was spent
on environmental
projects
in 2011-2014



4500

people employs
PJSC “AZOT”
enterprise

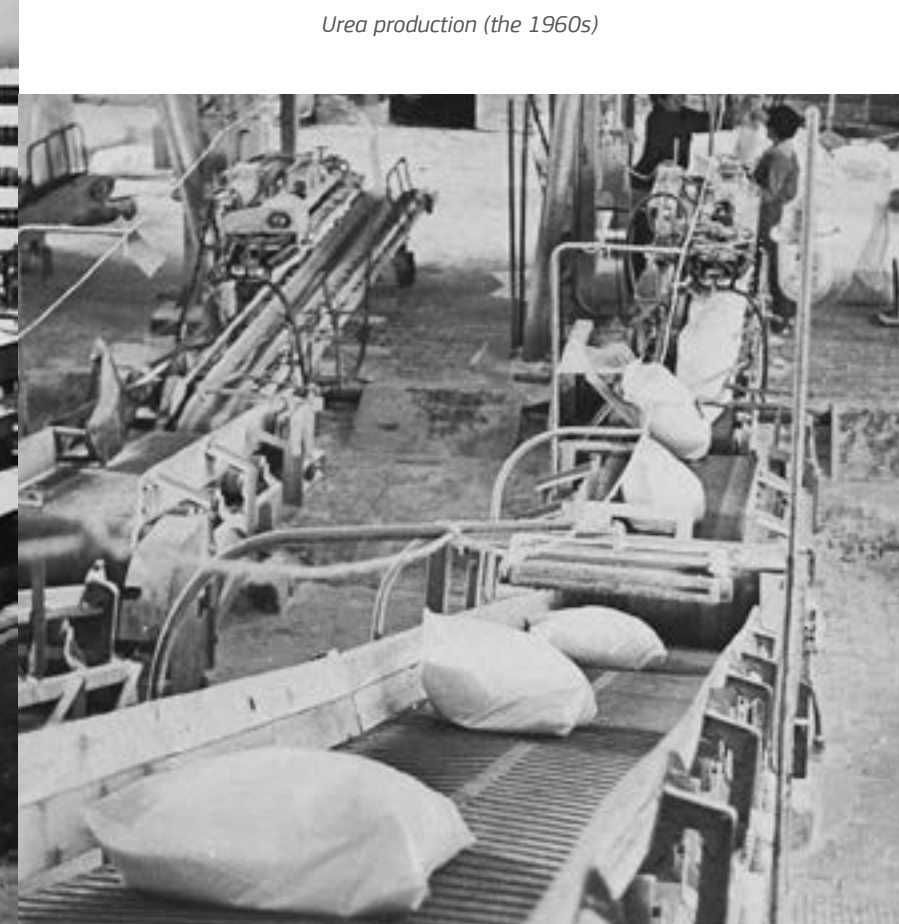
History



*Nitrogen Fertilizer Plant
Construction (the 1930s)*



*Field clearance for nitrogen fertilizer
construction (1962)*



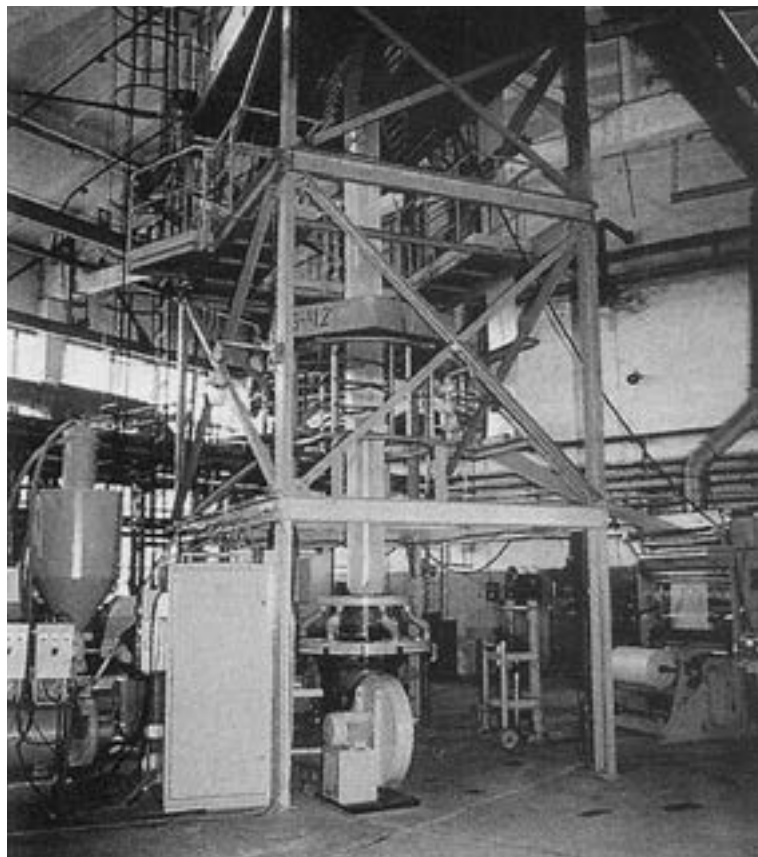
Urea production (the 1960s)



Ammonium nitrate production (the 1970s)

PJSC "AZOT" (Cherkasy) produced its first liquid ammonia in March, 1965. Having been built at high tempo (less than three years) the enterprise began developing actively.

In 1968 the urea production site was put into operation at the enterprise. At the beginning of 1970 the shops producing liquid ammonia, non concentrated nitric acid and ammonium nitrate started operating. During the following two years manufacturing capacities on non concentrated nitric acid and ammonium nitrate were doubled. In May 1973 the first millionth tonne of urea and the next month the first millionth tonne of liquid ammonia were produced at the plant.



*Installation of equipment
for polymer film production*

By the mid-1970s the formation process of main production capacities had almost been completed and in 1975 Cherkasy chemical plant became Cherkasy Production Association “Azot”.

Being “production association” the plant changed its development vector from quantity to quality. In 1967 industrial and research site of ion-exchanging production started operating at the plant. It was the most advanced site in the USSR that gathered the leading scientific and technical experts in the industry. This contributes to the new products launching as well as modern manufacturing technologies and equipment implementation.



*Experts working in the ion-
exchanging production shop*



*Caprolactam
production*

The 1990s period was the most difficult in the Association’s history. Settled economic contacts were ruined and the approach to business was being changed. Owing to a joint stock company formation in 1995 JSC “Azot” (Cherkasy) managed to keep its qualified personnel and did not allow production volume to decrease.

Joining OSTCHEM Group DF in 2011 gave Cherkasy chemical industry specialists new perspectives in both equipment modernizations and production capacities rising.














PJSC “AZOT” will celebrate its 50th anniversary in March, 2015.



Production capacities

Production capacities constant growth and modernization are the principal directions in PJSC "AZOT" (Cherkasy) development.

Main production capacities

Fertilizers production	Number of sites	Total production capacities (thousand tonnes per year)
Weak nitric acid		1 200
Granular ammonium nitrate		970
Liquid ammonia	 	962,7
Urea prilled	 	891,6
Urea-ammonium nitrate (UAN)		500
Aqueous ammonia		252
Crystalline ammonium sulfate		153
Liquid caprolactam		60
Crystalline caprolactam		50
Liquefied carbon dioxide		24
Cationite (ion-exchange resins)		3,25

Daily production capacities

Ammonia (A-5, A-3)  2 900 tonnes

Urea (M-2, M-6)  2 600 tonnes

Ammonium nitrate (M-9)  above 3 000 tonnes

Technological Processes Brief Description

Ammonia Production		Ammonium Nitrate Production	Urea-ammonium nitrate (UAN) Production	Urea Production			Non Concentrated Nitric Acid Production
Shop A-3	Shop A-5	Shop M-9	Shop M-7	Shop M-2	Shop M-6	Liquefied Carbon Dioxide Production in M-6 shop	Shop M-5
<p>The technological process of ammonia production was developed by Grande Paroisse and the gas synthesis process was elaborated by Foster Wheeler. The general project was prepared by EMCA-France.</p> <p>Planned production capacity is 400 000 tonnes of ammonia per year.</p> <p>The production of synthetic ammonia includes two process lines.</p> <p>Method of production implies ammonia synthesis from nitrogen and hydrogen by combining them under the pressure of 32-35 MPa and the temperature range of 430-570 °C using iron based catalyst.</p>	<p>The technological process of liquid ammonia production was elaborated by Kellogg Brown & Root LLC, USA. The project of all the sites (except construction, underground pipelines and liquid ammonia loading platforms) was presented by “TEC”, Japan.</p> <p>Planned production capacity is 450 000 tonnes of ammonia per year.</p> <p>The shop was put into operation in January, 1980. During the period 2006–2008 there were two phases of site’s reconstruction aimed to increase production capacity of liquid ammonia up to 562 700 tonnes per year.</p> <p>The production of synthetic ammonia is made in a single technological line.</p>	<p>The technological process of liquid ammonia production was elaborated by PJSC “GIAP”, Moscow.</p> <p>Planned production capacity is 970 000 tonnes of ammonium nitrate per year.</p> <p>The production of ammonium nitrate consists of two technological lines.</p>	<p>The technological process of urea-ammonium nitrate was developed by Spie Batignolles, France.</p> <p>Planned production capacity is 200 000 tonnes of UAN per year.</p> <p>The site was renovated in 2009, as result the capacity reached 500 000 tonnes of UAN per year.</p> <p>The production of urea-ammonium nitrate consists of two technological lines.</p>	<p>The technological process of urea production was developed by Chemoproject, the Czech Republic and “know-how” was based on the license of Stamicarbon, Netherlands.</p> <p>Planned production capacity is 330 000 tonnes of urea per year.</p> <p>The production of urea is made in a single technological line.</p>	<p>The technological process of urea production was developed by Chemoproject, the Czech Republic and “know-how” was based on the license of Stamicarbon, Netherlands.</p> <p>Planned production capacity is 330 000 tonnes of urea per year. After the reconstruction of the shop’s technological scheme according to the basic design of the company «Urea Casale» (Switzerland) production capacity increased to 561 600 tons of urea per year.</p> <p>The production of urea is made in a single technological line.</p>	<p>The shop was built and put into operation under the project of Chemtechnology (Cherkasy subsidiary), Scientific research and Design Institute of Chemical Technologies in 2003 with subsequent increase in production capacity of liquid carbon dioxide twice up to 24 000 tonnes per year in 2005.</p>	<p>The technological process of non concentrated nitric acid production was developed by GIAP, Dneprodzerzhinsk subsidiary.</p> <p>Planned production capacity is 1 200 000 tonnes of acid per year.</p> <p>Non concentrated nitric acid production is made with 10 technological lines based on UKL-7 sites which give 120 000 tonnes per year.</p>

Technological Processes Brief Description

Caprolactam Production				Aqueous Ammonia Production	Ion-exchange Resins (Cationite) Production in I-1shop
Liquid Caprolactam Production in shop K-1	Crystalline Caprolactam Production in shop K-7	Crystalline Ammonium Sulfate Production in shop K-2	Air Separation Products Production in shop K-3	Shop M-7	Shop I-1
<p><i>The technological process of caprolactam production was developed by GIAP, Moscow and SMK, Germany.</i></p> <p><i>Planned production capacity is 50 000 tonnes of caprolactam per year.</i></p> <p><i>The production capacity reached 60 000 tonnes of caprolactam per year after the reconstruction of the unit conducted in 2007.</i></p> <p><i>Caprolactam production consists of two technological lines.</i></p>	<p><i>The technological process of caprolactam crystalline production was introduced by Chemtechnology (Cherkasy subsidiary), Scientific research and Design Institute of Chemical Technologies.</i></p> <p><i>Planned production capacity is 50 000 tonnes per year.</i></p>	<p><i>The technological process of crystalline ammonium sulfate production was elaborated by GIAP (Kemerov subsidiary), Science and Design Institute of Chemical Technologies and SMK, Germany.</i></p> <p><i>Planned production capacity is 140 000 tonnes of ammonium sulfate per year.</i></p> <p><i>The production capacity reached 153 000 tonnes per year after the reconstruction of the unit conducted in 2007.</i></p> <p><i>Ammonium sulfate production consists of two technological lines operating simultaneously.</i></p>	<p><i>The production is intended for complex air separation into Nitrogen, Oxygen and Argon.</i></p> <p><i>The technological process of air separation is based on the low-temperature rectification method and includes:</i></p> <ul style="list-style-type: none"><i>purification of atmospheric air from admixtures;</i><i>pressure;</i><i>subsequent cooling;</i><i>liquefaction;</i><i>low temperature rectification to produce main components (Nitrogen, Oxygen and Argon).</i> <p><i>Air separation products manufacture consists of two identical air separation sites Azh Kz KAArzh-2 and KA-5.</i></p>	<p><i>The technological process of aqueous ammonia production was elaborated by GIAP (Severodonetsk subsidiary).</i></p> <p><i>Planned production capacity is 252 000 tonnes of aqueous ammonia per year.</i></p> <p><i>Aqueous ammonia production is conducted in a single technological line.</i></p>	<p><i>The technological process of cationite production was performed by the Scientific and Production Association “Plastmassy” (Plastics), Moscow. Technological batch scheme is used</i></p> <p><i>The production capacity reached 3 250 tonnes of cationite per year in terms of Ku-2-8 after the reconstruction of the unit conducted in 2005.</i></p>

Main products

Nitrogen fertilizers

Product	Standard
Ammonium nitrate	DSTU 7370:2013
Ammonium nitrate, a by-product of ammonium nitrate	TU U 24.1-00203826-041:2009
Ammonium sulfate	GOST 9097-82
Ammonium sulfate fertilizer, a by-product of ammonium sulfate	TU U 24.1-00203826-043:2011
Aqueous ammonia technical	GOST 9-92
Liquid ammonia technical (anhydrous ammonia)	GOST 6221-90
Liquid nitrogen fertilizers (UAN)	TU U 24.1-00203826.024-2002
Urea	DSTU 7312:2013
Urea, a by-product of urea	TU U 24.1-00203826-018:2009 (DSTU 7312:2013)

Organic products

Product	Standard
Aqueous hydroxylamine sulfate	TU U 00203826.019-99
Crystalline caprolactam	GOST 7850-86
Cyclohexane technical	GOST 14198-78
Cyclohexanone technical	GOST 24615-81
Liquid caprolactam	GOST 7850-86
POD oil	TU U 20.1-33270581-023:2012
Spirit fraction of caprolactam production	TU U 24.3-00203826-033:2005

Gases

Product	Standard
Liquefied carbon dioxide	DSTU 4817:2007
Nitrogen gaseous	DSTU GOST 9293:2009
Nitrogen liquid	DSTU GOST 9293:2009
Oxygen gaseous technical	DSTU GOST 5583:2009
Oxygen liquid technical	GOST 6331-78

Acids

Product	Standard
Non concentrated (weak) nitric acid	TU U 00203826.021-2000

Other products

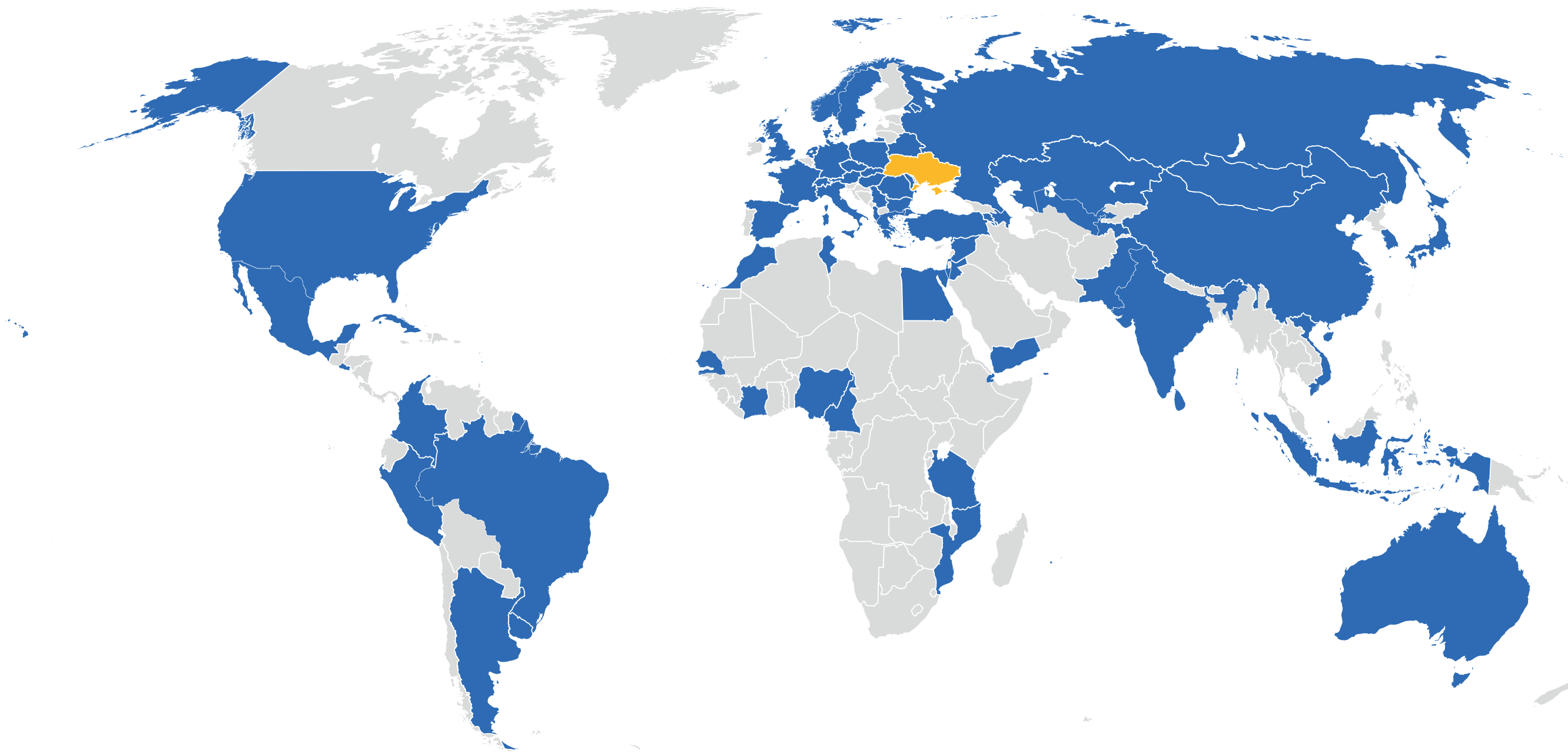
Product	Standard
Melt of sodium carbonate	TU U 24.1-00203826-044-2013

Polymers and polymer products

Product	Standard
Copolymer of styrene and 8% divinylbenzene, coarse fraction	TU U 24.1-00203826-028-2003
Ion-exchange resins – anionites: Grade AB-17-8	GOST 20301-74
Ion-exchange resins. Strongly acidic cation exchangers:	
Grade KU-2-8	GOST 20298-74, TU U 24.1-00203826-042:2009

Product	Standard
Grade KU-2-8 Na	TU U 24.1-00203826-042:2009
Grade KU-2-8 Na schS (AQUACATION)	TU U 24.1-00203826-040:2009
Grade KU-2-8 Na chS (AQUACATION)	TU U 24.1-00203826-040:2009
Grade KU-2-8 Kr	TU U 24.1-00203826-042:2009
Grade KU-2-8 chS	GOST 20298-74
Grade KU-2-8 chS (AQUACATION)	TU U 24.1-00203826-040:2009
Grade KU-2-8 Kr Na	TU U 24.1-00203826-042:2009
Grade KU-2-6	TU U 24.1-00203826-042:2009
Grade KU-2-6 Na	TU U 24.1-00203826-042:2009
Grade KU-2-4	TU U 24.1-00203826-042:2009
Grade KU-2-4 Na	TU U 24.1-00203826-042:2009
Grade KU-2-10	TU U 24.1-00203826-042:2009
Grade KU-2-10 Na	TU U 24.1-00203826-042:2009
Grade KU-2-20	GOST 20298-74
Grade KU-23-10/60	GOST 20298-74
Grade KU-23-15/100	GOST 20298-74
Grade KU-23-30/100	GOST 20298-74

Geography



Countries where the products
of PJSC “AZOT” (Cherkasy) are exported to:

Albania	Ecuador	Japan	Senegal
Argentina	Egypt		Slovenia
Armenia	El Salvador	Lebanon	Sudan
Australia	Ethiopia	Lithuania	Syria
Benin	France	Malaysia	Taiwan
Brazil		Mexico	Tanzania
Bulgaria	Georgia	Moldova	Tunisia
	Greece	Morocco	Turkey
China	Guyana		
Colombia	Guatemala	Nigeria	USA
Costa Rica			
Côte d'Ivoire	Hong Kong	Pakistan	
Cuba	Hungary	Peru	
		Poland	
Djibouti	India	Romania	
	Indonesia	Russia	
	Israel		
	Italy		

Quality Management System

PJSC “Azot” (Cherkasy) aims to rise long-term competitiveness and positive image of the enterprise in the industry as well as to increase customers and society’s loyalty.

The key task of PJSC “Azot” is to manufacture high-tech, science intensive and competitive products as well as to provide the employees with safe working places and minimize the environmental damage effects.

To achieve these goals the integrated management system (IMS) was implemented at the enterprise in 2004.

The integrated management system at PJSC “Azot” covers:

elaboration and development of production processes, manufacture and sale of:

- ammonia, ammonia processing products and by-products in ammonia production;
- air separation products;
- ion-exchange resins and by-products in ion-exchange resins production;
- caprolactam and by-products in caprolactam production.

IMS includes quality management system, environmental management system and labour as well as industrial safety management system.

Each of three systems meets the requirements of international standards.

The auditors from TNO Certification b. v. (Netherlands) assessed quality management system at PJSC “Azot” in May, 2005. According to the audit results the enterprise was provided with ISO 9001 Certification.

In 2006 the certification audit of environmental management system and labour safety management system was realized successfully. The certification audit was conducted by Moody International (UK). As result, PJSC “Azot” was issued certificate of compliance with ISO 14001 and OHSAS 18001.

Since then the enterprise has been improving the effectiveness of its own integrated management system and successfully undergoes a routine surveillance or recertification audit, realized by outside controllers.



Key results

2010—2014

Production volume of main products, tonnes

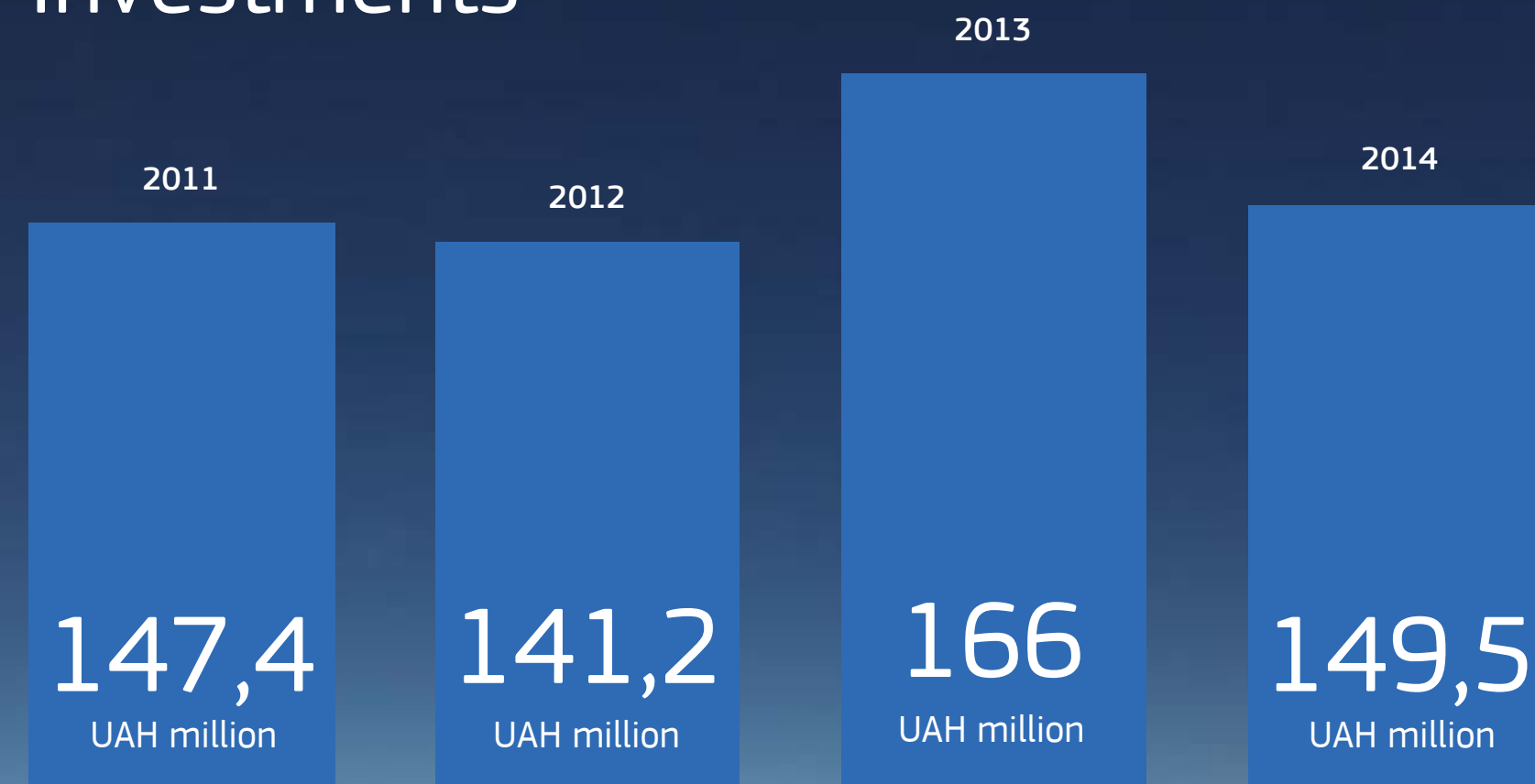
	2010	2011	2012	2013	2014	Growth rate (2010—2014.)
Nitrogen fertilizers in 100% terms	628 410	724 049	680 594	614 733	623 103	99%
Ammonia	922 910	964 796	866 238	791 583	900 399	98%
Urea	648 046	759 935	775 739	582 060	642 951	99%
Ammonium nitrate	847 046	971 056	879 927	951 063	920 627	109%
UAN	219 971	161 525	190 889	230 675	249 470	113%

Investments and modernization

Since PJSC “Azot” joined OSTCHEM group the enterprise has invested 604.1 UAH million in technical development and modernization programs.

It allowed PJSC “Azot” to implement a number of projects which contributed to the increase of basic technical and economic performance indices.

Investments



604,1
UAH million

In 2013 a range of projects aimed at modernization and major repairs of main assets was realized at PJSC “AZOT” (Cherkasy):

Modernization of No.1 ammonia production unit at A-3 shop

As a result of these activities natural gas discharge coefficient was decreased by 7 cubic metre per tonnes of ammonia and steam production of the unit was increased by 0.02 Gcal per tonnes of ammonia.;

The stripper replacement in the urea synthesis unit at M-2 shop

The project goal is to ensure the reliable operation of process equipment at planned working load.



Capital repair of the facade surfaces of granulation tower of ammonia nitrate production unit at M-9 shop as well as load-bearing structures of building 3009 at ammonium sulphate production shop K-2.

The project goal is to restore the bearing ability of building structures and to ensure their safe operation.

The reconstruction of the main step-down substation 110/6 kilowatt ГПП-02 (main step-down substation-02) was started.

The project goal is to replace some power system equipment in order to improve energy supply reliability to the consumer of the enterpriser. The completion is scheduled in 2015.

Investments
in these projects
amounted above

70
UAH million



In 2014 technical re-equipment of purifying facilities was realized at the wastewater treatment shop at PJSC “AZOT”.

Project goal is to provide the required quality of enterprises and municipal property wastewater purification in Cherkassy.

The total amount of investments of realized activities was

2,65
million UAH

Since 2014 the project on modernization of rectification unit at M-2 with the replacement of low pressure carbamate condenser E-303 has been realizing at PJSC “AZOT”.

Project goal is to intensify the work of liquid recycle stage with a corresponding increase in condensation of ion exchange resins. Ammonia consumption coefficient reduction up to 0,001 t /t.

Throughout 2014-2015 the audit of the enterprise water consumption and wastewater systems will be carried out.

Project goal is to find out saving reserves of power resources, decrease volumes of water resources consumed for account of optimization of process flowsheet and potential technologies of purified wastewater reuse.

In addition, bottled artesian water production was started in 2014.

Project goal is to provide the enterprise employees with pure artesian water.

In 2014–2015 the cargo and passenger lift was replaced in the granulation site of the carbamide production shop M-2.

Project goal is to replace the worn-out elevator equipment.

Investments
in these projects
amounted above

16
million UAH

Social Responsibility



Constant improvement of labour conditions and life quality of employees are the key focus of social responsibility PJSC “Azot”.

One of the most important events in Cherkasy over the last years was the renewal of Culture Center “Druzhba narodiv” the largest concert hall in the region.

60
UAH million

was invested by PJSC “Azot”
in the reconstruction of the Culture
Center and the squire around it.

Every year the enterprise personnel have possibility to rest at sea resort. During 2011-2014 years more than 2000 employees and their families spent their holidays at Crimean recreation resorts. The vacation packages were 50% paid by PJSC “AZOT”.

3,4
UAH million

was allocated by the enterprise
to the internal social programs in 2012.

PJSC “Azot” External Social Policy

PJSC “Azot” supports town in organization of creative, cultural and sports events in Cherkasy and its region. The enterprise actively implements the program ‘Save your city’ initiated by Dmitry Firtash, the President of the Federation of Employers of Ukraine (FEU), the Head of the Board of Directors of Group DF. The program covers all regions where OSTCHEM group’s enterprises operate and it is aimed to develop social infrastructure and increase life standards of citizens.

PJSC “Azot” provides city schools with technical and financial support, builds children’s yards and sports facilities, allocates funds to road’s repair as well as supports bright festivals and events in Cherkasy.

PJSC “Azot” contributes to development of chemical education on regional level and assists in school chemistry Olympiads organization. Furthermore, the enterprise promotes schoolchildren creativity and popularizes the healthy life style, volunteer movement and both native city and environmental protection among the growing up generation.

8
UAH million

was invested by PJSC “Azot”
in the foundation of rehabilitation center
for CNS children in Regional infantile
hospital in Cherkasy.

4,4 UAH
million

**was allocated to playgrounds’
arrangement in Cherkassy**

Environmental commitment

Environmental responsibility is the key priority in PJSC “Azot” production policy. Having joined Responsible Care Global Charter PJSC “Azot” implements its own environmental activities in accordance with the “Responsible Care of the Chemical Industry in Ukraine” program.

The main environmental activities of the enterprise are directed towards Kremenchug water basin preservation and atmospheric air protection.



RESPONSIBLE CARE[®]
OUR COMMITMENT TO SUSTAINABILITY

Water resources protection

300

thousands of cubic
meter per day

is the capacity
of wastewater treatment
facilities of both manufac-
turing water and sewerage.

6

water cycles provide
technological water supply
for the productions sites.

To avoid Kremenchug water basin pollution “Azot” carries out triple control of the manufacturing water quality before it comes to the treatment facilities. The quality is controlled by the enterprise’s laboratories under 33 criteria. It is also monitored at the biological treatment facilities on stage of purification and dropping processes.

21 UAH million

The enterprise’s laboratories which realize the analytical control in the area of environmental protection are certified by the State Enterprise “Cherkasy Research and Production Center of Standardization, Metrology and Certification” of the State Committee of Ukraine on Technical Regulation and Consumer Policy.

Quality tests of sewerage dropped into Kremenchug water basin are regularly checked with the laboratory of State Ecological Inspectorate in Cherkasy region and sent to Department of Ecology and Natural Resources of Ukraine in Cherkasy Oblast State Administration every month in order to monitor the condition of water basin in Cherkasy and the region.

The treatment facilities at PJSC “Azot” (manufacturing water and sewerage purification shop) process about 60 000 cubic meters of city sewerage per day (it comes from the city districts and industrial enterprises).

is the total amount invested
by the enterprise in pressure
manifold repair

1836
thousands m³ per year

The planned reduction
of filtered water
consumption

There were repairs in the shops M-9 (ammonium nitrate production) and M-6 (urea production) in 2014. This made it possible to prevent extra pollution of soil with wastewater as well as avoid soil erosion in the replaced area.

Atmosphere protection

These realized actions allowed to reduce emissions in comparison with 2013:

ammonia

53,3

tonnes per year less

nitric oxide

2,9

tonnes per year less

suspended particles

244,07

tonnes per year less

Reduction of nitrogen consumption 2.575 000 cubic metre per year less and cyclohexanone emission 0.002 tonnes per year less are expected after caprolactam production renovation.

In 2011–2014
PJSC “Azot” (Cherkasy)
has invested into
environment protection
about

297
UAH million



Employees development

Today PJSC “Azot” employs about 4 500 people. It constitutes 98% of the plant’s full strength and confirms the high rate of the enterprise as employer. All specialists of PJSC “Azot” are well-paid and provided with social guarantees.

The important aspect of employment policy is the educative and training programs.

PJSC “Azot” employees training and professional development programs are realized both at the enterprise which has its own licensed training center and the educational institutions across Ukraine.

One of the main directions of employee development is cross training. The specific character of production at many PJSC “AZOT” shops and new technologies implementation require employees to have professional multi-skills. Cross training provides effective organization of all the production processes and increases the efficiency of production in general.

The number of employees trained at PJSC “Azot” in 2014

Professional training and retraining of employees	117 persons
Cross training	121 persons
Advanced training of employees	387 persons
Professional development of management team and experts	988 persons

In 2014 the enterprise spent about 1 999 072 UAH on personnel development programs.



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