Vadim Amirov

Sewage treatment equipment marketing research

Helsinki Metropolia University of Applied Sciences

Bachelor's of Engineering

Environmental Engineering

Thesis

4 November 2013

Helsinki Metropolia University of Applied Sciences

Author(s) Title Number of Pages Date	Vadim Amirov Sewage treatment equipment marketing research 84 pages + appendices (37 pages) 4 November 2013
Degree	Bachelor of Engineering
Degree Programme	Environmental Engineering
Specialisation option	Name of the specialisation option
Instructor(s)	John Greene, Project Manager Kaj Lindedahl, Principal Lecturer

The purpose of this study was to develop step-by-step penetration strategy into the Russian market for Oy Raita Environment Ltd. Environment RAITA technology is a company specialized in environmental technology. Environment RAITA technology offers state-of-the-art solutions in the field of environmental technology for rural wastewater treatment, WC and composting systems.

Marketing research was the first goal of this work. This work includes research of the potential customers for the company. Sewage treatment equipment marketing research relates to the field of business, but this work also includes engineering analysis.

This work contains several major results: competitor analysis, list of potential customers and strategy solutions from the point of view of the author.

In the end, a results-based strategic plan was developed and presented in the thesis.

Keywords	sewage treatment, marketing research, Russian market

Abbreviations

BOD	biological oxygen demand
BV	joint-stock company of the closed type
CJSC	closed joint stock company
DOO	departmental organization order
EWP	Evrazijsky (Eurasian water partnership)
EU	European Union
GmbH (Ltd.)	German business vehicle equivalent to the common law limited company
JSC	joint-stock company
JSL	joint stock company
LLC	limited liability company
Ltd	law limited company
NGO	non-governmental organization
OJSC	open joint stock company
Oy	osake yhtio (share company)
RKS	Rossijskie kommunalnye sistemy (Russian municipal Systems)
RVK	Rosvodokanal
SBR	sequencing batch reactor
SPA	joint-stock company
SRL	special reference laboratories
SUE	state unitary enterprise
WSS	water supply and sanitation

List of figures

List of tables

Contents

1 Introduction

1.1 Wastewater treatment

Wastewater treatment is a complex of engineering facilities for wastewater removal from inhabitants to treatment systems. It is no less important than water supply. Mosin O.V. (n.d.) provides an overview of waste water treatment.

The objects of the canalization include up towns, engineering plants, food processing industry, municipal and social organizations of city. To organize a wastewater treatment system, for example, trenches, drains and runs are used. For water collection and removal from roads, roofs, terraces and sidewalks, surface and drains are used. System of pipes (from plastic and metal) and also channels along sidewalks and roads provides water outlet through channels of outdoor sewage.

During the organization of outdoor sewerage, technologies of water removal are combined for better effect. However, projection and creation of the whole water removal system in each concrete case individually depends on parameters such as type of soil, details of the object, organization of water removal from the roof. The most common type of water removal from the surface is dot and line drain.

Canalization and water removal with high quality are very important elements for successful business and household.

Each city and industrial enterprise have a complex of underground gravity pipelines, treatment and other facilities, by which wastewater disposal, treatment and disinfection are made in addition to the treatment and disinfection of sludge by utilizing of some chemical substances. These kinds of complexes are known as water disposal systems or water disposals.

Wastewaters are formed after usage of water from nature or tap water for household purposes or technological processes of industrial enterprises. Atmospheric condensations - rain and melt-waters, which precipitates on the territories of cities, population aggregates and industries, - are classified as wastewaters as well. Ground waters from mines during works with ores and other minerals are also classified as wastewaters. Wastewaters contains organic pollutants, which can stagnate and become base for the development of different microorganisms including pathogens.

These kinds of wastewaters can be bases of different diseases and advances of an epidemic. Wastewaters can contain mineral pollutants, hazardous and toxic substances. All kinds of wastewaters can disturb sanitary and epidemiological welfare of population of cities and industries. They are the source of pollutants for the environment.

Water disposal systems remove all negative impacts from wastewaters to the environments. After treatment procedures, wastewaters are usually let out to surface water. The most perfect wastewater treatment systems are systems, which provide water with so high quality that after treatment procedures it can be reused in industry and agriculture. These systems are known as drainless or close-ended disposal systems.

In small communities with low population density, sanitary safety has often been solved by collection of wastes in special cesspits with their future transportation to sanitary areas for disinfection. This kind of system is called an export disposal system. Nowadays this kind of system is found dissatisfactory for sanitary reasons. Growth of cities and industrial development made sanitary conditions more difficult and also made it more difficult to supply clean water to the inhabitants. Overall development of civilization resulted in the creation of modern cities and industrial enterprises with water supply and wastewater treatment systems.

Water supply and wastewater treatment systems are closely related to each other. Without a wastewater treatment system, water consumption is limited; because of difficulties with the removal of wastewaters, it is also impossible to build houses with more than two or three floors. Without a water supply system, it is impossible to create a combined wastewater treatment system. The sewage system relies on large quantities of waters for the transportation of these pollutants from the city or industrial enterprise. Therefore, a good water supply is required. Modern water supply systems and wastewater treatment systems can be created only if there are internal (inside building) wastewater treatment and water supply systems. Inhabitants increase water consumption for their household need. Increasing wastewater outflow provides normal function of wastewater treatment systems.

1.2 Wastewater treatment history

The history of waste water treatment has been summarized by Nenno N.L. (n.d.). First records of careful attitude to water sources can be found in writings of Herodotus. In 6th century B.C. he wrote about Persians.

Channels for wastewater were built in Egypt at least 2500 years B.C. Similar facilities were also built in India. In 6th century B.C. famous Cloaca Maxima was built in Rome, which is still partly used in the modern sewerage of Rome.

After a long period of stagnation in the dark ages, intensive building of sewage systems began in Europe only in the 19th century.

England was one of the first countries that started its industrial development, so from 1830 sewerage systems were already in 50 cities. Much later, Germany started to build its own sewerage systems, for example Hamburg got its first sewerage system in 1843, Frankfurt am Main in 1867, and Berlin in 1873. At the end of 19th century, there were more than 50 cities with centralized water supply.

Construction of sewerage systems happened much more slowly in France, so in Paris in 1824 there were only 36 km of wastewater channels; in 1856 their amount rose 4 times. And only in 1935 the total length of all channels was 1200 km. In USA, there were wastewater removal systems in 1000 cities in 1902.

Sewage buildings in Europe provided only wastewater outlet into surface waters without treatment procedures. England was the nation to declare an order on the removal of fecal masses and decomposing matters from wastewaters before their outlet into surface water. After that wastewater treatment requirements were made.

For a long time Russian capacity in this area stood behind other countries. However, the first Russian underdrains for wastewater removal were built already in 14th century in Novgorod. In the middle of the 18th century in St. Petersburg, the building of wastewater channels was started and at the end their total length was 95 km.

In Moscow in 1825, Samotechny and Glinsky were built for atmospheric water outlet and wastewater outlet from buildings. In 1829, the building of the sewage was started

in the city called Staraya Russa. In the following years the building of the sewages started in cities, which were far away from the capital.

2 Overview of Russian Water Market

2.1 Russian Water and Wastewater Treatment Service Market

The reform of housing and utility field is one of the most strategically important targets for Russian economic development. State policy in this field also provides phasing out of state monopolistic position and creating competitive focus in addition to maintaining of rate management for public services. For manufacturers as well as for customers, low quality of service is a major problem of the municipal field, which is related to the aggressive aging of infrastructure. Because of the aggressive aging of key assets average water loss in Russia equals to 23 % per year. In some cities water loss is 40 %. Accident rate is 5-6 accidents per year for one km of networks.

Figure 1 shows the coverage of water and wastewater market in Russia. This picture below is taken from Russian Water & Wastewater Treatment Market Outlook by Frost & Sullivan. Left column gives the total population of Russia and it equals to about 140 million people. Right column shows Population Covered with Water Services, which is between 120 and 140 million people, so not all population is covered by Water Services. And the dark blue column shows population covered with wastewater services, which is less than 80 million people. On the right side of the figure areas with most polluted waters are shown. The population density in areas increases according to the darkness of color.

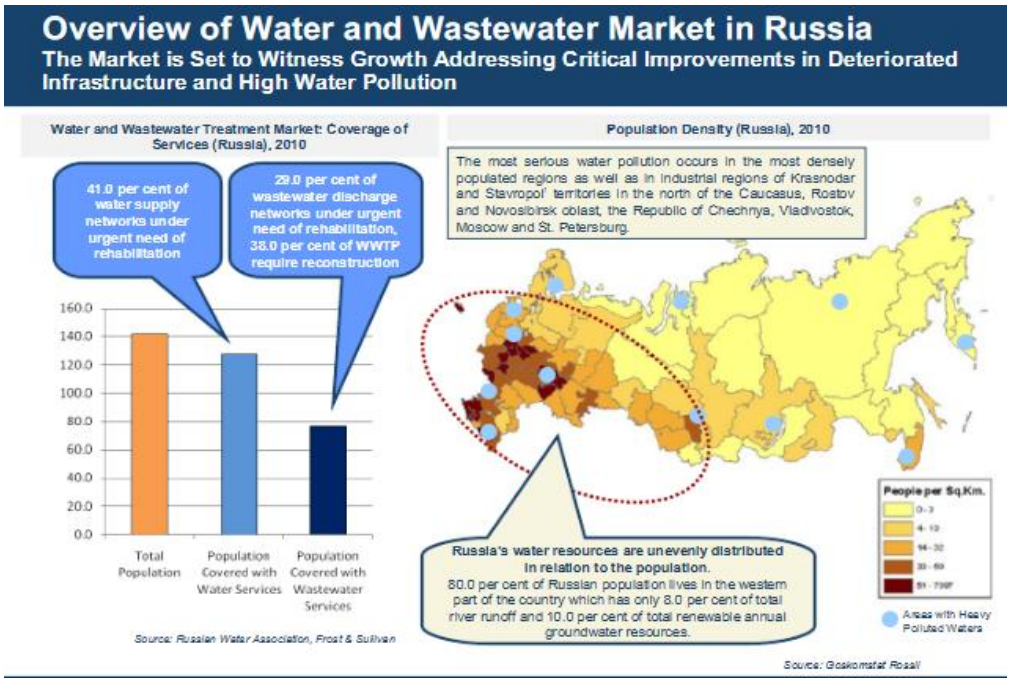


Figure 1. Coverage of Services (Szyplinska, n.d).

The proportion of rundown networks and facilities of water and waste water services equals to 60-70 % and in some regions, more than 80 % (Ministry of Regional Development).

The proportion of networks, which is needed to be replaced, equals to 42 % (for water supply) and 35 % (for sewerage) from the total length and it still increases faster than new networks are built.

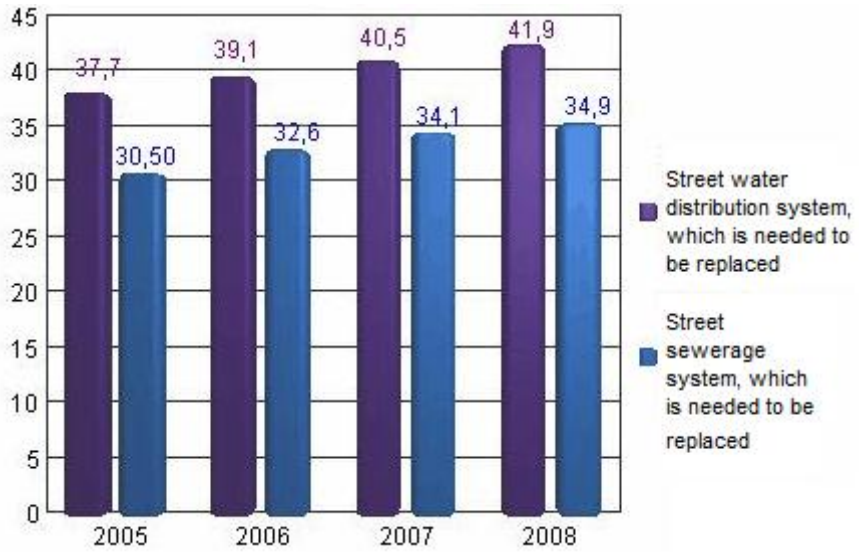


Figure 2. Percentage of water mains and sewerages needing to be replaced (PKF, 2010).

The total amount of money, which is needed for modernization of the whole system of water and sewer utilities equals to 15 billion rubles until the end of 2020. At the same time less than 1.5 % from the total sum is paid annually and this equals approximately to 15 billion rubles per year (according to data of the Ministry of Regional Development).

There are more than 4000 organizations in the territory of Russia, which provide water and wastewater treatment service. Most of them are municipal unitary enterprises (84%). Among private companies, 62 % fall under the following three federal operators:

- «Rosvodokanal» (RVK) (http://www.rosvodokanal.ru/);
- «Rossijskie kommunalnye sistemy» (RKS), which is group of companies (http://www.roscomsys.ru/);
- Joint stock company «Evrazijsky» (Eurasian water partnership -EWP) (http://www.bis-ogne.ru/).

The structure of the market is illustrated in Figure 3 below.

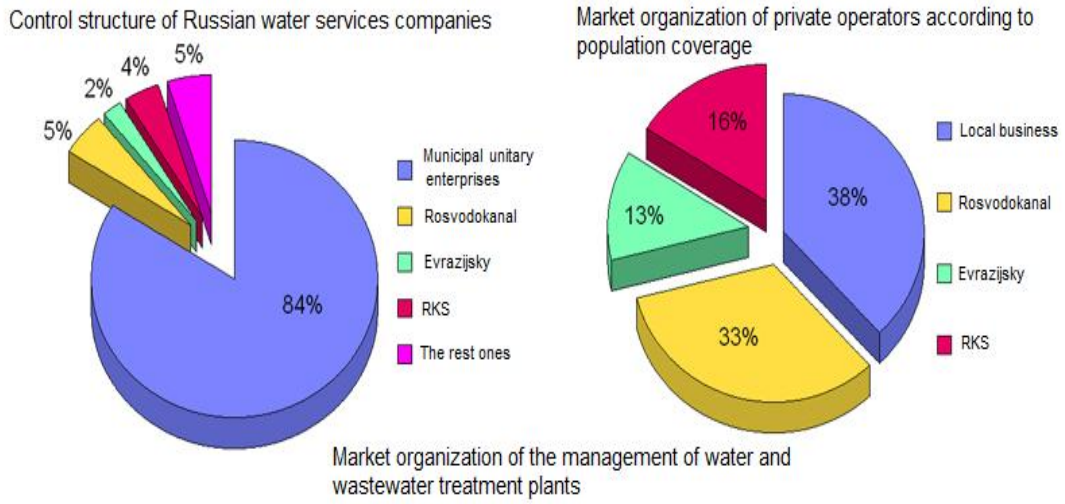


Figure 3. Control structure of Russian water services companies (PKF, 2010).

On the right-hand side of Figure 3 all main private operators are shown and all local businesses are shown as well. The percentages show how big roles these organizations and businesses play in the market. On the right-hand side, the percentages indicate what part of the whole market is occupied by local businesses, municipal unitary enterprises and three main private operators.

Characteristics and development strategies of private operators are shown in Table 1 and Table 2 below. On these tables three main private operators which were described

above are presented: «Rosvodokanal» (RVK), «Rossijskie kommunalnye sistemy» (RKS), «Evrazijsky» (Eurasian water partnership -EWP).

Table 1a. Characteristics of special federal operators of housing and utilities services from the end of 2008 to 01.01.2009 (PKF, 2010).

	«Rossijskie kommunalnye sistemy» (RKS)	**«Rosvodokanal» (RVK)**	**Joint stock company «Evrazijsky»**
Year of foundation	spring 2003 г.	2003 Legal successor of the group «Rosvodokanal-naladka» (created in 1949)	1994
Owners	100 % of shares - «KES-Holding» (public corporation «Renova»)	«Alfa Grupp» (90%), Deutsche Bank (10%)	«Vneshekonombank»
Regions	9 regions, 150 municipalities: in Altai Krai and Perm Krai, in Amur, Bryansk, Vladimir, Kirov, Tambov, Tver Oblasts, the Republic of Karelia; 7 cities: Blagoveshchensk, Petrozavodsk, Tambov, Kirov, Perm, Berezniki, Krasnokamsk - water supply and sewerage	8 regions: Barnaul, Kaluga and Kaluga Oblast, Krasnodar, Krasnodar Krai, Omsk, Orenburg, Tver, Tyumen, Lugansk Oblast of Ukraine; 7 Russian cities: Barnaul, Kaluga, Krasnodar, Omsk, Orenburg, Tver, Tyumen	2 Regions - Rostov-on-Don and south-west region of Rostov Oblast, Sochi, and cities of Azov-Black Sea coast (6 cities and 140 towns, including Aksai, Bataysk)
Activities	heat supply - 47%, electricity supply - 33%, **water and sanitation - 20%,** engineering services, technology and energy audit and consulting	**water and sanitation**	**water and sanitation,** electricity supply, insurance and planning of investments

Table 1b. Characteristics of special federal operators of housing and utilities services from the end of 2008 to 01.01.2009 (PKF, 2010).

	«Rossijskie kommunalnye sistemy» (RKS)	**«Rosvodokanal» (RVK)**	**Joint stock company «Evrazijsky»**
Revenue	23,696 billion rubles. In total is about 4,25 billion rubles according to WSS	10,751 billion rubles. VAT is not included.	9,9 billion rubles
Net profit	319 million rubles	497million rubles	No data
Population, which is served (#)	about 4,5 million people, more than 2,8 million people directly, 37 thousand contracts with juridical persons, more than 2 million of consumers according to WSS	6,1 million people, in Russia 4,6 million, about 33 thousand of budget and commercial organizations	More than 3 million people
Volume of investment programs under implementation	4,5 billion rubles from 2003 to 2008.	23,8 billion rubles	More than 40 billion rubles + the program "Chisty Don"
Overall production of water	water supply - 361 million cubic meters; wastewater - 351 million cubic meters	846 million cubic meters	water supply - 120 million cubic meters; wastewater - 88 million cubic meters

Table 2 presents the development strategies of the three main federal operators in housing and public utilities: «Rosvodokanal» (RVK), «Rossijskie kommunalnye sistemy» (RKS) and «Evrazijsky» (Eurasian water partnership -EWP).

Table 2. Development strategy of federal operators in housing and public utilities (PKF, 2010).

Measures	**Russian municipal systems to 2014**	**Rosvodokanal to 2012**	**Evrazijsky to 2020**
Number of cities / regions (presence)	expanding of their presence in regions to 15-20 (cities with more than 1 million inhabitants and from200 thousand inhabitants), the addition of new municipal corporations	10-15 - megacities (in Russia - 12, in CIS countries - 9), and cities, which have populations from 500 to 1,000 thousand	7-10 long-term contracts in cities of the Russian Federation, Kazakhstan and Ukraine
Population served	12-13 millions of people	10-15 million in Russia and CIS	more than 7 million people
Annual turnover	up to 95 billion rubles	more than 24 billion rubles. 1220 million cubic meters	400 million USD
Investments	up to 25 billion rubles for the period of 2009-2014.	More than 39.9 billion rubles + engineering in WSS	about 40 billion rubles for 2007-2026

The principle of private-public partnership is the foundation of business projects, which are realized by federal private operators. The activity of foreign operators on the market of WSS (water supply and sanitation) in Russia is limited, but it has a tendency to grow. The total revenue of all organizations, which provide services to WSS aggregates 127, 1 billion rubles (water supply) and 98, 2 (wastewater) with no regular distribution by federal districts.

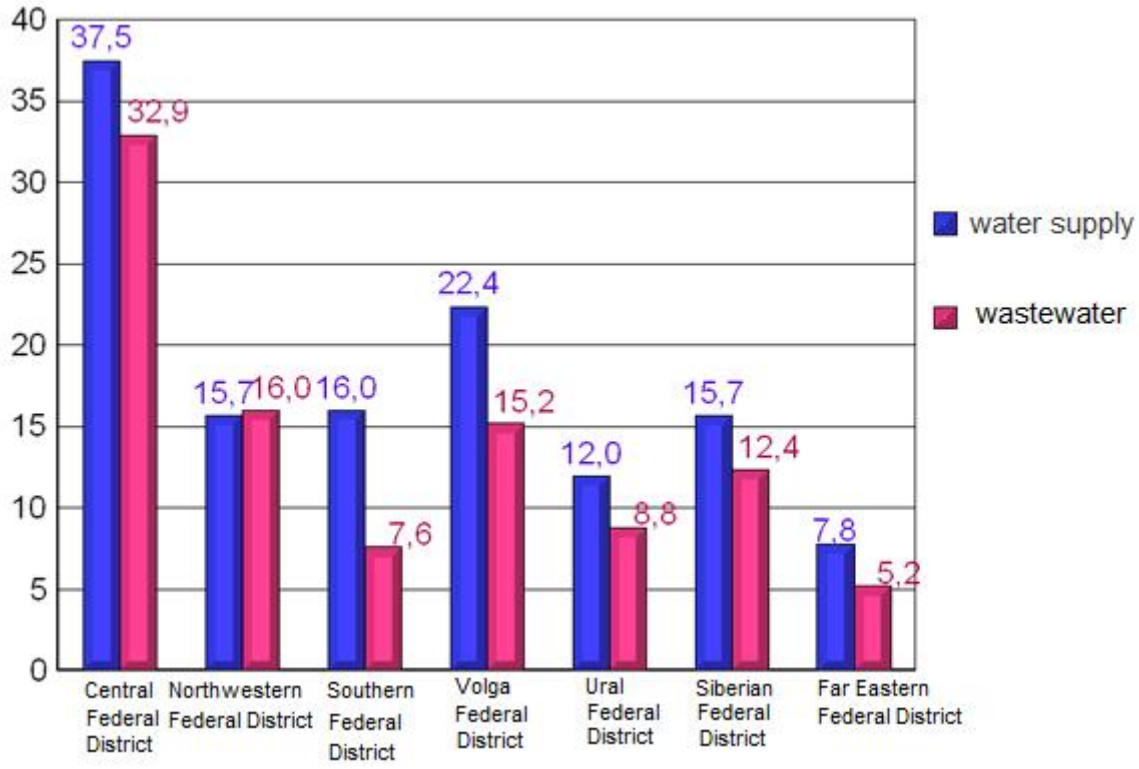


Figure 4. Profit of organizations which provide water and waste water treatment services according to federal districts (PKF, 2010).

2.2 Characteristics of Municipal Enterprises of Water Supply and Waste water Treatment in Big Cities

The most key players on the market outside of federal operators are Municipal Enterprises of Water Supply and Waste Water Treatment in big cities.

Table 3. Key players on the market (PKF, 2010).

Name of the organization	City	Population of the city, people	Revenue, thous. rubles	Volume of sales of water supply, thousand cubic meters	Spread of water supply network, km	Realization volume of water supply, thousand cubic meters	Spread of wastewater network, км	Water-rate, rubles for 1 cubic meter	Wastewater-rate, rubles for 1 cubic meter
JSC «Mosvodokanal»	Moscow	10 126 424	27 663 000	1 537 000	11 000,00	1 523 000	11 000,00	10	9,05
SUE «Vodokanal of St. Petersburg»	St. Petersburg	4 661 219	16 720 000	703 500	6 391,20	794 900	7 936,40	7,58	7,58
JSC «Nizhny Novgorod Vodokanal»	Nizhny Novgorod	1 311 252	2 356 200	166 400	1 854,90	217 600	1 392,60	15,88	6,94
LLC «Omskvodokanal»	Omsk	1 134 016	2 579 687	292 000	1 629,60	146 000	1 126,00	8,36	6,67
LLC «Rostov Vodokanal»	Rostov-on-Don	1 068 267	2 267 097	198 560	2 417,00	88 000	1 189,00	8,2	5,47
Municipal unitary enterprise «Ufavodokanal»	Ufa	1 042 437	1 377 500	117 926	1 614,40	107 663	903,3	9,83	7,48
«NOVOGOR-Kama» (Perm Branch)	Perm	1 001 653	1 880 000	98 563	1 160,00	116 207	1 087,00	12,57	8,03
Rosvodokanal		4 612 000	10 751 000	764 290	15 122,70	764 290	7 449,70		
«Rossijskie kommunalnye sistemy» (RKS) (Municipal Enterprise of Water Supply and Waste Water Treatment)		2 473 270	4 250 103	360 985	4 200	351 495	3 200		

Total volume of water for one inhabitant from metropolitical water and wastewater plants equals to 150 cubic meters per year. Gross income per customer for the biggest water supply and wastewater treatment plants is in diapason of 2-3 thousand rubles per year. The gross income is bigger in two capitals. Profit for one working person is also higher in metropolitical water and wastewater plants. This happens because of the usage of modern plant control systems.

Range of activity of biggest water supply and wastewater treatment plants and federal private operators of water supply and sanitation (WSS) is shown in Figure 5 below.

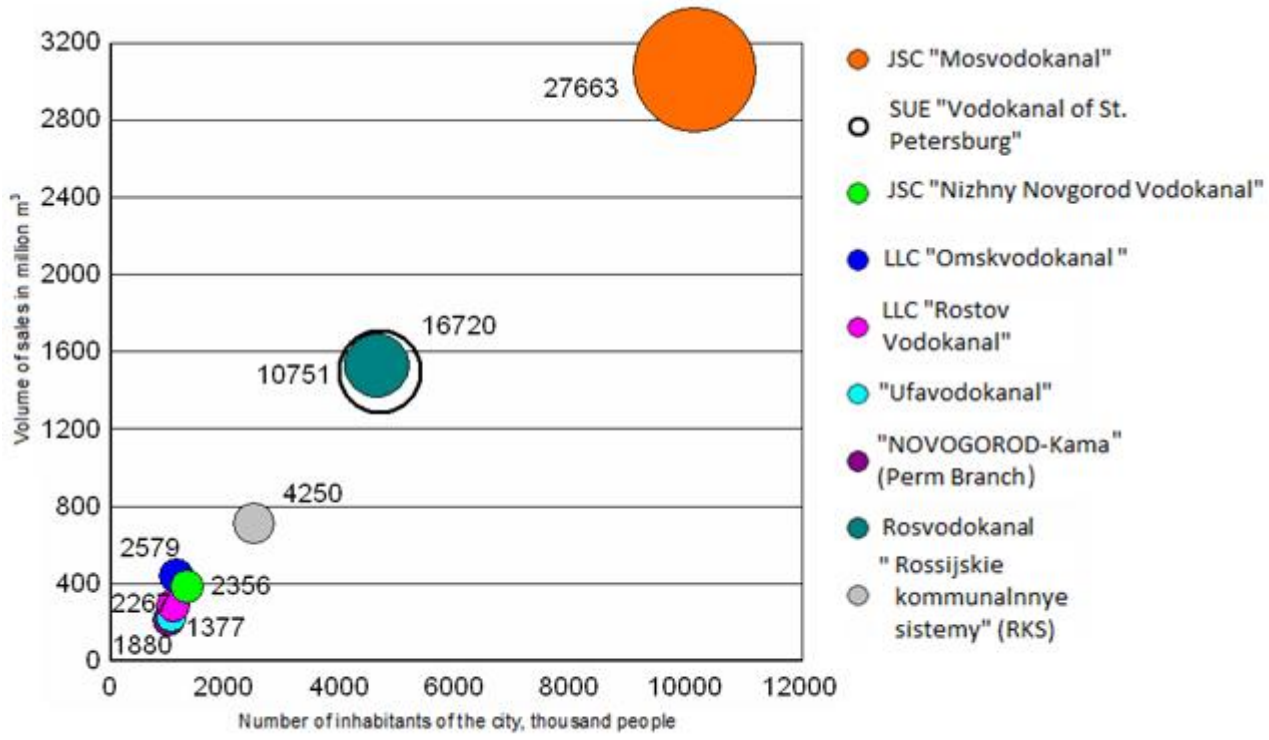


Figure 5, profit of large water supply and wastewater treatment plants and federal operators (size of circle is proportional to revenue in million rubles) (PKF, 2010).

According to MCD Group (2010), not more than 10% of the market belongs to network players. A little bit more than 20 % of the market belongs to water supply and wastewater treatment plants of the two capitals: 7% belongs to SUE “Vodokanal of St. Petersburg” and 14 % belongs to “Mosvodokanal”.

Even the summed revenues of two biggest private Russian operators RKS and RVK is smaller than the revenue of SUE “Vodokanal of St. Petersburg” and the revenue of “Mosvodokanal”, which shows small concentration of service market of WSS.

2.3 The structure of consumption and costs of services of the water supply and the wastewater

The population is the main customer of WSS services, which consumes 65-80 % of the total production volume (depending on enterprise). Figure 6 shows Consumption of water (water and wastewater treatment services) by population, budget organizations and commercial enterprises.

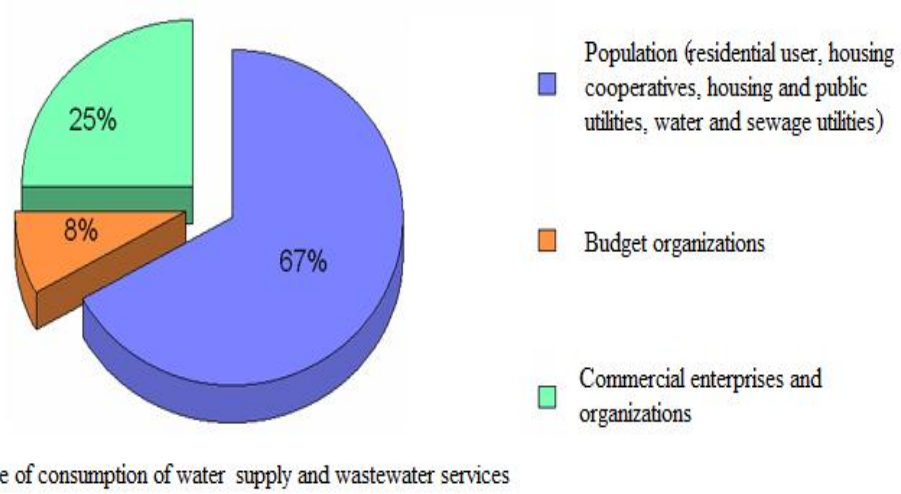


Figure 6. Consumption of water (water and wastewater treatment services) by population, budget organizations and commercial enterprises (PKF, 2010).

Water supply to population is reduced, because of the expansion of instrumental accounting and tendency to save resources by users, because of the dramatic growth of the cost of housing and communal services for the period of 2002-2008, and also because of expansion of the number of individual supply sources.

It can be seen from Figure 7 that in 2005 water usage was higher than wastewater outlet. Then total wastewater outlet increased rapidly, and in 2008 water usage and wastewater outlet were almost at the same level.

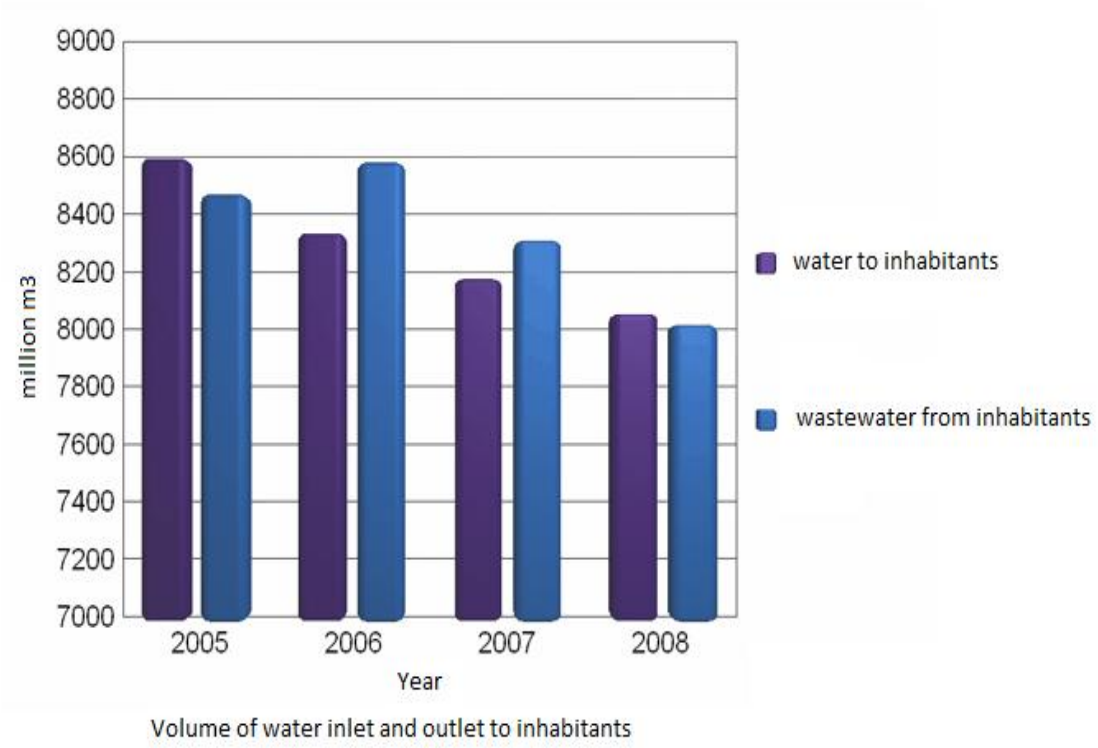


Figure 7. Water and wastewater consumption by inhabitants from 2005 to 2008. Wastewater is marked by blue and water by violet color (PKF, 2010).

2.4 Government policy for the development of wastewater treatment and water supply areas

The Russian government put together a number of reforms for the development of wastewater treatment and water supply areas for the period of 2010-2014:

- Saving of regulation of tariffs for water supply and wastewater treatment for inhabitants, limit indexes of tariffs.
- Saving of rate of increase of tariffs, which are higher than inflation, to transfer for the total refund of costs by inhabitants by economically suitable tariffs and at the same time with the social help to low-income citizens.
- Reduction of the consumption by inhabitants, because of the economy of sources, transformation of payment for public services from “by normative” to “by fact” based on metering values.
- Reduction of collection of payments from inhabitants based on the reduction of incomes, because of unstable economic situation.
- Introduction of two-rate tariffs for water for its capacity and volume, conversion to long-term tariffs (3-5 years).

- Introduction of tariffs, which are calculated by method of return on investment, which guarantee receipt of profit to investor.
- Reduction of budget financing with increasing of investments from private operators to long-term projects of building and modernization of infrastructure.
- Introduction of requirements in energy conservation and increasing of energy and economical efficiencies in heat supply and communal infrastructure systems, principles of technical regulation of the area.

On the basis of these reforms, it is possible to assume that the market of public services will have stable positive dynamics in a mid-term. The development of market will be enabled by the growth of tariffs for services of housing and public utilities and by bringing in of private operators and investments into the area despite predictable growth of accounts receivable and despite insignificant cuts of relief, because of the reduction of consumption and collectability of payments. Potential investment attractiveness of the market of public services is based on practically guaranteed sale of payments and possibility of significant reduction of expenses.

2.5 Russian Water Strategy

Water strategy of the Russian Federation for the period until 2020 was approved by the Russian Federation Government on 27 August 2009. Water strategy was developed for the purpose of water resources guaranteeing for the purpose of realizing the long-term concept for social and economic development of the Russian Federation for the period until 2020, approved by the Russian Federation Government on 17 November 2008.

Shares of population with access to water supply and wastewater treatment and their future increase in percentage from 2011 to 2017 are shown in Figure 8. Shares of population with access to water supply and wastewater treatment according to standards are also shown in Figure 8. Budget funds and private investments in water and wastewater treatment market are presented at the bottom of Figure 8.

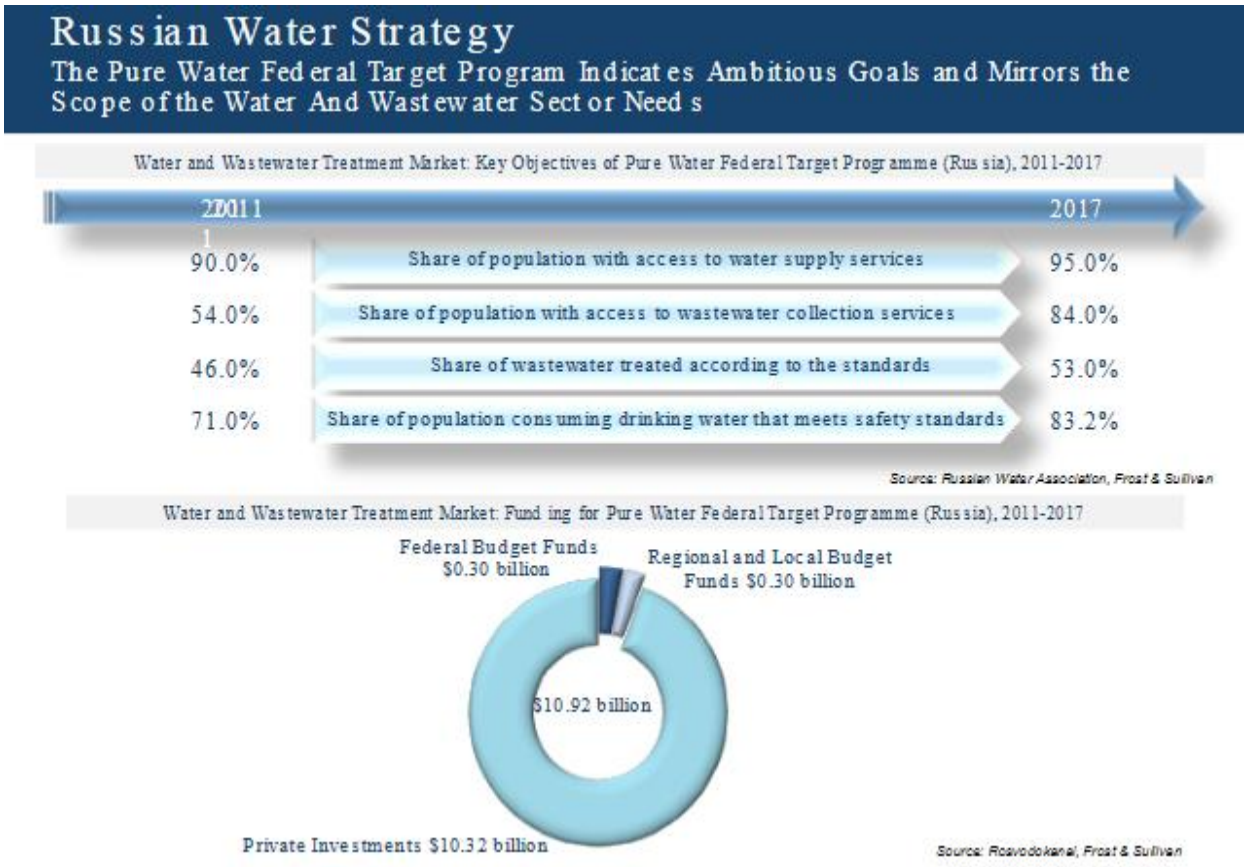


Figure 8. Russian water strategy (Szyplinska, n.d.)

Russian water strategy determines main areas of development activities of the Russian multipurpose water, which provides sustainable water management, water objects security, and protection against the negative effect of water. And also it provides the formation and realization of competitive advantages of the Russian Federation in water resources area.

The water strategy enforces the basic principles of the state policy in the area of protection and utilization of water bodies, provides acceptance and realization of management decisions for preserving aquatic ecosystems, which provide the biggest social and economic effect, and also creates conditions for effective coordination between participants of water relations.

The realization of the water strategy will promote sustainable socio-economic development of the country and support a high-level of food supply security, industrial safety and energy security. In addition, it will also realize constitutional rights of citizens to a more favorable environment.

The Russian water Strategy will be realized in two steps. The first step (2009-2012) includes the creation of conditions for multipurpose water sustainable development and the realization of the following activities:

- the development of a normative and legal framework in the area of utilization and protection of water objects;
- the system development of state management of multipurpose water;
- the creation of sustainable working parts, which provide implementation of innovative technologies for rational water consumption, and also the protection improvement and improvement of water quality of the water objects.

At this point, as a matter of priority, actions to improve population protection from negative water-related impacts will be applied. Actions for liquidation of accumulated water harm and augmentation of water supply for certain Russian areas will be applied as well.

The second step (2013-2020 years) the priorities of water strategy consists of these activities:

- water utilization system development, which provides anthropogenic impact reduction, higher protection level for population from negative water effect, which includes reliability and safety of waterworks, rationalization of water consumption and lowering of reservoir capacity, which includes building and reconstruction of the water and sanitation network, infrastructure of water conditioning and wastewater treatment.
- the priority development of sci-tech and processing base of multipurpose water, large-scale implementation of the innovative technology under development;
- skilled stuff supply to multipurpose water;
- direction-finding for implementation of competitive advantages of the Russian water resource potential on the export market.

Water strategy must reduce negative human-induced disturbance on the ecology of water objects by 2–2.5 times. In addition, water strategy will reduce disease incidence and extend life span for 2–3 years by improvement of the ecological environment. This strategy must also partially eliminate the deficiency of water by capacity increase of some part of reservoirs, which include Nizhnekamsk's and Cheboksary's reservoirs. The water intensity of gross domestic product must be reduced from 2.4 to 1.99 m^3 per

thousand rubles in 2012 with a continual reduction to 1.4 m^3. Overhead water will be reduced by 2 times.

The strategy also includes increasing protection of people and areas from floods and other negative impacts of water from 16% to 50% and making all emergency water-works technically safe.

Protective actions taken to protect inhabitants and objects of the economy against the negative impact of water will give an option to prevent possible impact, which is estimated at 989, 3 billion rubles. Rationalization of water utilization, which includes the reduction of water losses by application of the water-efficient process and the reconstruction of water-distributing systems, will allow to reduce economical energy-output ratio by 20 billion rubles annually.

The financial realization of the Russian water strategy is planned from federal budget resources, budget of a constituent entity of the Russian Federation, local budgets and extra-budgetary resources. According to preliminary estimates, the total volume of resource provision for the implementation of strategy measures is 662, 4 billion rubles, which includes federal budget resources (480, 9 billion rubles), resources from budget of a constituent entity of the Russian Federation and local budgets (114,6 billion rubles), extra-budgetary resources (66,9 billion rubles) (Ministry of natural Resources, n.d.).

2.6 Key Market Focuses, Market Size and Forecasts

Focus areas of Russia in this business in the long-term are as follows:

- the development of wastewater treatment technologies;
- reconstruction, modernization and the building of new sewage facilities;
- the usage of the most environmentally safe and effective reagents in wastewater treatment;
- introduction of new technologies in wastewater treatment;
- modernization of industrial plants and introduction of water recycling facilities into process diagrams.

Nowadays 70 % of Russian industries and inhabited localities do not have treatment facilities. Because of more strict environmental requirements, the volume of customers will increase. A large part of existing traditional treatment facilities is in need of reconstruction. Because of the coming Russian integration into EES (European Expert Service) environmental requirements to industries will increase. Already now a lot of industries are at a risk of closing as a result of an instruction from the environmental services because of misuse of wastewater treatment systems or their unsatisfactory performance.

According to the data of Russia's industry and energy ministry (“Muros”. Summary Market analysis, n.d.), the total amount of unclarified discharged wastewater equals to 4081 m^3 per year, and the quantity of wastewater continues to increase in accordance with the increase in production and population in Russia. For this reason, the market of wastewater treatment plants also grows.

It is impossible to give an exact growth estimate of the market because up to 70% of water discharge is in violation of regulatory requirements. The real need in mobile facilities for reutilization and sewage treatment is at least 58 847 x 1, 7 = 100 040 thousand facilities, which cost 1 002 trillion rubles. Because all techniques are in need in periodical renewal market outlet of facilities could be limitless. The business area is big because there are lots of different types of wastewaters and their amount is very large. And these wastewaters are collected constantly and this will never end. So it is developed industrial area, which is created by the global deficit of clean water and closely related to wastewater treatment and water treatment. According to data from the Competition of Russian Ecological Innovations (Конкурса Русских Экологических Инноваций) in 2005, the market of treatment systems was estimated on the territory of the Russian Federation.

Market research showed that there is an increasing demand for wastewater treatment systems, which can clean water from ”hard” pollutants and can be easily integrated into active treatment systems when capital investments are comparatively inconsiderable.

Wastewater treatment and disinfection systems market

There are historical trends in quick growth of heavy equipment, electrical, radio and engineering sectors of industry in Russia and also the realization of environmental protection strict measures is started there, so this is fast-growing segment of market. Ta-

ble 4 presents some high rollers from the view point of the author of the Thesis on the wastewater treatment equipment market. Table 5 presents such parameters as price, capacity and size of the products from companies which are mentioned in Table 4.

This kind of conclusion becomes stronger also by the fact that increase of these sectors of industry will be firstly reached by small and medium-sized enterprises, which cannot let themselves large capital investments into treatment facilities during starting period of their development. Market volume for coming ten years is 200-400 million $ per year.

Because of high quality-price ratio of mobile facilities for reutilization and sewage treatment and their mobility the circle of customers is wide:

- any kind of farm, which can get chip organo-mineral manure with wastewater treatment;
- food industry;
- municipal treatment plants of town water canal (горводоканал);
- wood-working industries and paper mill;
- dacha communities, spas, holiday hotels, and other customers, which have a need in wastewater treatment for reasons of wastewater penetration into aquifers, which are connected with drinking water sources.

2.7 Technology Evolution

One advanced system of biological wastewater treatment is the aerobically anoxic cleaning in SBR-reactors (sequencing batch reactor is aerobic reactor with cyclo-discontinuous activity), which makes it possible to remove not only organic compounds but also biogenous compounds until their concentrations are minimal. As in aero tanks, in SBR active sludge consisting of bacteria and animalcules is the cleaning basis. All these organisms proceed rapidly with the help of organic compounds of wastewaters and excess hydrogen, which comes into the facility with the air inflow. Bacteria forms flocks and subtract ferments, which mineralize organic pollution. By switching off aeration and mechanical mixing, the removal of biogenic substances happens.
In the short term, the implementation of membrane methods in wastewater treatment is planned.

Experts have concluded that in 2025, water deficiency will be the major threat for health, environment and food safety. Wastewater reuse is the way to solve the problem of water deficiency. Wastewater treatment processes, which remove pollutants and return water to its hydrological cycle, are used in the technology of membranous biological contactor, and it develops rapidly. Membranous biological contactor combines activated sludge process with mechanical membranous separation, which is presented as a physical barrier with pore spaces from 0, 5 mm to 10 nm, which disinfects wastewater completely (Figure 9). As disadvantages, huge investments, high operating costs and plugging of the membrane unit should be mentioned. Constant concentration determination of extracellular polymer substances in activated sludge and microbial component is also a difficulty because nowadays the data of parameter changes is not systematized.

Development and application of this technology for industrial and urban wastewaters show very high functional reliability. This technology can work with higher concentrations of activated sludge (to 20 g/l) than traditional treatment facilities (6 g/l). This will greatly reduce the volume and size of wastewater treatment facilities.

Within the framework of the development of high-concentrated wastewater treatment technologies, the following tasks were set:

- detailed working-out of complicated biological processes in membranous reactors;
- determination of critical factors of water quality, which act on effectiveness and stability of sewage treatment;
- determination for each specified, production-required degree of wastewater treatment before its inlet into membranous reactors.

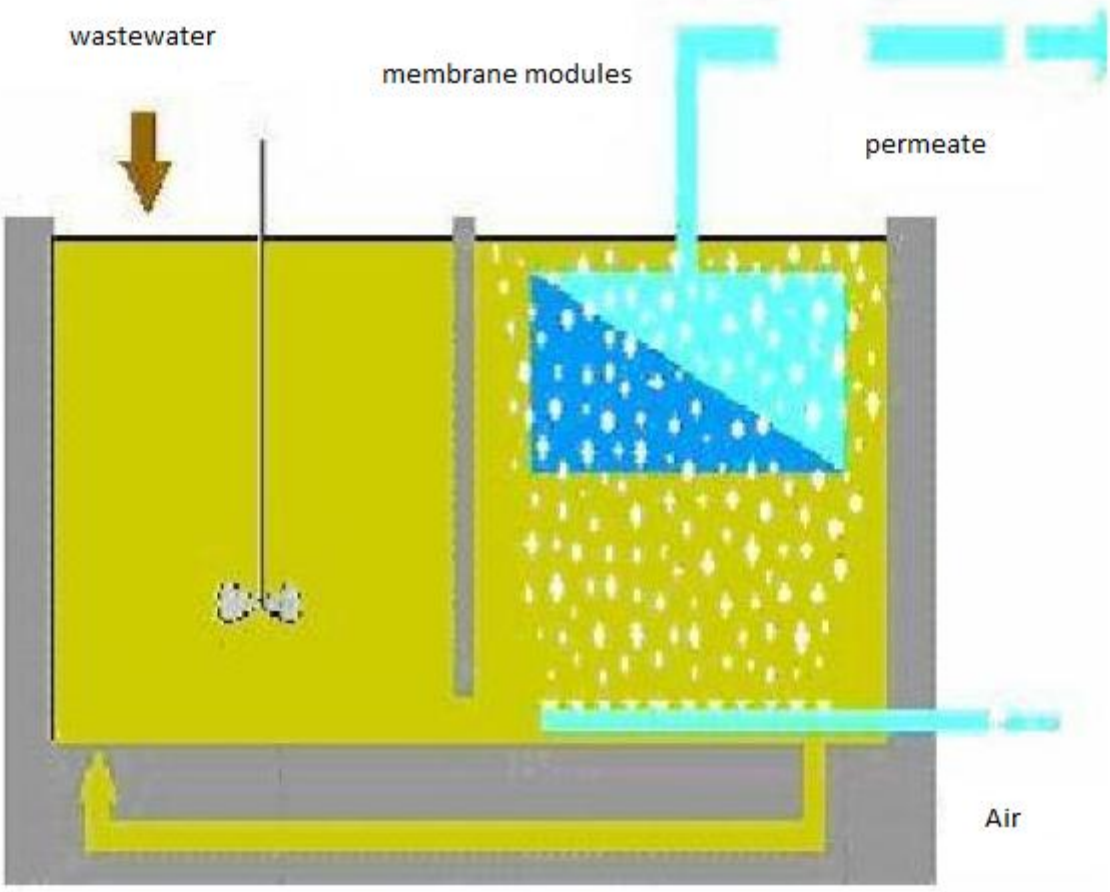


Figure 9. A membrane system is drawn in cross-section. Clean water is called permeate, and it is marked by a light blue color. The membrane is shown as the border between grey water, which is marked by a dark blue color and permeate (MEDIANA-ECO, 2009).

It looks like in the near future Russian environmental policy will be more focused on ecological standards. Also Russian requirements are stricter than EU treatment facility requirements. Enforcement will be improved in the near future. More companies will be interested in getting facilities with the confirmation of their quality. Facilities, which were successfully tested according to Russian Standards and have relevant documentation, will be more preferable than others, and from certified ones facilities with the best price/quality ratio will be chosen. On the other hand, since Russia has a cold climate, northern suppliers could become more preferable. Therefore the treatment facility for sales success must be:

- compliant with Russian ecological standards;
- utilizable in a cold climate;

After abidance by these two terms, it is possible to focus on price/quality ratio and also on such parameters as compactibility, mobility, flexibility for installation in any type of

soil. Also, it is good to contact and cooperate with scientific centers to be familiar with new developments and technologies to be ready to get additional equipment in advance. This will give the possibility to become the first one who is readjusted and entered into the market. For example, Green Rock Oy cooperates closely with University of Oulu and performs testing in a central sewage collector.

2.8 Key End-users

The end-users of wastewater treatment plants are the following:

- food industry;
- farms;
- cottages;
- villages;
- small towns (>5000 inhabitants).

Thus, the production of Oy Raita Environment Ltd is focused on surrounding areas, where there are no connections with centralized municipal sewage. Figure 10 illustrates key-end-users of BioBox with EV ecotoilet system.

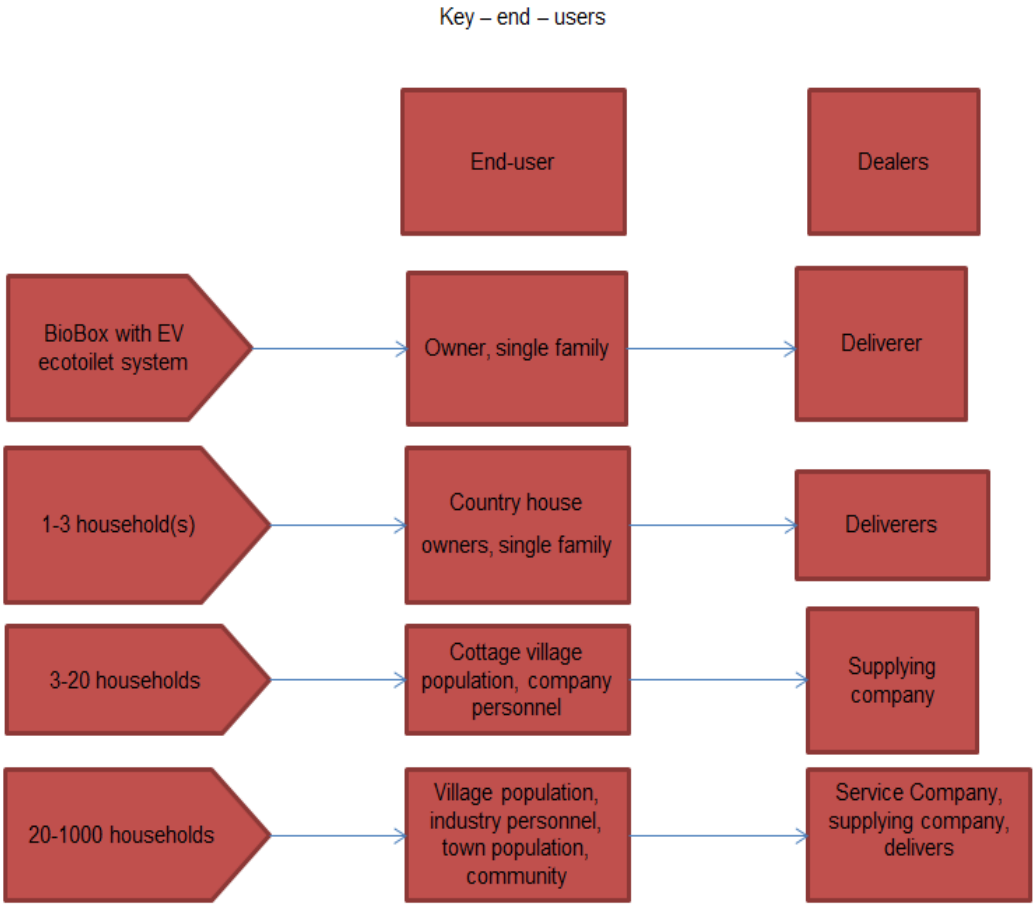


Figure 10. Biological BioBox wastewater treatment units for 1-3 households, 3-20, 20-1000 households for cottages and cottage villages.

3 Market in figures

3.1 Competitors

To give some idea of the kind of equipment markets in Russia, several key players from the view point of the author of the thesis are presented in tables 4 and 5 with their production.

Table 4. High rollers from the view point of the author of the Thesis on the wastewater treatment equipment market.

Company name	Size of the company	Operating area	Business Focus
Topol-Eko	Major company	All Russian Oblasts and CIS countries	Local waste treatment plants producer
Uponor	Major company (3200 members)	Europe, Asia, and South America; Russian sales offices work in Moscow, St. Petersburg, Samara, Krasnodar, Ekaterinburg and Novosibirsk	Solution provider for water service, indoor climate and water mains
Labko	Major company	Europe	Production and wastewater treatment delivery
Greenrock	Major company	International market	Wastewater treatment on places without central sewerage systems

Table 5. Parameters of the products from high rollers on the wastewater treatment equipment market (Uponor Oy, 2013, Wavin-Labko Oy, n.d., Topol-Eko, n.d.).

Company	Equipment	Price in Rubles	Price in Euro	Capacity [m3/day]	Size [m3]
Topol-Eko	Topas	79900	1997,5	1	3,3
		99850	2496,25	1,5	4,8
		125500	3137,5	2	6,3
	Topaero	179 500	4487,5	3	6,3
		219 300	5482,5	4	9,503
		276 500	6912,5	6	12,87
Greenrock	Green Rock 05	67 772,04	1694,301		2,389181
	Green Rock 05S (IISI-6)	185 162,90	4629,073	1	4,926017
Uponor	Uponor Bio10	583 866,36	14596,66	1,5	7
	Uponor Bio15	661 045,77	16526,14	2,2	8

Then parameters of the equipment from different companies were compared. These comparison results are shown in Figure 11 below.

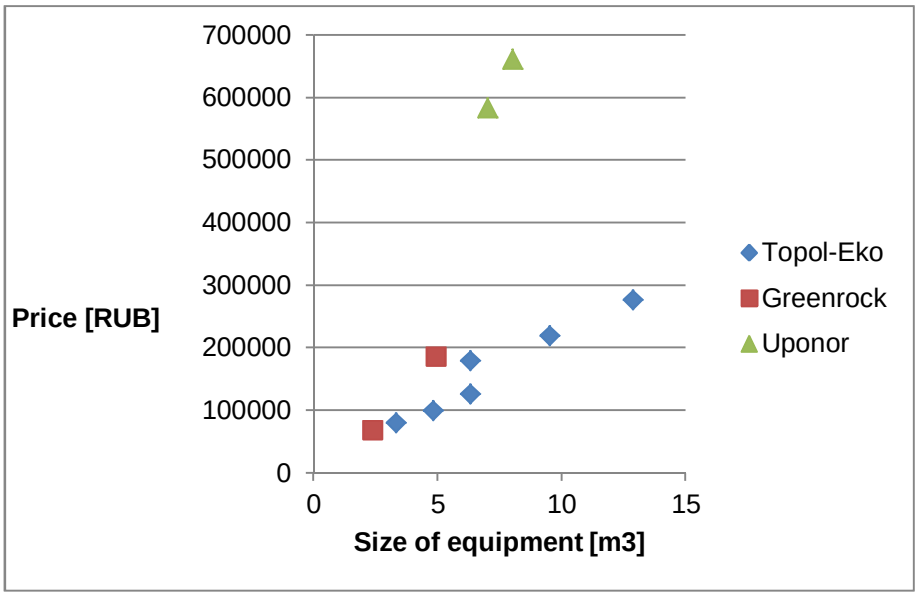


Figure 11. Ratio between size of equipment and its price for companies from previous tables (Table 4, Table 5). Size of the equipment in m3 is presented as x-axis and prices in Russian rubles are presented as y-axis.

Closest competitors for "Raita Environment" from the point of view of the author of the thesis are as follows:

- Wavin-Labko;
- WehoPuts;
- Uponor;
- Ecolator;
- Clewer.

These companies have the same targets as "Raita Environment" has and work in the same areas. The charts were found on the website of Clewer Oy (2010) (http://www.clewer.com/ru/files/2010/12/ComparisonresultsforSHU_RUS.pdf) and

translated into English by the author of the thesis. The charts were presented for promotional purposes; therefore, they cannot be considered as fully reliable. The Clewer Oy's charts can be found in Appendix 1.

According to the EN 12566-3 standard all facilities were tested by the Finnish Environment Institute (SYKE) and their results were presented on the website of Finland's environmental administration. These results of treatment efficiencies and energy consumptions are written down in a table (Table 6).

Table 6. Treatment average efficiencies (Finnish Environment Institute, n.d.).

Competitors	Nitrogen removal [%]	Phosphorus removal [%]	BOD7 removal [%]	Energy consumption [kWh/day]
BioKem 6	54	90	97	1,2
WehoPuts	50	90	97	1,036
Uponor	50	96	98	0,9
Ecolator	69	87	97	2,8
Clewer	65	89	95	3,77
Raita PA	44	90	96	1,7

To illustrate the data and to make comparison easier, the figures 12, 13 and 14 were made on the basis of Table 5. According to CE-standards, BOD7 must be reduced at least by 90 %, Phosphorous by 85 % and Nitrogen by 40 %, so all facilities, which were mentioned above, satisfy the CE-standards.

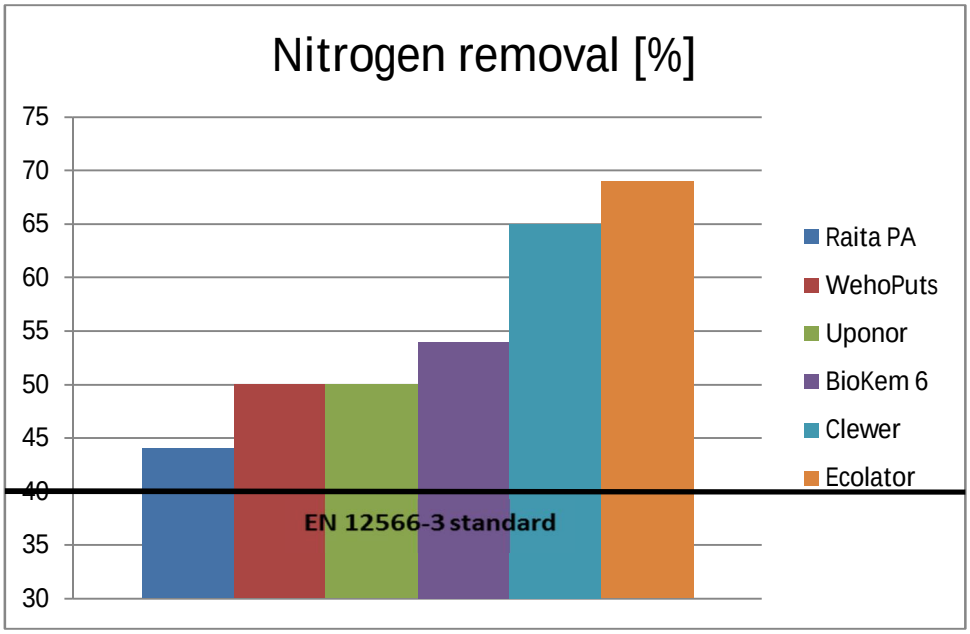


Figure 12. Treatment efficiency of nitrogen removal [%].

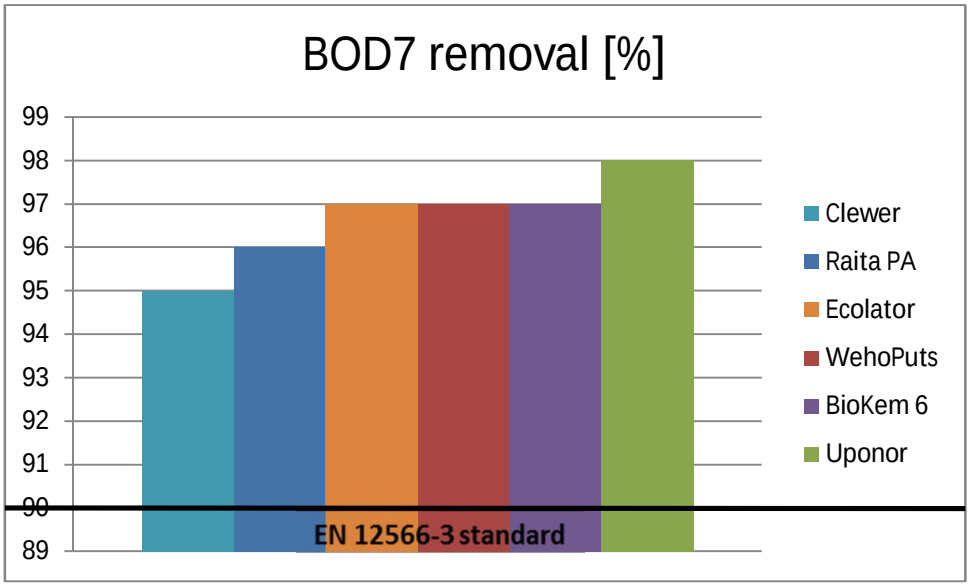


Figure 13. Treatment efficiency of BOD_7 removal [%].

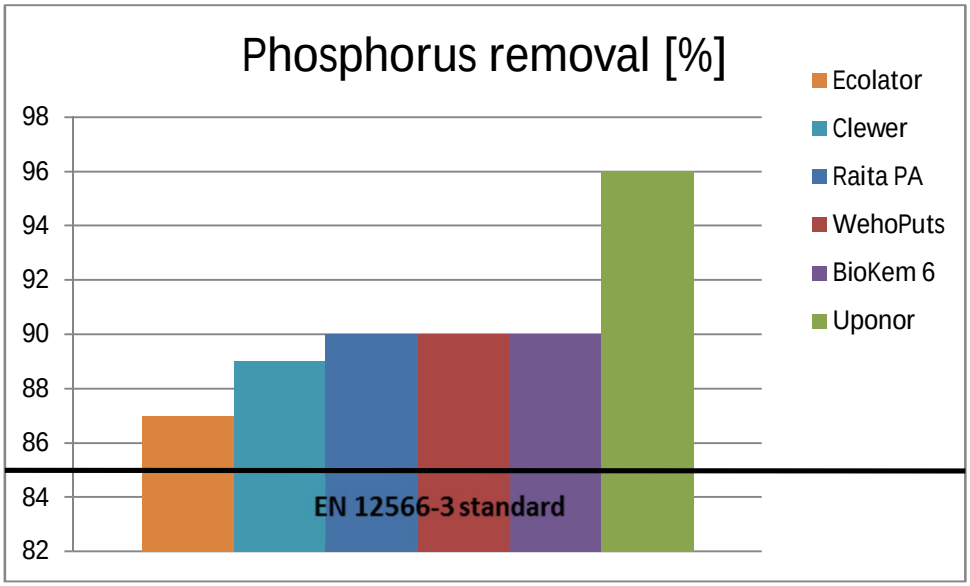


Figure 14. Treatment efficiency of phosphorous removal [%].

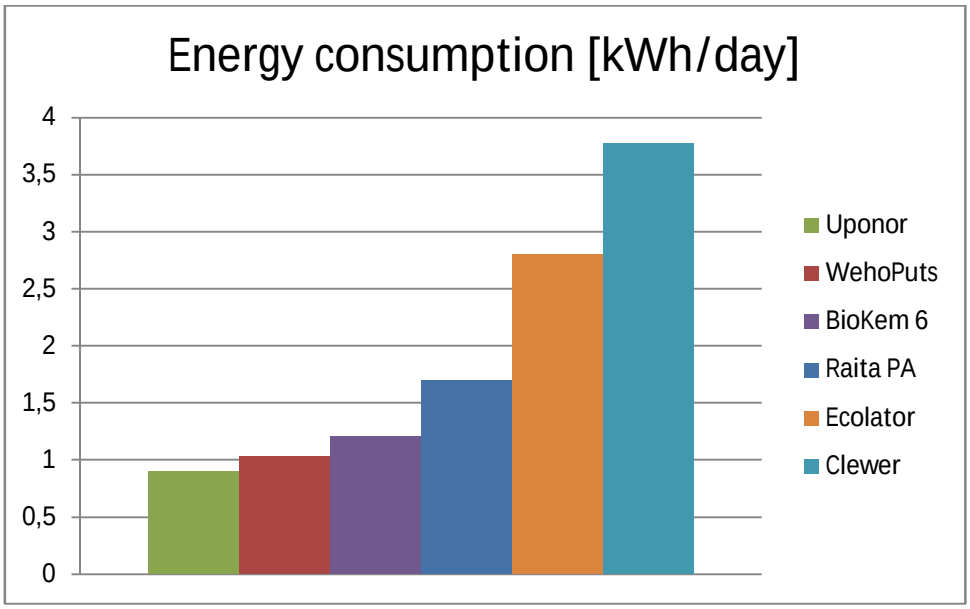


Figure 15. Energy consumption [kWh/day].

At least three of these firms (Labko, Uponor and WehoPuts) have offices in Russia, which give them several advantages on Russian market. Not only large companies but also medium-sized have their branch offices. By this kind of network they have access to new information. From branch office directors of holding company get more detailed information about customer preferences in concrete region. And this kind of data is quite important for companies, who are planning to control main Russian markets.

All these competitors have certificates, which confirm that their production was successfully tested according to Finnish and EU standards. At least two of them

(PA0.8MULTI and BioKem 6) have certificates according to Russian standards. As an example, Russian certificates from WAVIN-LABKO (http://biomaster.su/sertificaty.html), which is the manufacturer of BioKem 6, are given in Appendix 2.

3.2 Conclusions

Comparison of treatment results and prices for the equipment showed that none of treatment facilities have any big advantages in comparison with others. Some of them treat better than others, but 1-2 % in this case is not a big advantage. All facilities provide quality service which is in conformity with the standards. This is the main point that the customer will consider. It may be reasonable to make the Russian certificates easily available through the Russian version of the company's website.

In the opinion of the author, simplicity in service, simplicity and reliability of the facility, compactness of the facility, and smooth-flowing transportation of the facility may become benefits and advantages of the system. Firstly, this is related to connections more than to facilities. That could be engineering lines and particularly sewerage lines.

There is a difference, for example, between usage of one pump or three pumps on one object. In this particular case, one pump is three times cheaper.

Less pipes, less transition pipe pieces, connecters, which are very common in the Russian market (especially in Leningrad Oblast and Karelia) - all these advantages must be attractive for construction companies as well as for possible partners and customers. For this purpose, it would be reasonable to inspect the site where the cottage village is going to be built. Less equipment to be transported will make the process more cost-efficient.

Besides demonstrating treatment technologies, it may be reasonable to demonstrate schemes and methods of laying, construction and packing more often during the exhibitions. Engineering solutions and decisions must be advertised. The perfect scheme which can be presented to the administrator and will be absolutely correct according to all standards will make very nice corporate advertising.

As partners, charting, scheming, plotting and planning experts (engineers from Karelia and St. Petersburg) should be taken into account. Maybe these experts already had some kind of relations with the construction company, and they have experience in

making plans for the company, which is interesting at the moment for wastewater treatment company or they worked for competitors, which also can be of benefit.

Not only the advertisement of the wastewater treatment technology, but also advertisement of engineering solutions should be implemented: plans, schemes, photos may be added. Sectional drawings of sewerage systems must be more detailed. These kinds of drawings are already shown on the webpage of Raita Oy, but maybe it must be considered in more depth. Here, cost-efficient solutions which allow installation and transport equipment must be shown, to take away compost easily and effectively. Pipe systems, drains, pump stations, wells, communication lines, installation chart, connection layout, pipeline layout, isolation systems - the advertisement of all these aspects must be more detailed. Maybe it makes sense to develop a larger range of possible solutions, which could be introduced to the possible client. An optimal solution that could be applied to almost any kind of engineering network will save the possible client from extra work.

4 Strategy alternatives for the company

4.1 Basic strategies

There are four basic alternative strategies for the company: limited growth, growth, cutting down and also a combination of these three strategies.
Limited growth is a strategy which is used by the majority. For this strategy, it is characteristic to define goals from the realized result corrected for inflation. This strategy is applied in formed branches of industry with static technology when the organization is basically satisfied by the situation. Organizations use determinate growth because it is the most convenient, easy and less risky. If the firm has been profitable with this strategy previously, it will probably stay profitable in future.

Growth is a strategy which is realized by a constant, measurable level increase of long-term goals and short-term goals comparing to an index of previous periods. It is applied in fastest growing industries with quick-changing technologies. Growth can be internal and external. *Internal growth* can be made by expansion of the assortment and services. *External growth* is a growth in related fields in the form of vertical or horizontal

growth (acquisition and absorption of competing or adjacent organizations). Nowadays a combination of corporations is the most recognized and obvious form of growth.

Cutting down is a strategy which is chosen by managers less than other strategies. It is also called strategy of last resort. Level of purposes becomes lower than this level in the previous year. There are several variants of the strategy of cutting down:

- Liquidation (total sale of material assets and assets).
- Cutting off extra.
- Reduction and reorientation (reduction of part of activity).

The strategy of cutting down, most of all, is chosen when performance indicators continuous to decay during cutback of economic activity or for the saving of the organization.

Combination is a strategy which is usually applied by some huge firms which are active in several different fields. It is a combination of three strategies – *limited growth*, *growth* and *cutting down*.

4.2 Choosing of the strategy

Primarily, management checks all strategy alternatives. Secondarily, management directs attention to one specific strategy. The target is to select the track which will maximize the long-term efficiency of organization. To make the most effective choice, management must have clear conception of the firm and firm's future.

There are several factors which act on the choice:

- Risk;
- Previous strategies. Quite often management is influenced by previous strategies.
- Time.

To be formal, a three-way strategy was developed by the author of the thesis. It was decided to use a combination of growth and limited growth strategies. For effective promotion strategy, internal and external growth strategies involve the following activities:

- personal contacts;
- contacts by telephone and email;
- development of the presentation of company's production.

All three branches (personal contacts, contacts by telephone and email and development of the presentation of the company's production) must be developed parallelly.

4.3 Contacts by telephone and email

From the website http://www.vseposelky.ru/msk/ it is possible to find information about all cottage villages in Leningrad Oblast. Here it is also possible to find information about each cottage village and company which is constructor or seller. Therefore, one should first be in contact with companies which sell cottages in villages by telephone and sending personalized email. The responding company will redirect the offer or turn out to be the main employer.
Lenexpo Complex (http://lenexpo.ru/en/) could be mentioned as an instance. Information about the future country estate exhibition was found on the Internet (http://spb.domshow.ru/about.shtml). From the exhibiting membership, the most interesting ones from the point of view of the author of this thesis were extracted and listed. It is also possible to collect information about companies previously by getting in contact with the Chamber of Commerce and Industry.
The idea was to send personalized emails to each company from the list along with phone calls.

4.4 Personal contacts

It makes sense to attend the exhibition and present one's own production, make an offer to each company representative, exchange contact details, and, if it is necessary, interview company representatives.
As partners, charting, scheming, plotting and planning experts (engineers from Karelia and St. Petersburg) should be taken into account.

4.5 Development of the presentation of the production of company

The Russian certificates should be made easily available through the Russian version of the company's website as has been made by WAVIN-LABKO (http://www.labko.ru/sertificaty.html).
The advertisement of the wastewater treatment technology, but also advertisement of engineering solutions should be implemented; plans, schemes, photos may be added. Sectional drawings of sewerage systems must be more detailed. The advertisements should show cost-efficient solutions, which allow installation and transport equipment to take away the compost easily and effectively. It most likely makes sense to develop a larger range of possible solutions, which could be introduced to the possible client.

To systemize text described above the scheme (Figure 16) was made by the author of the Thesis.

Figure 16 Strategy alternatives for the company.

5 Engineering study

5.1 Literature research

Russian wastewater treatment market can be divided into two sectors: municipal wastewater sector and industrial wastewater sector.

During the selection of wastewater treatment and collection systems the following conceptual issues must be taken into account:

- necessity for maximal reduction of wastewater quantity and water impurities;
- possibility to extract valuable impurities from wastewater with the following utilization of them;
- the re-use of wastewaters (the original one and the treated one) in industrial processes and water recycling systems.

The selection of wastewater treatment method depends on many factors: the quantity of wastewater and its different types, the expenses, the possibility and the economic feasibility of the extraction of contaminants from wastewater, quality requirements for purified water during its usage for water recycling and water reuse and outlet into the basin, the capacity of water reservoir, the presence of regional and/or municipal wastewater treatment facilities.

There are three main types of plants for sewage treatment: local, general and municipal. For wastewater treatment, chemical reagent treating methods , such as coagulation, flocculation, sedimentation, filtration, flotation, adsorption, ion-exchange method, reverse osmosis are applied. Wastewater treatment facilities for cities and districts are specified mostly for mechanical, physical-chemical and biological sewage treatment. If industrial wastewater goes to these sewage treatment facilities, this kind of wastewater should not contain impurities, which can break the normal rhythm of work of the sewage and wastewater treatment facilities:

- suspended substances and floats in quantity of more than 500 mg / l;
- substances which can choke pipes of the sewerage or can be deposited on walls of pipes;
- substances with erosive action (damaging effect) on the pipe material or structural members of the sewerage;
- burnable impurities and saluted gaseous substances, which can produce explosive mixtures into sewer networks and facilities;
- hazardous substances in high concentrations, which hinder biological wastewater treatment or outlet into basins (taking effect of treatment into account).

Water temperature should not be above 40 ° C. Simultaneous discharges of wastewaters with high concentrations are not allowed.

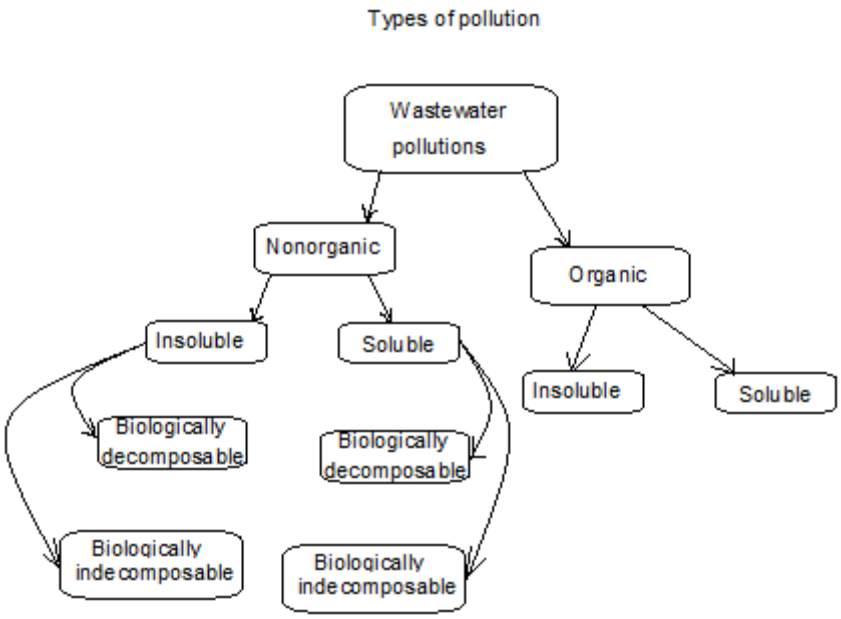


Figure 17. Types of pollution.

5.2 Mechanical wastewater treatment

Mechanical wastewater treatment is used mostly as a pre-treatment process. Mechanical wastewater treatment removes 60-65% of suspended solids from wastewaters and 90-95% from some types of industrial wastewaters. The task of mechanical waste water treatment is to prepare wastewater for physical-chemical and biological wastewater treatment. Mechanical wastewater treatment is the cheapest treatment method to a certain degree, so that is why it is always rational to the highest possible complete mechanical wastewater treatment methods.

Nowadays cleaning processes have high requirements. This provides creation of physical-chemical wastewater treatment methods with a high efficiency, intensification of biological wastewater treatment processes, development of flow-sheets with the combination of mechanical, physical-chemical and biological wastewater treatment methods and treated water reuse in technical processes. The mechanical treatment is made for separation of undissolved particulate pollutants from wastewater by screening, clarification and filtration.

For stopping large impurities and partly for suspended substances, wastewater is filtered through different kinds of gratings and screens. The sedimentation is used to separate suspended substances (with higher or lower density comparing to the density

of water) from wastewater. During the sedimentation heavy particles precipitate and light particles float.

Facilities, where heavy particles precipitate during wastewater sedimentation, are called degritters. Facilities, where light particles float during industrial wastewater sedimentation, are called (depending on the type of particles) fat interceptors, grease interceptors, and oil separators, for example. Filtration is also applied for stopping small particles. For these purposes, filtration materials in the shape of textile (net), particulate material layer or porous material is applied as filters.

Mechanical wastewater treatment as an independent method is applied when turbidity-free water after this kind of purification method can be used in technical industrial processes or led into water basins without the disturbance of their ecological state. In all other cases, the mechanical wastewater treatment works as the first step of wastewater treatment.

5.3 Physical-chemical wastewater treatment

Physical-chemical wastewater treatment occurs when some substance (a reagent - a coagulant or a flocculant) is added into wastewater. It reacts with impurities in the water and makes the separation of insoluble impurities, colloids and soluble compounds possible.
During this process, concentration of hazardous substances in wastewater decreases, soluble compounds becomes insoluble, or still soluble but non-hazardous compounds react, so that the wastewater composition changes (their neutralization happens) and colored water is created. Physical-chemical wastewater treatment gives a possibility to intensify mechanical wastewater treatment. Depending on required degree of wastewater treatment, physical-chemical treatment method can be the last or the second (before the biological wastewater treatment) step of wastewater treatment process.

5.4 Biological wastewater treatment

Biological wastewater treatment is based on the activity of microorganisms, which provide combustion or recovery of organic substances, which are found in the wastewater in the form of thin suspensions, colloids, in the solution, and act as a source of food for

microorganisms; therefore, water is cleaned.

Biological wastewater treatment plants can be divided into two main types:

- plants where the treatment process takes place in the conditions, which are close to natural;
- plants where the treatment process takes place in vitro.

There are facilities where the purified wastewater filtration proceeds through the soil (irrigated fields and filtration fields) and facilities which look like water reservoirs (stabilization basins) with flow water. In these kind of facilities, the breathing of microorganisms proceeds because of consumption of the oxygen directly from the air. In the facilities of the second type, microorganisms use the oxygen mostly due to a diffusion process through the surface of the water (reaeration) or due to the mechanical aeration.
In vitro biological wastewater treatment is applied in aeration tanks, bio-filters and aerofilters. In these conditions, wastewater treatment process proceeds more intensively, because of the better conditions for life activity of microorganisms.
With high reduction requirements, the product water may be treated additionally. Sand filters (mostly double-layer and multilayer) as well as contact flocculators are the widest spreading facilities for additional purification; microfilters are applied less often.
The reduction of oxidation-prone substances is possible by sorption method, for example, by activated carbon and chemical oxidation or by ozonation. Salt concentration can be reduced by desalination methods.

5.5 Wastewater treatment plants

Advantages of the biological wastewater treatment method include: the possibility to remove different organic compounds, including toxic ones, from the wastewater, simple apparatus design, and a relatively low operational cost. Disadvantages of the biological wastewater treatment method include high first costs, the necessity of strict observance of processing method of cleaning, toxic effect on microorganisms and some organic compounds and necessary dilution of wastewater in case of a high concentration of impurities.

Wastewater treatment facilities are divided into aerobic and anaerobic. In comparison with anaerobic, the aerobic methods are more common. During the aerobic method the activity of microorganisms is supported because of the free oxygen in water. These methods are widely applied in domestic sewage treatment.

Constant reproduction of microorganisms is the principle of biological wastewater treatment method.

Wastewater goes to the aeration tank of aerobic biological treatment. Activated sludge and air are also added to the tank. All three components are mixed. Microorganisms destroy the organic (pollution) compounds in the water, and to do this they require oxygen. This is accompanied by an increase of biomass. The mixture of purified water and sludge flows into the secondary sedimentation tank, where the mixture is separated into the water (purified) and the activated sludge. Purified water goes into the reservoir. Part of activated sludge from the sedimentation tank can be recycled back into the aeration tank, and the other part goes to sludge storage. In biofilters, wastewater treatment is provided by microorganisms of biofilm, which is on the surface of filling.

5.6 Technologies

The most simple and effective solution of the problem of wastewater for a country house, roadside cafe or refueling station is the connection to central sewerage. In water-conservation zones of canals, water reservoirs and rivers, the connection to networks is compulsory. But not all villages and isolated buildings have this possibility. And the total amount of payment for the connection can be several thousand dollars. Thus, in some cases individual wastewater treatment system is the only possible way.

All local wastewater treatment plants can be divided into two main types: compact biological wastewater treatment plants and plants based on natural soil properties. Nowadays the first scheme is considered as the best technical solution for sewage utilization (especially for country house suitable for around the year living). Wastewater treatment is done by applying plain sedimentation of particulate matter and multiple stage biological method.

Energy independence is the main advantage of plants based on natural soil properties; they do not need to be connected to electrical network. This makes them perfect for installations at houses with seasonal living (usually summertime). The most part of biological wastewater plants cannot work without electrical power.

Wastewater treatment plants based on natural soil properties are divided into two types: with wastewater absorption and/or soil filtration. Absorption is made by the self-purifying capacity of the soil, and the filtration is made because of the artificially created soil filter. The selection of cleaning method depends on soil composition and soil characteristic of the ground area. In sandy soils the most effective and economical facilities are installations, where wastewater flows in the soil through perforated pipes, surrounded by a road metal layer and buried at about 40 cm depth.

If there are loamy and clayey grounds (in which water conductivity is poor) or high groundwater layer (which can be as shallow as 2,5 m) it means that the sand-grit filtration field must be made or even several filtration trenches. There are several layers of sand and road metal in the trench, in which perforated pipes are laid. The recommended length of this kind of facility is 20-25 m, which increases the degree of purification to 95-98 %. Grey waters, which move through this kind of filter, are collected in drains and removed from the territory. Filtering layer must be changed periodically but not often (once per 10-15 years).

5.7 Practical research

On 20th of February in village of Petrovskoye, there was a workshop called “Innovative technologies applied to waste water and water supply plants”. The workshop was organized by SUE Vodokanal of St. Petersburg and Ladec Ltd. District administration representatives and administration representatives of all locations excluding Hetoyskoe.

Representatives of LLC “Alliance Electro” made an exhibit and showed their waste water treatment plant, which was opened in village of Petrovskoye in 2012. This is a huge building with the new equipment inside. All components work automatically, and the presence of personnel is not needed. All equipment has a logotype of “Alliance Electro” because, since October of the previous year, this firm provides waste water treatment and water supply in this location of Kurkiekskoe. Photos from the exhibition can be found in Appendix 3.

6 Choosing the strategy

6.1 Introduction

The idea of the strategy is to sign a long-term contract at its best with Russian building companies for installation, assembling, construction and production of wastewater treatment equipment by "Raita Environment Oy". It also makes sense to know ahead about Russian projects in the sanitation area. Raita Environment Oy offers drainage systems for 1 - 5000 inhabitants for cottage villages, cottages and industries - basically for everybody who does not have connection with central canalization.
Most probably early at the beginning of construction or during planning sewerage systems are chosen by building company. There is also a possibility that construction companies have long-term contracts with some companies for getting wastewater treatment equipment from them.

Nowadays market of cottage construction is developed rapidly. So investments in this area are becoming more attractive. Return on investments depends not only on the location, nearness to roads, but also on how professional designing will be done, making of utilities, and landscape design and complex improvement of the territory.

Design work begins with creation of the conception of cottage village. *Conception* is raw material, from which designing of all sections begins. At this point decisions about the number of houses in the village and the architectural style (individual or common for all cottages) are made.
Experts take part in general planning. At the same time coordination of projects with regulatory agencies is made - from getting primary approvals to commissioning.
Design work contains the following:

- conception of the village;
- general planning;
- one architectural concept of building;
- design of approach roads;
- utility systems and services (water supply, canalization, heating electric power supply and low current systems).

6.2 Building of the cottage village

After the project is done and coordinated, building phase of the cottage village starts. Considerable cost saving could be made if all cottages were built simultaneously. This improves machine working and construction material delivery. Also by doing so it is possible to start individual finishing, site improvements and landscaping quickly enough.

6.3 Utility systems

Cottage village could be connected with centralized networks or autonomous networks could be installed.

Quite a lot of companies, which work on out of town housing market, start general planning when the construction has already started. But because all circumstances affect final price nowadays, it becomes more and more important to use multifaceted approach from the beginning. During such complex work, the best result will be gotten if everything is done by one company. Different kinds of specialists must be on the staff of the company. Presence of professionals for general planning as well as presence of designers, managers, economists, constructors and engineers for all projection actions is important to get maximal profit from the project.

Nowadays in the Central economic region of Russia, which includes Moscow Oblast, building of larger cottage villages, which have on average about 500 households, is more popular than the building of smaller ones for 50 households.

There is forecast in general planning of changes with the course of time of town-planning, ecological situation, social and economic development. Zonation of sections is made in general planning as well according to functions of sections, types of their usage, environmental protection is also attached. Environmental analysis, building conditions determination and landscape specifications are taken into account by engineers in early stages of construction.

Time period for cottage village projection is usually from 6 to 12 months while concept definition takes about one month. Concept definition provides guidance on optimum territory division and objects locations in segments. It also gives definition of balance of areas, estimation of desired service life. It also offers the possibility to start formation of technical documentation and consultation with regional architectonic committee. So

even in the very start major parameters of buildings could be planned as well as their engineering characteristics.

Already at the rough planning stage, engineering installations are taken into account; therefore, makes sense for wastewater treatment companies to come in already in the very early planning stage.

Nowadays large long-term projects become more popular. Developers are ready for expenses to get in the end a qualitative product with high liquid characteristics and good opening for further extensions. Nowadays, big investment projects, which can provide the investor with a clear performance summary on phased basis, are popular among employers on the market. So forward demonstration of the wastewater treatment system which is fitted for concrete object could give several advantages to service partners when they offer their engineering services - in this case in the area of wastewater treatment.

General plan of the future village from the viewpoint of the local officer must look like a rigidly defined package of required schemes taking into account building codes, or building controls, GOSTs, norms and rules. Standards say that schemes must be drawn with high professional level according to all rules. Standard complex of schemes includes the following:

- general data of the schemes;
- grid layout plan;
- site grading plan;
- earth mass plan;
- summary plan of engineering lines;
- plan of area development;
- detail sections (fragments, centers).

Also design of development must be coordinated with architectural and town planning agencies, environmental authorities, sanitary and epidemiological services, bodies of the State fire-fighting service and ecological inspection.

So, as it was mentioned before, it makes sense in the early stage of general planning to plan for a sewerage system, which is already fitted in the concrete plan of engineering lines. For that reason, it may make sense to contact institutions of local government even earlier than the employer for getting detailed information about construction project plans. For an example, in this context, the institution could be one of the following:

- Committee for Construction in Leningrad Oblast (http://building.lenobl.ru/);
- Committee for Construction in Moscow Oblast (http://www.kds.mosreg.ru/main/);

- The Ministry of Construction of the Republic of Karelia (http://www.gov.karelia.ru/Power/Committee/Build/index_e.html).

In this case, companies with Russian branches have advantages because these kinds of companies have relations with the government. On the other hand, the employer can reject an offer from a wastewater treatment company that pretends to be a subsupplier - then work will have been done for nothing.

6.4 Possible customers and possible actions

To make profitable contract for delivery and installation of wastewater treatment facilities in non-urban area, it is required to hire out by construction company as a sub-contractor. The customer chooses construction company as a general contractor and then the general contractor chooses sub-contractors including manufacturers of wastewater treatment equipment. Sometimes, the customer hires all subcontractors by itself. First, the customer should contact companies which sell cottages in villages by telephone and personalized email. The responding company will redirect the offer or turn out to be the main employer. Quite often large construction companies long beforehand have their own sub-contractors.
When the company is looking for subcontractors it visits exhibition. Therefore presence in all more or less important exhibitions in the targeted region or Oblast is so important. On such exhibitions, employers are looking for possible subcontractors and possible subcontractors are showing their technologies.

Lenexpo Complex (http://lenexpo.ru/en/) could be mentioned as an example. Information about the future country estate exhibition was found on the Internet (http://spb.domshow.ru/about.shtml). From exhibiting membership the most interesting ones from the point of view of the author of this thesis were extracted and listed. These companies are described below.

Jensen Group is one of the biggest investment companies of the Russian property market. During 20 years it successfully realizes complex investment projects. Nowadays office, commercial, industrial and countryside items of immovable property are under the control of company.

”Dacha construction co-operative ”Dobry Dom” is producer and builder of quick-mounting housing for seasonal and all-the-year-around living. Company’s activity is low-height construction for reasonable price. There are demonstrational cottages in South and North parts of St. Petersburg. Also there is an office in Moscow.

“Zeleny Peterburg” belongs to the group of companies “Novy Peterburg”, which is one of leaders in the property market of St. Petersburg and Leningrad Oblast. More than 10 years “Novy Peterburg” has worked with objects of municipal and country estate.

Huge amount of offices, which are opened all over the city, active implementation of computer and internet technologies, real property database outside St. Petersburg - all these advantages give a possibility to clients to use services of the company with maximal comfort.

“Kottedzhi v Ozerkah” is a permanent exhibition (http://www.ozerki-expo.ru). Nowadays it is about 30 building companies, which offer different technologies for building of cottages. The companies work in 40 commercial and office pavilions, where they offer their products and services in the field of out-of-town house-building (foundations, heating, ventilation, building and finishing materials, conditioning). This is a great place for promotion for visitors and participants of exhibition.

Pikanttitalot Oy is a Finish company, which has official distributor in Russia. This company provides services in projection, fabrication and assembly of Finish wooden houses from sandwich panel. Building of the house is possible from typical project, as well as from individual project from customer.

“SU 71” is a company, which builds cottages, sales them, sales ground areas, makes interior décor and interior design.

TERRA (http://spb-terra.ru). – is an out-of-town building company that build cottages and does all kind of work in cottage villages:

- ground works;
- complex of general construction works;

- water supply;
- wastewater treatment;
- bathroom fixtures and equipment;
- operation and exploitation of buildings and roads.

”JÄMERÄ” is Finish company with huge experience in the area of production, building and projection. JÄMERÄ does all kinds of works in areas of complement and building of cottages from design to building.

The company ”Zenit” (http://investzenit.ru/) was founded in 2005. It provides services in the area of country and municipal, and commercial immovable properties. The main targets of the company are listed below:

- to form a new kind of relationship in the area of immovable property;
- active cooperation with clients and partners;
- to form a good image of the company.

The authority of the company and its professional acknowledgment in business circles of St. Petersburg give a possibility to the company to realize different types of projects and to provide to these projects the approval from city government, different social structures and business communities.

“Landskrona-Development” LLC (http://www.landskrona.ru) is a development company, the main activity of which on the open market is the effective realization of investment projects, which are related with land properties of various profiles, which are located on the territory of Leningrad Oblast.

The idea was to send personalized emails to each company from the list along with phone calls. Before then it would be ideal to attend the exhibition to present one’s production, to make an offer to each company representative, to exchange contact details and, if necessary, to interview company representatives.

It is also possible to collect information about companies previously by getting in contact with the Chamber of Commerce and Industry. On the one hand, it will give information about possible customers, and, on the other hand, it can give information about companies-competitors.

Services in the field of business information for native and foreign manufacturers are as follows:

- Business partners search into fractions of goods and services market in Russia and some foreign countries with the report which comes with registered office and place of business of companies, contact information, name of director and description of business areas.
- Company promotion onto target market.
- Business information of Russian firms as brief (registration data, information on management team, contact details, information about the founders) or full report (registration data, structure of company, sub-companies and part-owners information from several sources, information on management team, contact details, information about the founders, financial and economic performance data during several years if it is accessible).
- Business information of foreign firms (registration data, financial metrics, history of the company, estimation of its business solvency and financial circumstances and also degree of commercial risks in case of cooperation, sub-companies and part-owners information from several sources, information on management team, contact details, information about the founders, financial and economic performance data during several years if it is accessible). Information content changes all the time.
- Distribution of promotional information in the area of business information on the website of Chamber of Commerce and Industry (http://www.tpprf.ru/en/).

7 Marketing research by this Strategy

7.1 Locations

To find possible customers, a search was made by the author of Thesis. The production is mainly orientated on cottage villages. Leningrad Oblast, Moscow Oblast and Republic of Karelia were chosen as preferable federal subjects for penetration into the Russian market. Partly this choice was made because St. Petersburg and Moscow are two capitals of Russia, partly - because Leningrad Oblast and Republic of Karelia are located close to the Finnish–Russian border, so there must be main client groups.

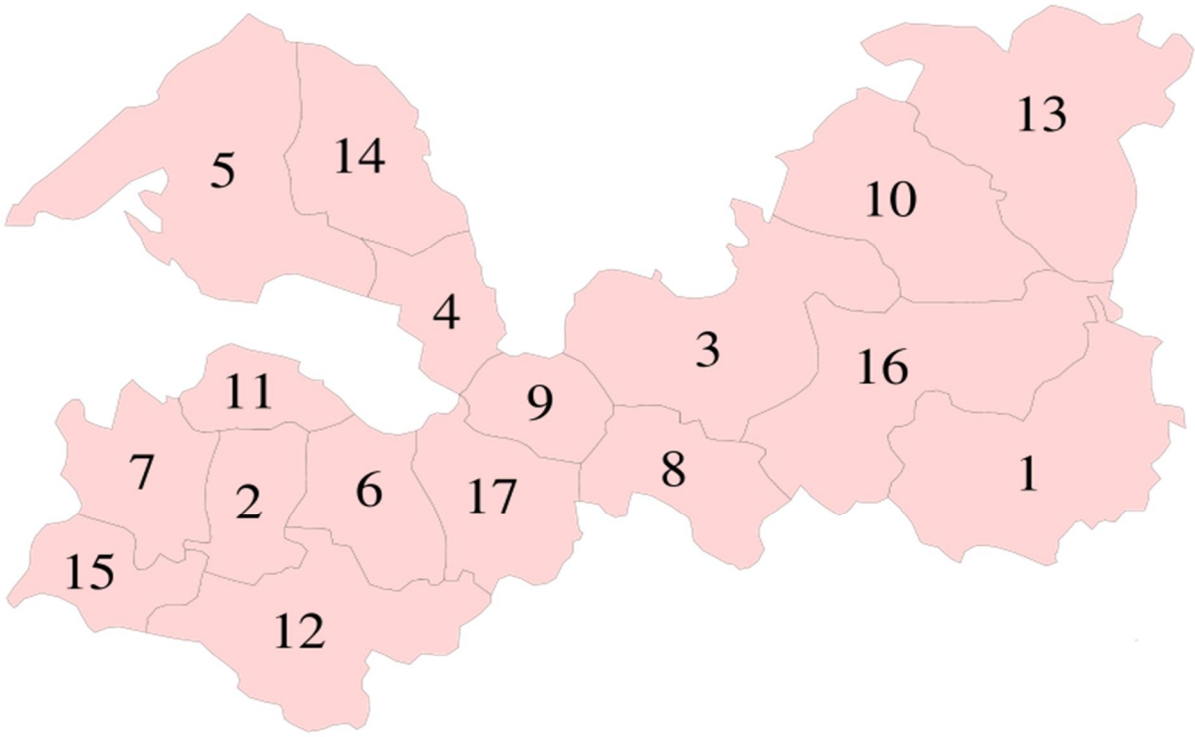


Figure 18. Districts of Leningrad Oblast: 1. Boksitogorsky, 2. Volosovsky. 3. Volkhovsky. 4. Vsevolozhsky. 5. Vyborgsky. 6. Gatchinsky. 7. Kingiseppsky. 8. Kirishsky. 9. Kirovsky. 10. Lodeynopolsky. 11. Lomonosovsky. 12. Luzhsky. 13. Podporozhsky. 14. Priozersky. 15. Slantsevsky. 16. Tikhvinsky. 17. Tosnensky. (Wikipedia, 2013).

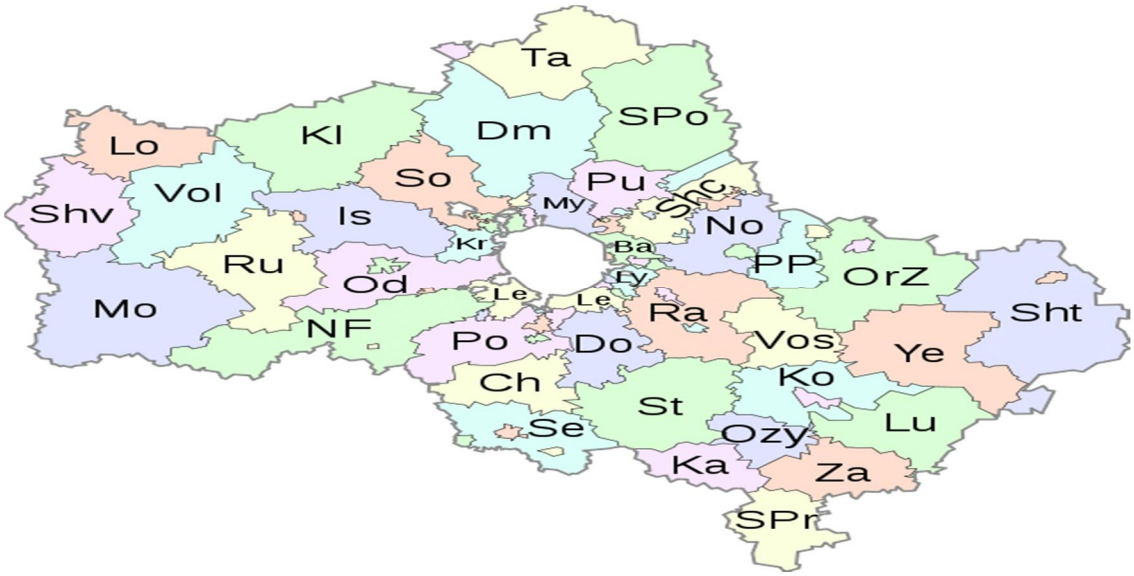


Figure 19. Districts of Moscow Oblast: 1. Balashikhinsky. 2. Dmitrovsky. 3. Domodedovsky. 4. Istrinsky. 5. Kashirsky. 6. Klinsky. 7. Kolomensky. 8. Krasnogorsky. 9. Leninsky. 10. Lotoshinsky. 11. Lukhovitsky. 12. Lyuberetsky. 13. Mozhaysky. 14. Mytishchinsky. 15. Naro-Fominsky. 16. Noginsky. 17. Odintsovsky. 18. Ozyorsky. 19. Orekhovo-Zuyevsky. 20. Pavlovo-Posadsky. 21. Podolsky. 22. Pushkinsky. 23. Ramensky. 24. Ruzsky. 25. Sergiyevo-Posadsky. 26. Serebryano-Prudsky. 27. Serpukhovsky. 28. Shatursky. 29. Shakhovskoy. 30. Shchyolkovsky. 31. Solnechnogorsky. 32. Stupinsky. 33. Taldomsky. 34. Volokolamsky. 35. Voskresensky. 36. Yegoryevsky. 37. Zaraysky (Wikipedia, 2013).

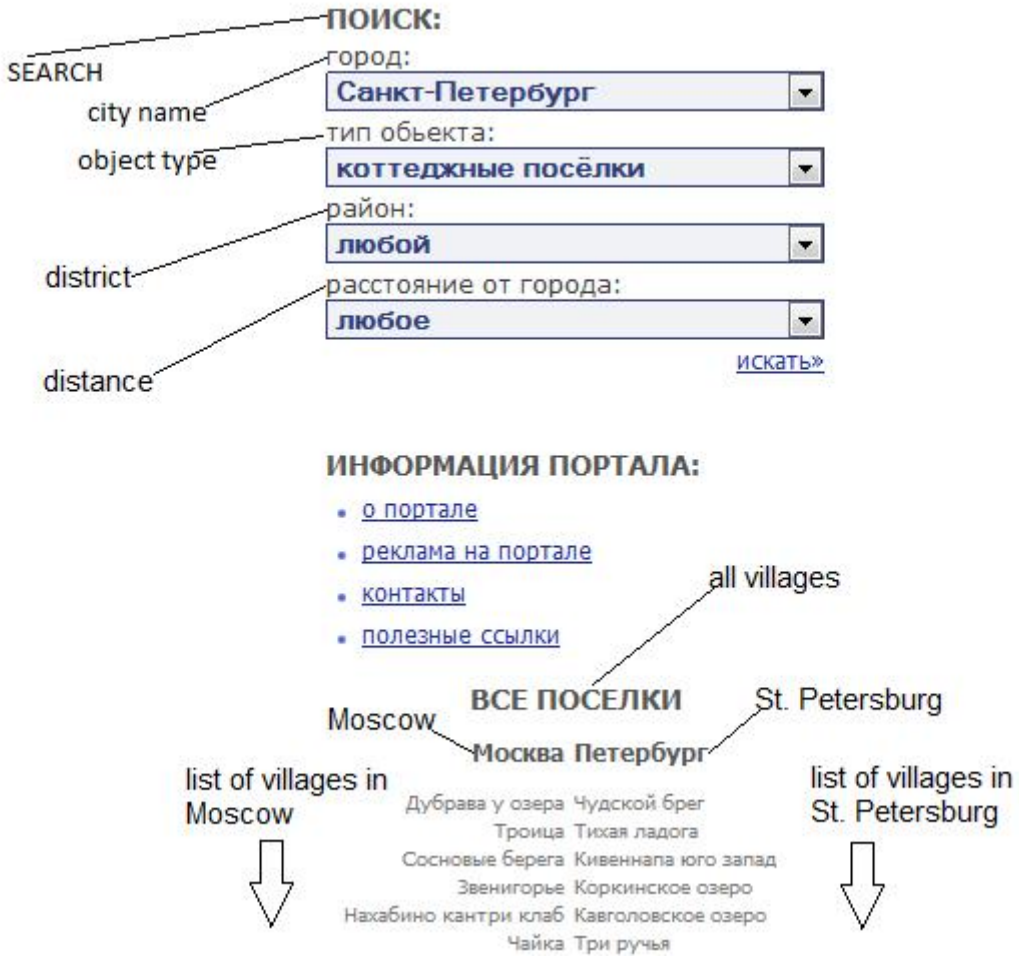
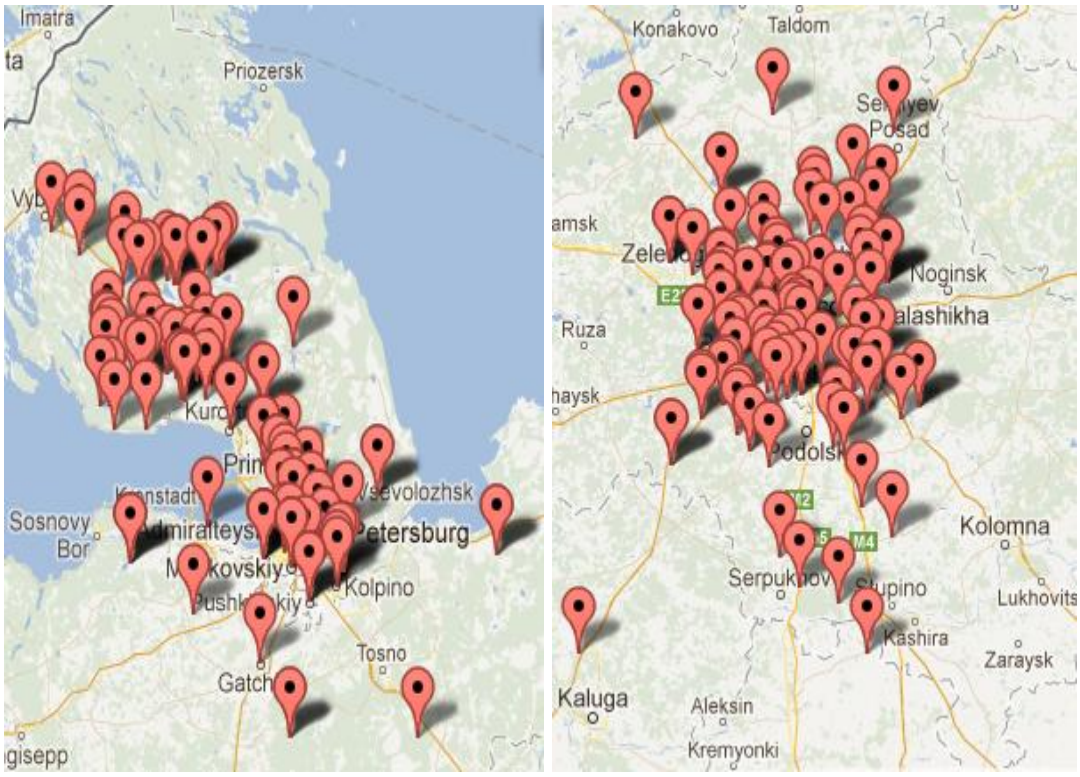


Figure 20. Lists of cottage villages of Leningrad Oblast and Moscow Oblast (Vse poselky, 2007).

Locations of all cottage villages of Leningrad Oblast and Moscow Oblast were also found on map (Figure 21).



St. Petersburg and Leningrad Oblast Moscow and Moscow Oblast

Figure 21. Location of cottage villages (Poselkovik.ru, n.d.).

In the end, Moscow Oblast was skipped, and it was decided to focus on Leningrad Oblast and The Republic of Karelia.

7.2 Construction companies

A list of developers at the market of country estate in Leningrad Oblast was found at http://fazenda.spb.ru/companies/developers/. The idea was at the end to develop step-by-step Russian market penetration strategy for concrete company. It was decided to contact several developers in the market of country estate in Leningrad Oblast. This action was regarded as the first step for the strategy. Cooperation offer was sent also to the website of the building project of a cottage village without connection with central canalization, which was under construction and planning.

Table 7a. List of construction companies which are classified according to their importance. The most important ones are marked by red color.

Company name	Address
Ltd. "Elba Construction Company"	Location: St. Petersburg, Nevsky 140.
	Tel: 777-91-91
	Website: www.elbacompany.ru
Company 47 Region	Location: St. Petersburg Lermontovsky boulevard, 13, "Griboedov", 2nd floor.
	Phone: +7 (812) 490-77-88, +7 (812) 490-77-87
	Website: http://www.47lo.ru
	E-mail: info@47lo.ru
Baltros company.	Address: 18th Line of Vasilievsky Island, Building 31
	Business center "Senator".
	Phone: +7 (812) 332-99-99
	Website: http://baltrosgroup.ru
"A1 construction company number 1"	http://www.l1-stroy.ru/contact/contact.asp
	+7 (812) 305-33-55
Group of companies "Dachnoe".	Address: Bulvar Novatorov, Building 29, box 2
	Tel: 376-22-72
	Website: http://www.art-dachnoe.ru
Sodruzhestvo company.	Address: Kolomyazhsky boulevard, Building 33, business center "Sodruzhestvo".
	Telephone: +7 (812) 380-86-50
	Website: http://www.sodruzhestvo.spb.ru
Group of companies CDS.	Phone: (812) 676-00-00
	Website: http://www.cds.spb.ru
Group UNISTO Petrostal.	Address: Street Kuznetsovskaya, Building 40
	Phone: (812) 369-0442
	Website: http://www.unisto-petrostal.ru

Table 7b. List of construction companies which are classified according to their importance. The most important ones are marked by red color.

Company name	Address
Investment and Construction Corporation Stroykomplekt.	Address: Street 10 Pushkinskaya
	Phone: (812) 320 9320
	Website: http://www.sk.spb.ru
Construction company ASERP.	Address: Pushkin, street Leontief, 41,
	Phone: +7 (812) 466-06-14
	Website: http://www.aserp.spb.ru
Construction company Petrotrest.	Address: 7th line B.O., 62-A, Block 2
	Phone: (812) 331-31-31
	Website: http://www.petrotrest.ru
Ltd. "Story Fin Invest".	Address: Admiralsky transit, Building 6, room 6-n
	Phone: (812) 305 75 71
	Website: http://www.s-f-i.ru
Ltd. "The construction company" Dalpiter-stroy. "	Address: Ligovsky, 94, block 2, business center "Ligovsky Prospect".
	Phone: (812) 305-36-36
	Website: http://www.dalpiterstroy.ru
GC "Garant".	Address: Chkalovsky Prospect, 9/13, office 5
	Phone: (812) 235-06-87
	Website: http://www.garant-dev.ru
Investment and Construction Company "Okstroy."	Location: Bolshoy Sampsonovsky Prospec-tus, 31
	Phone: +7 (812) 294-58-31
	Website: http://www.okstroy.ru
JSC "Zhilstroyinvest."	Address: Street Kharkiv, building 8a
	Phone: 8 (812) 938-938-7
	Website: http://www.zsi.spb.ru

Table 7c. List of construction companies which are classified according to their importance. The most important ones are marked by red color.

Company name	Address
Company "Stroyinvest"	Location: Balkanskaya square House 5, retail complex "ASTRA", letter "Я", 4th floor, office 20
	Telephone: 333 29 December
	Website: http://stroy-invest.su
CJSC "SU-326."	Address: Kolpino, Finlandskayast., 34
	Tel: 461-31-60
	Website: http://www.su326.ru
JSC "Stroitelny Trest."	Address: Kondratievsky 62, Bldg 4.
	Phone: (812) 331-2000
	Website: http://stroytrest.spb.ru
YIT.	Location: Primorsky, 54, building 1-A
	Phone: (812) 703-44-44
	Website: http://yitspb.ru
Property development and construction company «SETL CITY»	Address: Moskovsky boulevard, 212, letter A
	Phone: (812) 33-55-111
	Website: http://setlcity.ru

The author of the thesis contacted with all these companies by email and with some of them by phone as well. Unfortunately, no positive answers were received. One reason for this may be that the author of the thesis did not contact the companies in the name of Raita Environment.

Construction companies were considered as customers. The main idea was to check building companies with new projects related to building of villages and cottages and to offer sewage treatment production for their needs.

8 Main client groups

8.1 Introduction

Nowadays Russian market of wastewater treatment plants provides a very wide range of native and foreign producers. Usually customer's choice of concrete wastewater plant depends of such parameters as price, capacity, and material whereof the construction was made. Requirements to installation, sediment removal and degree of the purification of channels in output are not less important. Some of wastewater treatment plants require regular (at least once per year) pumping out of the accumulated mineral sediment by the sewage truck, for others it is ok to change filter manually once every three years. Hydrological, climatic and terrain conditions, wherein the plant will work, also determine some restrictions on the choice of wastewater treatment plant. Finally, not the least importance for the customer has a lifetime of warranty provided by the producer.

8.2 Companies dealing in this market area

Treatment plants from the Tapas series (the brand owner - LLC PD "Topol-Eko ") are made of integrated polypropylene and have a capacity from 1 to 30 m3 per day, so the number of users of these systems can be up to 150 people. After treatment procedures in these facilities effluent can be released into water bodies. Sludge removal can be made by an in-house pump without using of the sewage truck. Cost of the system "Tapas" with its installation (plug-and-produce) is from $ 3,500. The pricelist for the production of "Topol-Eko" in North-western Federal District, which includes Leningrad Oblast and Republic of Karelia can be found in Appendix 4.

A series of mini sewage treatment plants of the company "Ipuls-Plast" is designed for smaller volumes (number of inhabitants not more than ten people). Integrated sewage treatment is performed through sedimentation (in anaerobic conditions), and multiple stage biological treatment (aeration) followed by chlorination of effluent. Plants are made of polyethylene. After treatment effluent can be released on the terrain. Sludge disposal is required twice a year without the use of special equipment. Price of the systems "VOCs" including installation starts from $ 3,500

"FTS-Servis" LLC manufactures wastewater treatment plants called "Favorite plus", which are reinforced concrete monoblocks, combining two-piece digester and a filter chamber. These units are reliable and efficient facilities, designed to withstand ground

movements. Deposit removal is required once in 3-5 years by cesspool emptier. The cost of the installation starts from $ 3,500.

"Cottage-Bio" series wastewater treatment systems produced by "League-B" LLC are ready-to-use monolithic reinforced concrete or double-layer protective coating metal installations with cleaning efficiency up to 99%. Sediment must be removed once a year using special equipment. The cost including installation starts from $ 3,500. Wastewater treatment units of the Twer series from CJSC "Torgovyj dom "Inzhenernoe oborudovanie" are manufactured from both steel and polypropylene. These systems have large range of capacities (from treatment unit for one family to wastewater treatment system for the whole cottage village). Facilities are made in single airproof multicell shell, which contains sedimentation tank, bioreactor, aerotank, disinfection tank. Tver wastewater treatment units are applied mainly for clayey ground and high level of ground water. Release to water basins and on the terrain. Frequency and removal method of sediment depends on modification. Cost including installation is $ 2700.

LLC "Novyj zavod kolodcev i trub" markets sewage systems called "Zolotar", which work on the principle of sludge digester and consist of three chambers, where feces waters are separated from organic impurities, defecated and biologically cleaned on filtering and absorbent materials. Chambers are presented as water-proof concrete wells, which are equipped with various filters. The facility does not use mechanical/electrical equipment. Prepared outflows may be outleted to reservoir. Sludge removal is carried out every 5-10 years by sewage truck. Buying and installation of "Zolotar" cost from $ 2030 to $ 5080.

Russian-sourced wastewater treatment systems are based on plastic septic tanks from producers of products made from polymeric materials such as "Anion", "ELGAD polymer", "Rotoplast" and "Impulse-Plast."

From foreign producers, one of the leading positions belongs to Finnish company Green Rock. Typical facility of this brand is represented as a polyethylene reservoir, wherein the biofiltration is made by using plates or shells from the stone fiber. Water from the facility is removed to filtration well or trench. This model is easy to use, does not need connection with electric mains, but every three years it is necessary to replace the filter. The cost of the installation is from $ 3,700.

French company Calona-Purflo supplies Russia by autonomous systems of biological treatment from the polyethylene. These facilities are for year-round as well as for seasonal use, their capacity ranges from 200 to 30,000 liters / day. Sludge removal must be carried out not less than once per five years. Due to the fact that equipment is supplied all ready for installation the cost is relatively low (from $ 1,500, which includes assembly and installation).

Uponor Corporation in Russian market offers two types of polyethylene systems:

- soil system (Uponor Sako);
- biochemical system (Uponor Bio).

In the Uponor Sako system, which does not need connection with electric mains, wastewaters are treated in two steps: precipitation of suspended solids in the septic tank and then absorption or soil filtration. Sludge removal is carried out once per year. The price of facility (with installation) is from $ 3000. There is a choice of systems with different capacities for buildings with different amounts of inhabitants. The cost of Uponor Bio (with installation) is from $ 8,000. This facility does not need sewage fields, so its assembling does not depend of groundwater level in the lot and permeability of soil. The area, which is needed for its assembling, is 6 m^2.

AO "Ecolator" Finland Oy" is a Company with huge experience in the area of ecological technologies. This company specializes on development and marketing of wastewater treatment systems. Its wastewater treatment facilities are based on new ecological requirements and were tested by Environmental center of Finland (SYKE) and got good results. From these test "Ecolator" wastewater treatment facilities satisfies international wastewater treatment requirements. According to the European Committee for Standardization Ecolator 5 treats water with middle efficiency. There are more than 120 people working for "Ecolator" Finland Oy" and their amount continues to grow. In 2008 the amount of personnel increased by 50 people and the amount of sales increased by 294%. In Finnish sewage treatment facilities market 50% of sales go to "Ecolator". In 2009, the volume of business was equal to 13.7 million euro. The main owner of the company is Administration Department "Sponsor Capital Oy" (www.sponsor.fi).

Table 8. Some examples of different types of treatment facilities, firms and prices for local treatment facilities (Story Interyer, n.d.).

Company	Type	Capacity (m3/day)	Price
Komfortny dom («Комфортный дом»)	AT-6 (at home for 4 inhabitants according to ES), Lithuania	0,54	2000 € (without installation)
	AT-20 (at home for 20 inhabitants according to ES), Lithuania	2,7	7300 € (without installation)
Baltijsky aljans («Балтийский альянс»)	Bioreactorfor house (for 4 inhabitants), Russia, Finland*+	1	2030 € (without installation)
	Gasoline and grease separator Labko (Finland)	3l/s	3110 € (without installation)
	Grease separator Labko (Finland)	4l/s	2050 € (without installation)
RegionStrojServis («РегионСтройСервис»)	Sump tank FWKO (5 human maintaining according to Russian Standards), Kaliningrad	1	3375 € (with installation)
	УБСВ-4 (FWKO) (20 human maintaining according to Russian Standards), Kaliningrad	4	8007 € (with installation)

* Suppliers' prices are in euro, qualification of manufacturing enterprise are in roubles.

Importers of the equipment for wastewater treatment in Russia are listed below:

1. Aqua Industrial Watertreatment B.V.
2. Arbiogaz
3. Dama Engineering D.O.O.
4. Dewaco Ltd
5. Engineering Dobersek GmbH
6. Enviro-Chemie GmbH
7. Envites, Spol.S.R.O.
8. Evac OY
9. Fenno Water Ltd OY
10. Galvabrembo
11. Galvanotechnik Leipzig GmbH
12. Hamann AG
13. Huber Se
14. Maxflow Membran Filtration GmbH
15. Mega A.S.
16. Mse-Filterpressen GmbH
17. Nijhuis Water Technology
18. Proaqua GmbH & Co
19. RML-TEKNIIKKA OY
20. Severn Trent De Nora Texas Llc
21. Siemens Water Technologies
22. Simeoni S.R.L.
23. Teknofanghi Srl
24. U&D Environmental Technology Co., Ltd
25. Uab Traidenis
26. Wam Industriale S.P.A.
27. Wavin-Labko OY

The main importers of industrial water treatment chemicals in Russia are as follows:

1. Ashland
2. Auchtel Products
3. BASF
4. Bayer

5. Bengbu Dongli Chemical
6. Bim
7. BK Giulini
8. CG Chemikalien
9. Changzhou Yuanquan Hongguang Chemical
10. Chemisky
11. ClackCorporation
12. Dahuachem International Economic And Trade
13. Doshion Veolia Water Solutions
14. DowChemical
15. Envirochemie
16. Epuro Sas
17. GEWater&ProcessTechnologies
18. Genesys International
19. Grasim Industries
20. Hebi Juxing Resin
21. Henan Qingshuiyuan Technology
22. Hydro-X Water Treatment
23. Ion Exchange
24. Jiangsu Jianghai Chemical Group
25. Jiangsu Suqing Water Treatment Engineering Group
26. Jurby Watertech
27. Kalkwerke H. Oetelshofen
28. Kemipol
29. Kemira
30. Kolon Life Science
31. Lanxess
32. Merck
33. Nalco
34. Purolite
35. Qianan Great Wall Chemical
36. Rohm And Haas
37. Schaefer Kalk
38. Shandong Dongda International Trading
39. Shandong Taihe Water Treatment
40. SNF

41. Technochim
42. Thermax
43. Wilhelm Dietz
44. Wuhu Eco Tech Trade
45. Yixing Bluwat Chemicals
46. Yuqing Water Purifying Materials
47. Zhengzhou Meirujia Trade
48. Zibo Sanfeng Chemical Industry
49. Public factory «Smoly»
50. JSC «Krymskij Titan»
51. OJSC «Azot», Cherkassy
52. OJSC «Brom»
53. OJSC «Sumyhimprom»
54. LLC «Tehnohimreagent»
55. LLC «Himimpeks»

The main producers of industrial water treatment chemicals are as follows:

1. CJSC "Grusky," Canas
2. CJSC "Kemira Eko"
3. CJSC "Koaguljant", Yaroslavl
4. CJSC "Opytnyj Zavod Neftekhim"
5. CJSC Scientific and production corporation "Sofeks"
6. CJSC PCF "Slavyanka"
7. Scientific and production corporation "Intertap"
8. NGO "Ekologicheskie Sistemy"
9. OJSC "Azot", Kemerovo
10. OJSC "Aurat"
11. OJSC "Kaustic", Volgograd
12. OJSC "Kaustic" Sterlitamak
13. OJSC "Poliflok"
14. OJSC "Severstal", Cherepovets
15. OJSC "Sorbent"
16. OJSC "Uralkhimplast"
17. OJSC "Khimprom", Novocheboksarsk
18. OJSC HC "Niton"

19. LLC "Aqua-Khim"
20. LLC "Akripol"
21. LLC "Alkhim"
22. LLC "Ishimbajskij specializirovannyj himicheskij zavod katalizatorov"
23. LLC "Company" Nalko "
24. LLC "Mirriko management"
25. LLC "NPF Baltsintez"
26. LLC "Resurs Ekologija"
27. LLC "Sintez", Kostroma
28. LLC "Skoropuskovsky Sintez"
29. LLC "Ural-Koaguljant"
30. LLC "Firm Akvahim"
31. LLC "Ekoenergo"
32. LLC Vetluzhsky plant "Metoksil"
33. LLC NGO "Zavod Khimicheskih reagentov"
34. LLC PCF "Travers"
35. LLC PD "Tokem"
36. TSC "Alfa-Region"
37. FFE "Zavod Imeni J.M. Sverdlova"
38. Ecological Fund "Voda Evrazii"

9 Budgeting coming years

9.1 Objectives of Russian State Program, “Clean Water”

Russian State Program, “Clean Water” aimed at reforming and modernization of the water and sanitation sector. The duration of the program is from 2011 till 2017. The tasks of Russian State Program, “Clean Water” will be solved by making changings and additions in the legal system of Russian Federation and financing program actions based on devices from the program.

Figure 22 shows subjects of the Russian Federation.

Figure 22. Subjects of the Russian Federation (Wikipedia,1.10.2013)

The Russian State Program Clean Water has the following tasks/objectives:

- to create an effective business environment for long-term external private investments in the water and sanitation sector, based on clear government control system, which enables equity for consumers, owners and operators of water supply system and water disposal system;
- the development of government control system in the sector of water supply, water disposal and waste water treatment, including establishment of modern quality targets of services, effectiveness and reliability the sector of water supply, water disposal and waste water treatment;
- modernization and improvement of the sector of water supply, water disposal and waste water treatment by supporting local programs of the Russian Federation.

Sectorial focus of the program is as follows:

- housing and utilities sector;
- agriculture, hunting and forest sector;
- forest, woodworking and paper-pulp industries;
- light industry;
- food industry;
- medical industry;
- fishing industry.

Areas of realization of the program are listed below:

St. Petersburg
Altay Krai
Amur Oblast
Arkhangelsk Oblast
Astrakhan Oblast
Vladimir Oblast
Volgograd Oblast
Vologda Oblast
Voronezh Oblast
The Zabaikalye Territory
Ivanovo Oblast
Irkutsk Oblast
Republic of Kabardino-Balkaria
Kaliningrad Oblast
Kaluga Oblast
Kamchatka Krai
Kemerovo Oblast
Kostroma Oblast
Krasnodar Krai
Krasnoyarsk Krai
Kurgan Oblast
Kursk Oblast
Leningrad Oblast
Lipetsk Oblast
Magadan Oblast
Moscow Oblast
Murmansk Oblast
Nenets Autonomous District
Nizhny Novgorod Oblast
Novgorod Oblast
Novosibirsk Oblast
Orenburg Oblast
Orel Oblast
Penza Oblast
Perm Krai

Primorsky Krai
Republic of Adygea
Altai Republic
The Republic of Bashkortostan
The Republic of Buryatia
The Republic of Dagestan
The Republic of Ingushetia
The Republic of Kalmykia
The Republic of Karelia
The Republic of Komi
The Mari El Republic
The Republic of Mordovia
The Sakha (Yakutia) Republic
The Republic of North Ossetia - Alania
The Republic of Tatarstan
The Republic of Tyva
The Republic of Khakassia
Rostov Oblast
Ryazan Oblast
Samara Oblast
Saratov Oblast
Sakhalin Oblast
Sverdlovsk Oblast
Smolensk Oblast
Stavropol Krai
Tambov Oblast
Tver Oblast
Tomsk Oblast
Tyumen Oblast
Udmurt Republic
Ulyanovsk Oblast
Khabarovsk Krai
Khanty-Mansi Autonomous Area
Chelyabinsk Oblast
The Republic of Chuvashia
Chukot Autonomous Area

Yamal-Nenets Autonomous District

Yaroslavl Oblast

9.2 Financing sources and the amount of finance of the program

The limiting (prognostic ative) amount of financing of the program equals to 331,8 billion rubles, including all sources.

The funds from federal budget resources - 9 billion rubles – have been distributed as follows:

- 3 billion rubles in 2011;
- 3 billion rubles in 2012;
- 3 billion rubles in 2013.

The funds from consolidated budgets of subjects of the Russian Federation - 9 billion rubles – have been allocated as follows:

- 3 billion rubles in 2011;
- 3 billion rubles in 2012;
- 3 billion rubles in 2013.

The funds from extra budgetary resources – 313.8 billion rubles – have been allotted as follows:

- 7,3 billion rubles in 2011;
- 21,2 billion rubles in 2012;
- 27,6 billion rubles in 2013;
- 41,9 billion rubles in 2014;
- 58,4 billion rubles in 2015;
- 70,2 billion rubles in 2016;
- 87,2 billion rubles in 2017.

Financing sources and financing amounts are annually specified, when federal and regional budgets are formed for then-year. Table 10 shows the limit for floating assets for subjects in the Russian Federation. These calculations confirm total amount of de-voted funds for enterprises of subjects of the Russian Federation.

Table 9a. Limit for floating assets for subjects in the Russian Federation.

#	Subject	Limit for floating assets (in rubles)
1	Altai Territory	392923751,1
2	Amur Oblast	135780894
3	Arkhangelsk Oblast	197889570,6
4	Astrakhan Oblast	158876424,2
5	Belgorod Oblast	241382997,4
6	Bryansk Oblast	203852760,7
7	Vladimir Oblast	225607362
8	Volgograd Oblast	408573181,4
9	Vologda Oblast	191453111,3
10	Voronezh Oblast	356781770,4
11	The Jewish Autonomous Oblast	29184925,5
12	Zabaykalsky Krai	176213847,5
13	Ivanovo Oblast	168262927,3
14	Irkutsk Oblast	394816827,3
15	The Kabardino-Balkar Republic	141002629,3
16	Kaliningrad Oblast	147959684,5
17	Kaluga Oblast	158008764,2
18	Kamchatka Krai	54000000
19	The Karachay-Cherkessia Republic	67361963,19
20	Kemerovo Oblast	444967572,3
21	Kirov Oblast	219454864,2
22	Kostroma Oblast	108583698,5
23	Krasnodar Krai	814133216,5
24	Krasnoyarsk Krai	456531113,1
25	Kurgan Oblast	149489921,1
26	Kursk Oblast	226035497,9
27	Leningrad Oblast	257079754,6
28	Lipetsk Oblast	182666082,4
29	Magadan Oblast	25430324,28
30	Moscow	1666380368
31	Moscow Oblast	1065281332
32	Murmansk Oblast	131994741,5
33	Nenets Autonomous Okrug	6673093,78
34	Nizhny Novgorod Oblast	524319018,4
35	Novgorod Oblast	101058720,4

Table 9b. Limit for floating assets for subjects in the Russian Federation.

#	Subject	Limit for floating assets (in rubles)
36	Novosibirsk Oblast	418038562,7
37	Omsk Oblast	317421560
38	Orenburg Oblast	333323400,5
39	Orel Oblast	128177037,7
40	Penza Oblast	216631025,4
41	Perm Krai	426131463,6
42	Primorsky Krai	312673093,8
43	Pskov Oblast	108631025,4
44	The Republic of Adygea	69901840,49
45	The Republic of Altai	33239263,8
46	The Republic of Bashkortostan	641437335,7
47	The Republic of Buryatia	151998247,2
48	The Republic of Dagestan	431826468
49	The Republic off Ingushetia	81512708,15
50	The Republic of Kalmykia	44676599,47
51	The Republic of Karelia	107936897,5
52	The Republic of Komi	150057844
53	The Mari El Republic	110145486,4
54	The Republic of Mordovia	130385626,6
55	The Sakha (Yakutia) Republic	149758106,9
56	The Republic of North Ossetia–Alania	110555652,9
57	The Republic of Tatarstan	596082383,9
58	The Republic of Tyva	50008764,24
59	The Republic of Khakassia	85062226,12
60	Rostov Oblast	667230499,6
61	Ryazan Oblast	181640666,1
62	Samara Oblast	500103418,1
63	St. Petersburg	725726555,7
64	Saratov Oblast	404613496,9
65	Sakhalin Oblast	80581945,66
66	Sverdlovsk Oblast	693149868,5
67	Smolensk Oblast	152392638
68	Stavropol Krai	427709027,2
69	Tambov Oblast	171702015,8
70	Tver Oblast	214595968,5
71	Tomsk Oblast	164666082,4

10 Conclusion

10.1 Limitation of the research

Finding information was the first faced difficulty during the thesis work. It was hard to even find an overview of Russian wastewater treatment market.
Because of the specifics of the market, it is not easy to develop step-by-step strategy for market penetration in great detail and be absolutely sure that it will be implemented without any changes to the original plan. Especially at the first stage there will be some changes in the course of the works.
From the author's point of view, the customer needs are wider than just requirements for water treatment. Possibility to apply a sewage system in a specific infrastructure plays an important role. Partnership with other companies on mutually beneficial conditions is needed to apply a sewage system in the specific infrastructure. It can be Russian or foreign company but partnership with local firms is required for successful product promotion. Companies with local branches have more advantages than competitors but it can be compensated by cooperation with local company.
Perhaps the most significant difficulty was to contact new companies. Contact by email and telephone must be combined with personal meeting. From the author's point of view, personal meeting should take place even before contact by email and telephone. The most interesting exhibition participants must be highlighted and directly at the exhibition, specific time for contacting with them by phone, Skype or email must be must be negotiated.

10.2 Objectives

The main objective of all actions was to find ultimately regular customers. Then on basis of these relations it will be possible to expand. First of all, it is related to future branches. It is important to have a sort of «safety bag» in the form of long-term contracts and cooperation and steady partners and customers. In this sense it is important to collect information in advance about all targeted companies.
With respect to local market, in view of presence of steady market players which already have long-term partners, it may make sense to start from far outskirts of Leningrad Oblast. From the author's point of view, the Republic of Karelia looks more attractive as a starting point for market penetration because this area is more flexible for new players. From the author's point of view, construction companies, corporations and

municipalities in Karelia have les steady deliverers and suppliers so they are more open for new relations (including wastewater treatment companies).
To improve company's presentation, documentation with implementation of sewage system into infrastructure was collected from all previous general plans, contracts and projects. Of course , it must first be decided with previous partner which part of the information can be presented. And then all previous solution can be presented to the future client.

References

Clewer Oy, 2010. Front page. [online] Avaliable at: <http://www.clewer.com/en/> [Accessed 28 May 2013]

Domshow, 2013. Front page. [online] Avaliable at: <http://spb.domshow.ru/about.shtml> [Accessed 28 May 2013]

"Ecolator" Finland Oy", 2013. Front page. [online] Avaliable at: <http://www.ecolator.fi/> [Accessed 28 May 2013]

Ekoteh-Ug, n.d. Wastewater treatment by using biomembrane reactors. [online] Avaliable at: <http://www.ekotex-ug.ru/tekhnologii/70/index.php> [Accessed 28 May 2013]

ExpoForum, 2013. Front page. [online] Avaliable at: <http://lenexpo.ru/en/> [Accessed 28 May 2013]

Hiebing Jr., R.G., Cooper, S.W., 2003. The Successful Marketing Plan, Third Edition. New York McGrow-Hill

MCD Group, 2010. Water supply and sanitation in Russia. [online] Avaliable at: <http://www.mcd-pkf.com/publication/consulting/publ_18.html> [Accessed 28 May 2013]

Mosin O.V., 30 November 2008. Biological wastewater treatment [online] Avaliable at: <http://www.o8ode.ru/article/planetwa/oprecnenie/biologi4eckaa_o4ictka_cto4nyh_vod.htm> [Accessed 28 May 2013]

Szyplinska P., n.d. Russian Water Market Outlook. [online] Avaliable at: <http://www.slideshare.net/FrostandSullivan/russian-water-wastewater-treatment-market-expected-to-double> [Accessed 28 May 2013]

Raita Environment Oy, 2013. ENVIRONMENTAL TECHNOLOGY. [online] Avaliable at: <http://www.raita.com/> [Accessed 28 May 2013]

The Clean Water State Revolving Fund program, 2011. Front page. [online] Available at: <http://gos-water.ru/> [Accessed 28 May 2013]

Uponor Oy, 2013. Front page. [online] Avaliable at: <http://www.uponor.ru/> [Accessed 28 May 2013]

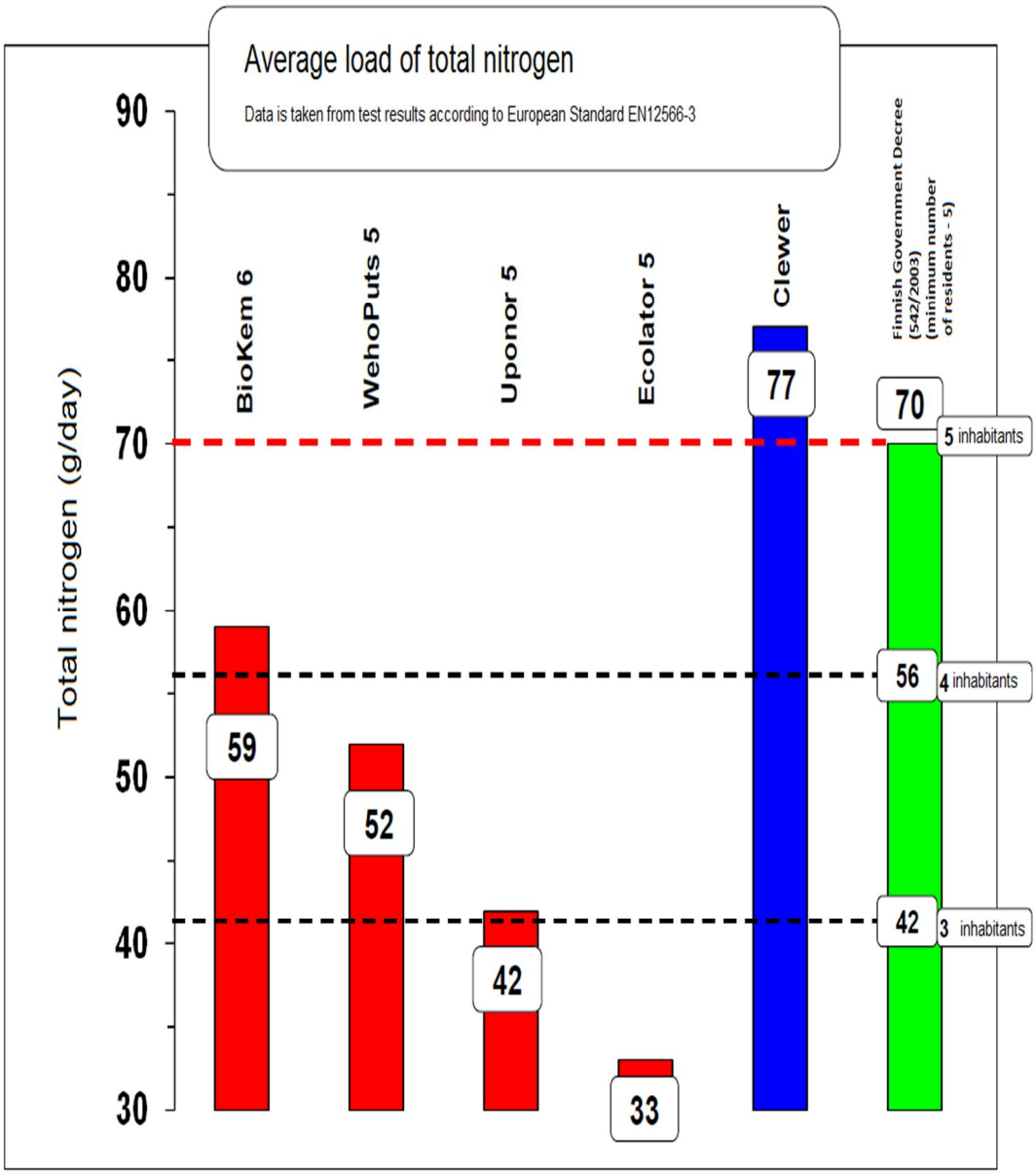
Wavin-Labko Oy, n.d. Treatment facilities. [online] Avaliable at: <http://www.labko.ru/> [Accessed 28 May 2013]

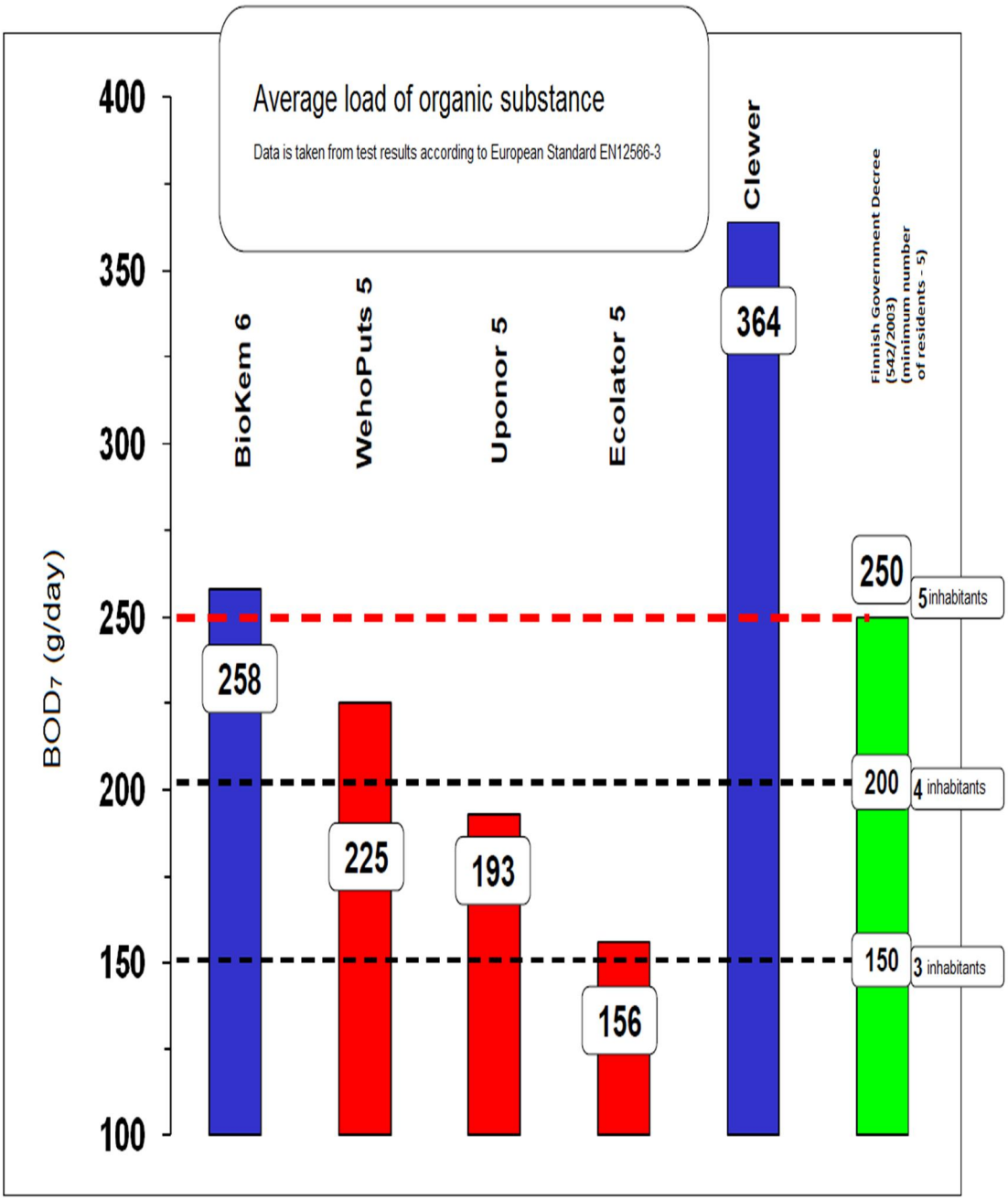
Wikipedia, 24 May 2013. Sewage treatment [online] Avaliable at: <http://en.wikipedia.org/wiki/Sewage_treatment> [Accessed 28 May 2013]

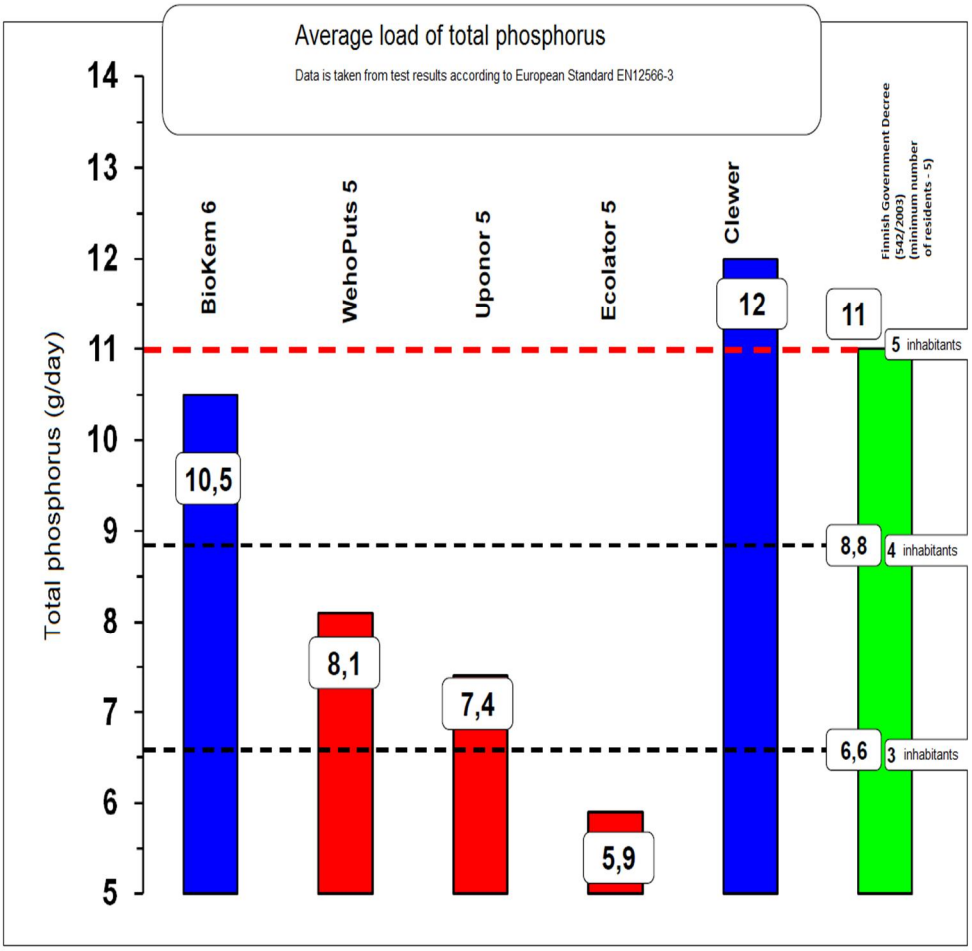
WWW.VSEPOSELKY.RU, 2007. Front page. [online] Avaliable at: <http://www.vseposelky.ru/msk/> [Accessed 28 May 2013]

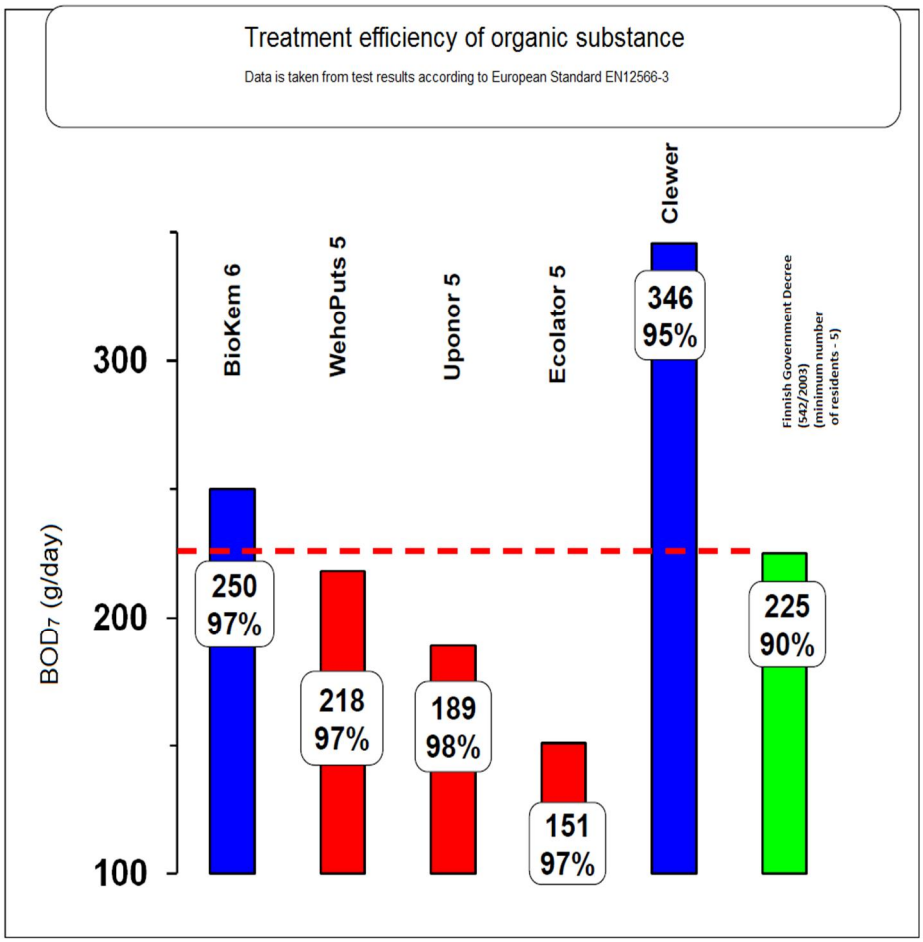
Yakovlev, S.V., Karelin, J.A., Zhukov, A.L., Kolobanov, S.K. ,1975. CANALIZATION. “Stroyizdat”, Fifth Edition. Bibliotekar.Ru

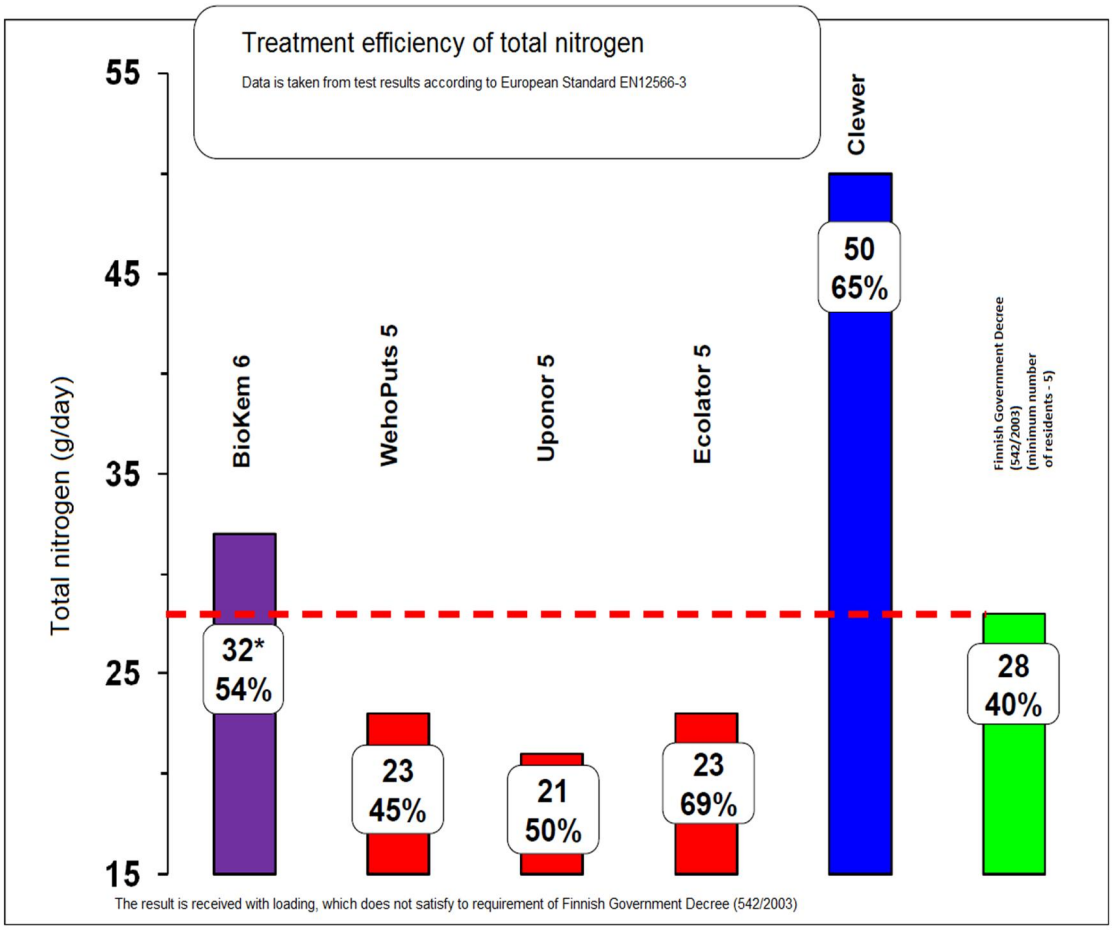
Appendix 1 The Clewer Company's charts

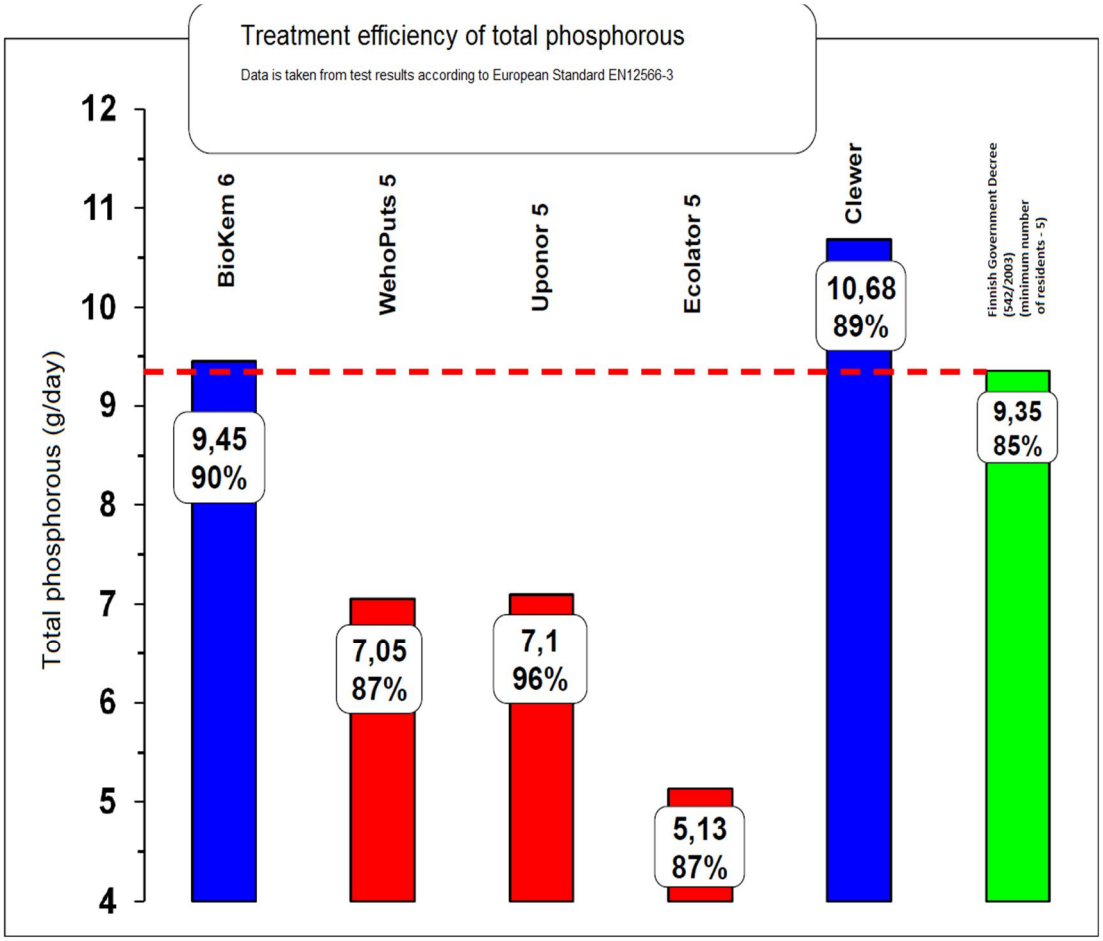



Average load of organic substance
Data is taken from test results according to European Standard EN12566-3
BOD7 (g/day)
400
350
300
250
200
150
100
BioKem 6
WehoPuts 5
Uponor 5
Ecolator 5
Clewer
Finnish Government Decree (542/2003) (minimum number of residents - 5)
258
225
193
156
364
250
5 inhabitants
200
4 inhabitants
150
3 inhabitants


Average load of total phosphorus
Data is taken from test results according to European Standard EN12566-3
Total phosphorus (g/day)
14
13
12
11
10
9
8
7
6
5
BioKem 6
WehoPuts 5
Uponor 5
Ecolator 5
Clewer
Finnish Government Decree (542/2003) (minimum number of residents - 5)
10,5
8,1
7,4
5,9
12
11
8,8
6,6
5 inhabitants
4 inhabitants
3 inhabitants


Treatment efficiency of organic substance
Data is taken from test results according to European Standard EN12566-3
BioKem 6
WehoPuts 5
Uponor 5
Ecolator 5
Clewer
Finnish Government Decree (542/2003) (minimum number of residents - 5)
BOD7 (g/day)
300
200
100
250 97%
218 97%
189 98%
151 97%
346 95%
225 90%


Treatment efficiency of total nitrogen
Data is taken from test results according to European Standard EN12566-3
Total nitrogen (g/day)
55
45
35
25
15
BioKem 6
WehoPuts 5
Uponor 5
Ecolator 5
Clewer
Finnish Government Decree (542/2003) (minimum number of residents - 5)
32*
54%
23
45%
21
50%
23
69%
50
65%
28
40%
The result is received with loading, which does not satisfy to requirement of Finnish Government Decree (542/2003)


Treatment efficiency of total phosphorous
Data is taken from test results according to European Standard EN12566-3
Total phosphorous (g/day)
12
11
10
9
8
7
6
5
4
BioKem 6
WehoPuts 5
Uponor 5
Ecolator 5
Clewer
Finnish Government Decree (542/2003) (minimum number of residents - 5)
9,45 90%
7,05 87%
7,1 96%
5,13 87%
10,68 89%
9,35 85%

Appendix 2 Russian certificates from WAVIN-LABKO Sanitary and epidemiological inspection report (№ 50.РА.02.485.П.001058.10.09) from 22.10.2009 to 22.10.2014

ФЕДЕРАЛЬНАЯ СЛУЖБА ПО НАДЗОРУ
В СФЕРЕ ЗАЩИТЫ ПРАВ ПОТРЕБИТЕЛЕЙ И БЛАГОПОЛУЧИЯ ЧЕЛОВЕКА

Федеральное государственное учреждение Министерства обороны "842 центр государственного санитарно-эпидемиологического надзора РВСН"

САНИТАРНО-ЭПИДЕМИОЛОГИЧЕСКОЕ ЗАКЛЮЧЕНИЕ

№ 50.РА.02.485.П.001058.10.09 от 22.10.2009 г.

Настоящим санитарно-эпидемиологическим заключением удостоверяется, что продукция:
Система очистки хозяйственно-бытовых сточных вод "BioМастер" по приложению

изготовленная в соответствии
ТУ 4859-001-56131056-2006

СООТВЕТСТВУЕТ (~~НЕ СООТВЕТСТВУЕТ~~) санитарным правилам
(ненужное зачеркнуть, указать полное наименование государственных санитарно-эпидемиологических правил и нормативов):
ГН 2.1.5.980-00 "Гигиенические требования к охране поверхностных вод"

Организация-изготовитель
ООО "Аквамастер" г. Санкт-Петербург, Ланское шоссе, д.14, к.1, пом.112 Н (Российская Федерация)

Получатель санитарно-эпидемиологического заключения
ООО "Аквамастер" г. Санкт-Петербург, Ланское шоссе, д.14, к.1, пом.112 Н (Российская Федерация)

Основанием для признания продукции, соответствующей (не соответствующей) санитарным правилам, являются (перечислить рассмотренные протоколы исследований, наименование учреждения, проводившего исследования, другие рассмотренные документы):
Протокол испытаний №49А-0137 от 15 октября 2009 г. Испытательный Центр Сергиево-Посадского филиала ФГУ "Менделеевский ЦСМ" (Регистрационный номер аттестата аккредитации ГОСТ Р № РОСС RU.0001.21АЮ22)

№ 2930852

ГИГИЕНИЧЕСКАЯ ХАРАКТЕРИСТИКА ПРОДУКЦИИ

Вещества, показатели (факторы)	Гигиенический норматив (СанПиН, МДУ, ПДК и др.)	до установки	после установки
Взвешенные вещества, мг/дм^3		1000	10,0
Биохимическое потребление кислорода ($БПК_{полн}$) при температуре 20°С, мг O_2/л, не более	4	500	3,0
Водородный показатель pH, в пределах	6,5-8,5		6,5-8,5
Азот аммонийный, мг/дм^3	1,5	25	0,5
Нитраты, мг/дм^3	45	40	40,0
Нитриты, мг/дм^3	3,3	3,0	0,08
Общие колиформные бактерии, КОЕ/100 мл	Не более 500		500
Термотолерантные колиформные бактерии, КОЕ/100 мл	Не более 100		100
Колифаги, БОЕ/100 мл, не более	10		10

Область применения:

Для очистки хозяйственно бытовых сточных вод от жилых, административных зданий, производственных объектов, очистки сточных вод с автомойки, в т.ч. на объектах МО РФ

Необходимые условия использования, хранения, транспортировки и меры безопасности:

В соответствии с рекомендациями изготовителя.

Информация, наносимая на этикетку:

Наименование продукции, страна и фирма изготовитель, условия использования.

Заключение действительно до 22.10.2014 г.

Главный государственный санитарный врач
(заместитель главного государственного санитарного врача) Казанцев А.Ю.

Бланк N 2930852

Номер листа: 1

ФЕДЕРАЛЬНАЯ СЛУЖБА ПО НАДЗОРУ
В СФЕРЕ ЗАЩИТЫ ПРАВ ПОТРЕБИТЕЛЕЙ И БЛАГОПОЛУЧИЯ ЧЕЛОВЕКА

Федеральное государственное учреждение Министерства обороны "842 центр государственного санитарно-эпидемиологического надзора РВСН"

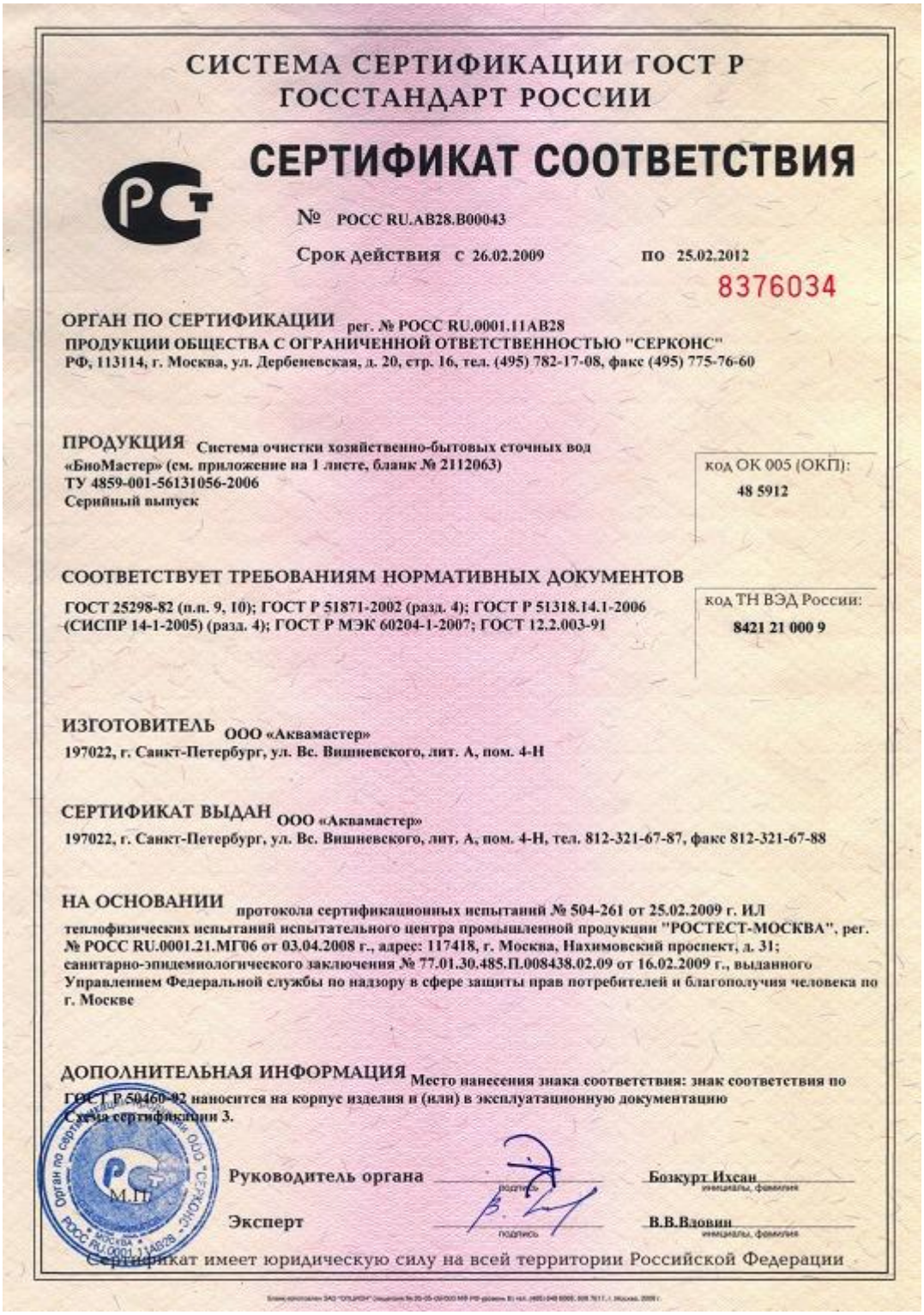
ПРИЛОЖЕНИЕ
К САНИТАРНО-ЭПИДЕМИОЛОГИЧЕСКОМУ ЗАКЛЮЧЕНИЮ

№ 50.РА.02.485.П.001058.10.09 от 22.10.2009 г.

Система очистки хозяйственно-бытовых сточных вод "BioМастер" в составе:

1. Аэрируемый отстойник AP.
2. Комплекс биологической очистки и денитрификации BF.
3. Блок химической очистки и дезинфекции DES, DES-A.
4. Вторичный отстойник ST.
5. Блок микрофильтрации MC.
6. Пульт управления TOP.
7. Системы обезвоживания осадка BWD.
8. Пескоилоотделитель EuroHEK.

Главный государственный санитарный врач
(заместитель главного государственного санитарного врача)



СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ГОССТАНДАРТ РОССИИ

СЕРТИФИКАТ СООТВЕТСТВИЯ

№ РОСС RU.АВ28.В00043

Срок действия с 26.02.2009 по 25.02.2012

8376034

ОРГАН ПО СЕРТИФИКАЦИИ рег. № РОСС RU.0001.11АВ28
ПРОДУКЦИИ ОБЩЕСТВА С ОГРАНИЧЕННОЙ ОТВЕТСТВЕННОСТЬЮ "СЕРКОНС"
РФ, 113114, г. Москва, ул. Дербеневская, д. 20, стр. 16, тел. (495) 782-17-08, факс (495) 775-76-60

ПРОДУКЦИЯ Система очистки хозяйственно-бытовых сточных вод «БиоМастер» (см. приложение на 1 листе, бланк № 2112063)
ТУ 4859-001-56131056-2006
Серийный выпуск

код ОК 005 (ОКП): 48 5912

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ НОРМАТИВНЫХ ДОКУМЕНТОВ

ГОСТ 25298-82 (п.п. 9, 10); ГОСТ Р 51871-2002 (разд. 4); ГОСТ Р 51318.14.1-2006 (СИСПР 14-1-2005) (разд. 4); ГОСТ Р МЭК 60204-1-2007; ГОСТ 12.2.003-91

код ТН ВЭД России: 8421 21 000 9

ИЗГОТОВИТЕЛЬ ООО «Аквамастер»
197022, г. Санкт-Петербург, ул. Вс. Вишневского, лит. А, пом. 4-Н

СЕРТИФИКАТ ВЫДАН ООО «Аквамастер»
197022, г. Санкт-Петербург, ул. Вс. Вишневского, лит. А, пом. 4-Н, тел. 812-321-67-87, факс 812-321-67-88

НА ОСНОВАНИИ протокола сертификационных испытаний № 504-261 от 25.02.2009 г. ИЛ теплофизических испытаний испытательного центра промышленной продукции "РОСТЕСТ-МОСКВА", рег. № РОСС RU.0001.21.МГ06 от 03.04.2008 г., адрес: 117418, г. Москва, Нахимовский проспект, д. 31; санитарно-эпидемиологического заключения № 77.01.30.485.П.008438.02.09 от 16.02.2009 г., выданного Управлением Федеральной службы по надзору в сфере защиты прав потребителей и благополучия человека по г. Москве

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ Место нанесения знака соответствия: знак соответствия по ГОСТ Р 50460-92 наносится на корпус изделия и (или) в эксплуатационную документацию
Схема сертификации 3.

М.П.

Руководитель органа _____ Бозкурт Ихсан
подпись инициалы, фамилия

Эксперт _____ В.В.Вдовин
подпись инициалы, фамилия

Сертификат имеет юридическую силу на всей территории Российской Федерации

СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ГОССТАНДАРТ РОССИИ

2112063

ПРИЛОЖЕНИЕ

К сертификату соответствия № РОСС RU.АВ28.В00043

Перечень конкретной продукции, на которую распространяется действие сертификата соответствия

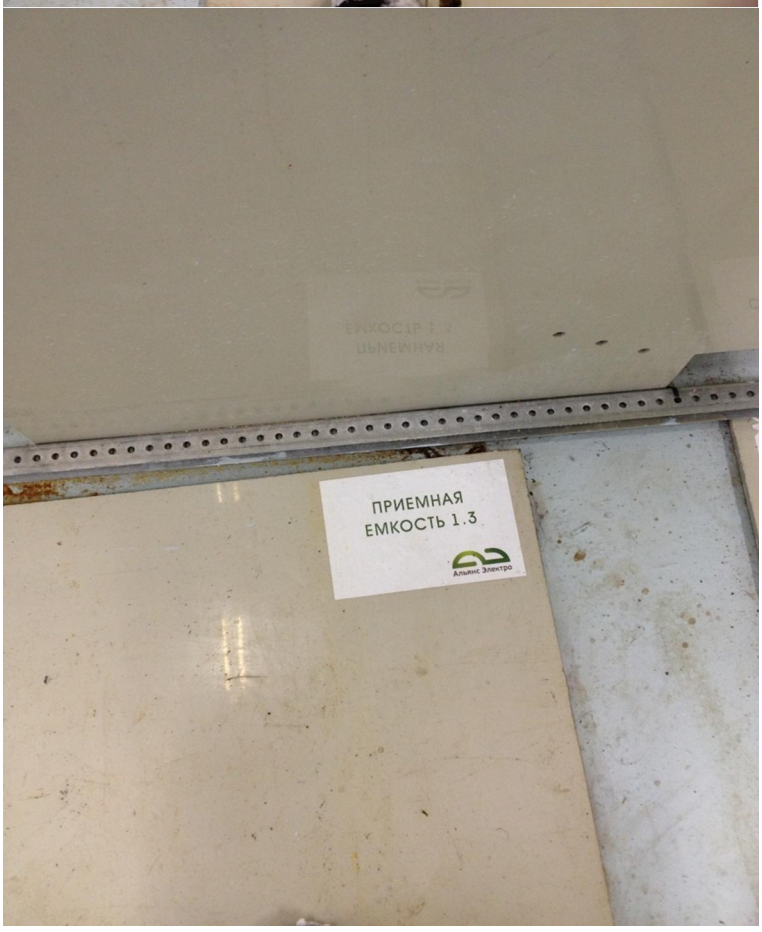
код ОК 005 (ОКП) код ТН ВЭД СНГ	Наименование и обозначение продукции, ее изготовитель	Обозначение документации, по которой выпускается продукция
48 5912 8421 21 000 9	Система очистки хозяйственно-бытовых сточных вод «БиоМастер»: 1. Аэрируемый отстойник: АР 50, АР 100, АР 200, АР 300, АР 400, АР 500; 2. Комплекс биологической очистки и денитрификации: BF 50, BF 100, BF 200, BF 300, BF 400, BF 500; 3. Блок химической очистки и дезинфекции: DES 50, DES 100, DES 200, DES 300, DES 400, DES 500, DES-A; 4. Вторичный отстойник: ST 50 , ST 100 , ST 200 , ST 300,ST 400 , ST 500; 5. Блок микрофильтрации: MC 50, MC 100, MC 200, MC 300, MC 400, MC 500; 6. Пульт управления TOP; 7. Системы обезвоживания осадка: BWD 2, BWD 4, BWD 6, BWD 8, BWD 10, BWD 12 ИЗГОТОВИТЕЛЬ: ООО «Аквамастер» 197022, г. Санкт-Петербург, ул. Вс. Вишневского, лит. А, пом. 4-Н	

Руководитель органа _____ Бозкурт Ихсан
подпись, инициалы, фамилия

Эксперт _____ В.В.Вдовин
подпись, инициалы, фамилия

М.П.

Appendix 3 Photos from the waste water treatment plant, which was opened by LLC “Alliance Electro” in village of Petrovskoye in 2012

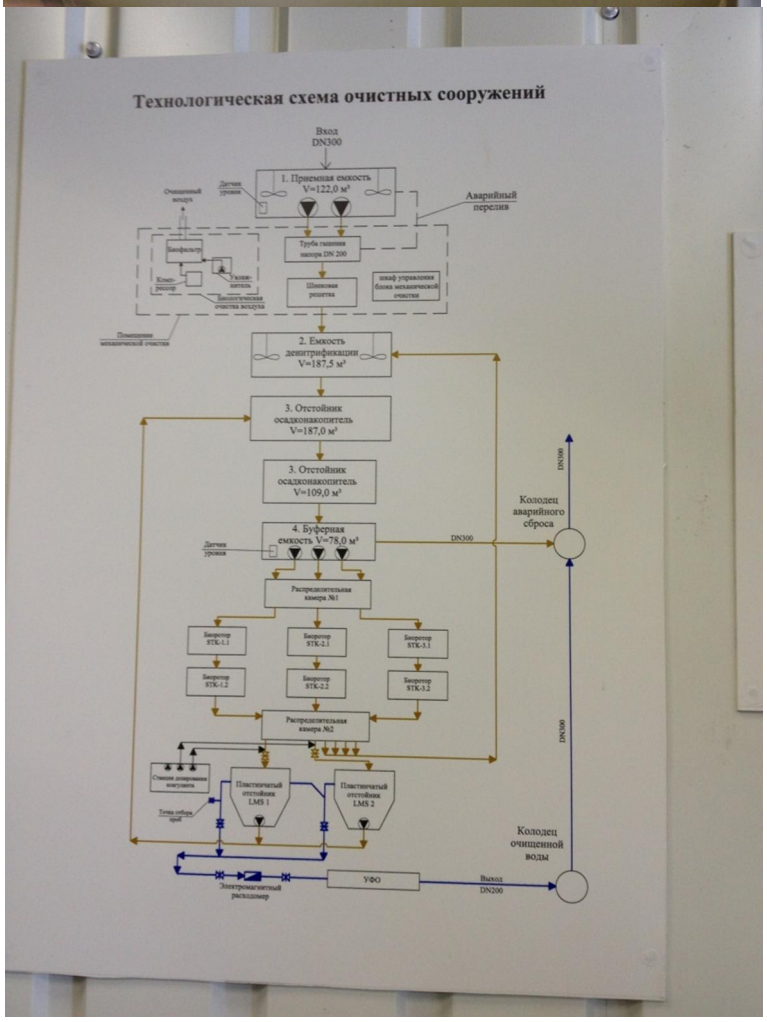


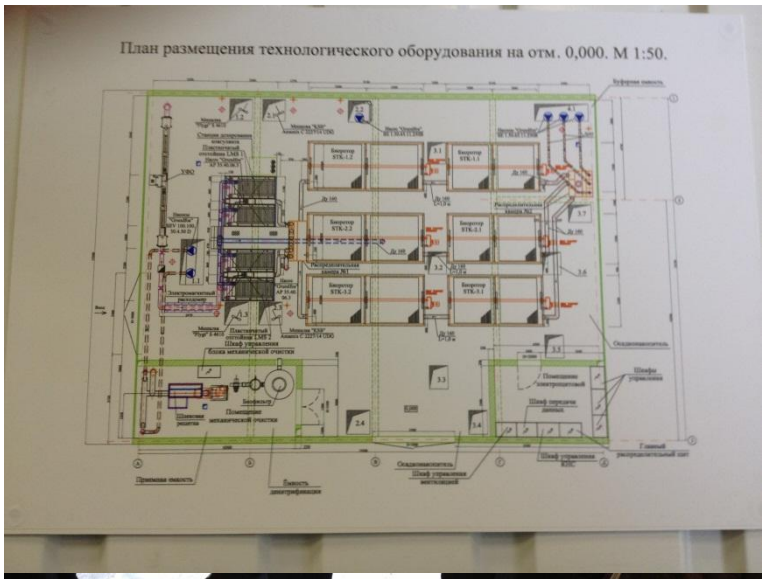

МЕШАЛКА
"FLYGT" S 4610


НАСОСЫ
"GRUNDFOS" SEV.
100.100.30.4.50 D
ПРИЕМНАЯ
ЕМКОСТЬ 1.1


ЭЛЕКТРОМАГНИТНЫЙ
РАСХОДОМЕР


Альянс Электро
НАСОС
"GRUNDFOS"
AP 35.40.06.3
ПЛАСТИНЧАТЫЙ
ОТСТОЙНИК
LMS 2


Технологическая схема очистных сооружений
Вход
DN300
1. Приемная емкость
V=122,0 м³
Аварийный
перелив
2. Емкость
денитрификации
V=187,5 м³
3. Отстойник
осадконакопитель
V=187,0 м³
3. Отстойник
осадконакопитель
V=109,0 м³
4. Буферная
емкость V=78,0 м³
DN300
Колодец
аварийного
сброса
DN300
Распределительная
камера №1
Биореактор
STK-1.1
Биореактор
STK-2.1
Биореактор
STK-3.1
Биореактор
STK-1.2
Биореактор
STK-2.2
Биореактор
STK-3.2
Распределительная
камера №2
Пластинчатый
отстойник
LMS 1
Пластинчатый
отстойник
LMS 2
DN300
Колодец
очищенной
воды
Электромагнитный
расходомер
УФО
Выход
DN200


План размещения технологического оборудования на отм. 0,000. М 1:50.

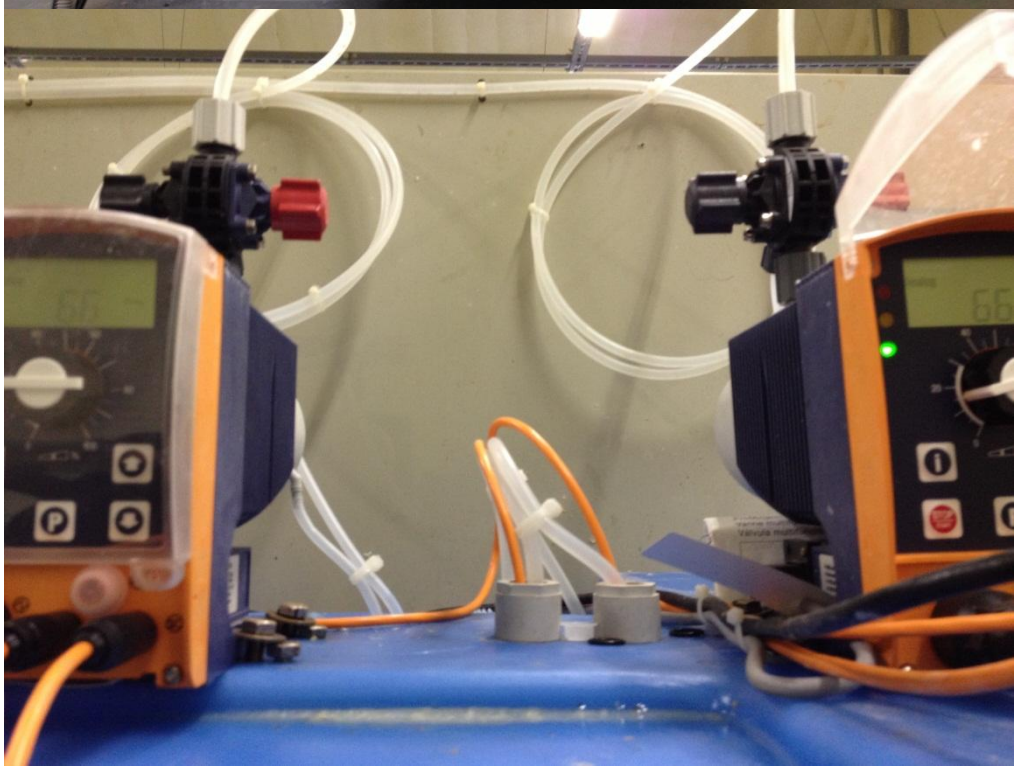

SIEMENS


SIEMENS


ЭЛЕКТРОМАГНИТНЫЙ
РАСХОДОМЕР


LAMP STATUS
LAMP 1
LAMP2
MODULE 2
LAMP STATUS
LAMP 1
LAMP2
MODULE 3


TROJAN UV3000
UV INTENSITY
64
ELAPSED TIME
9079

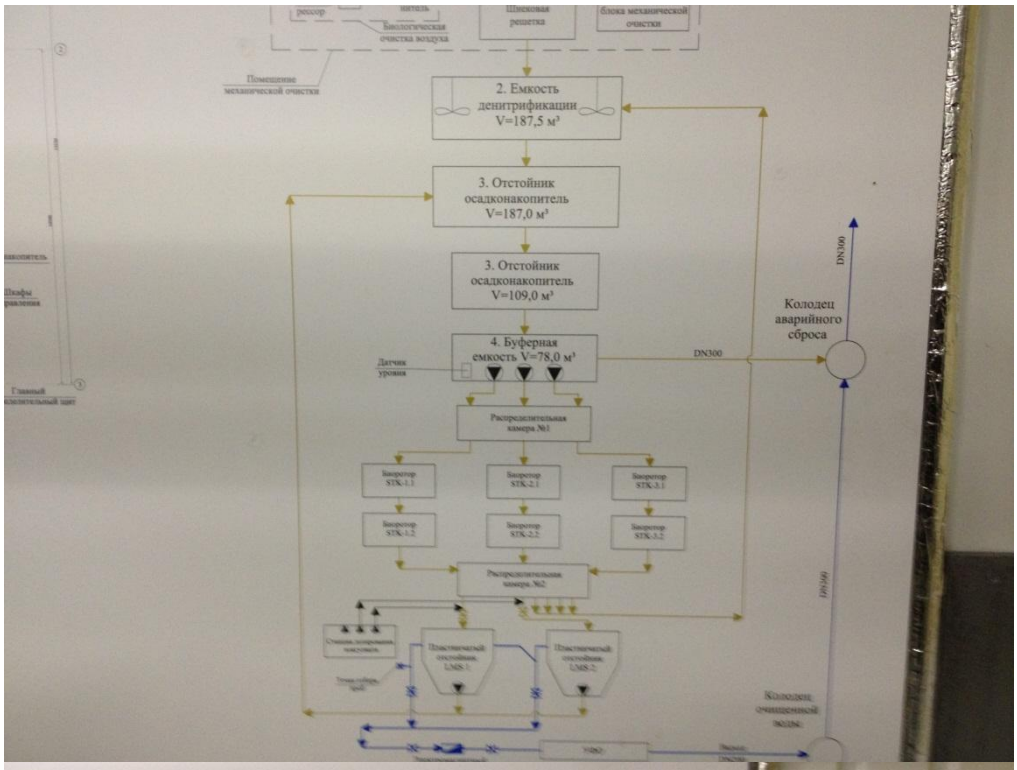


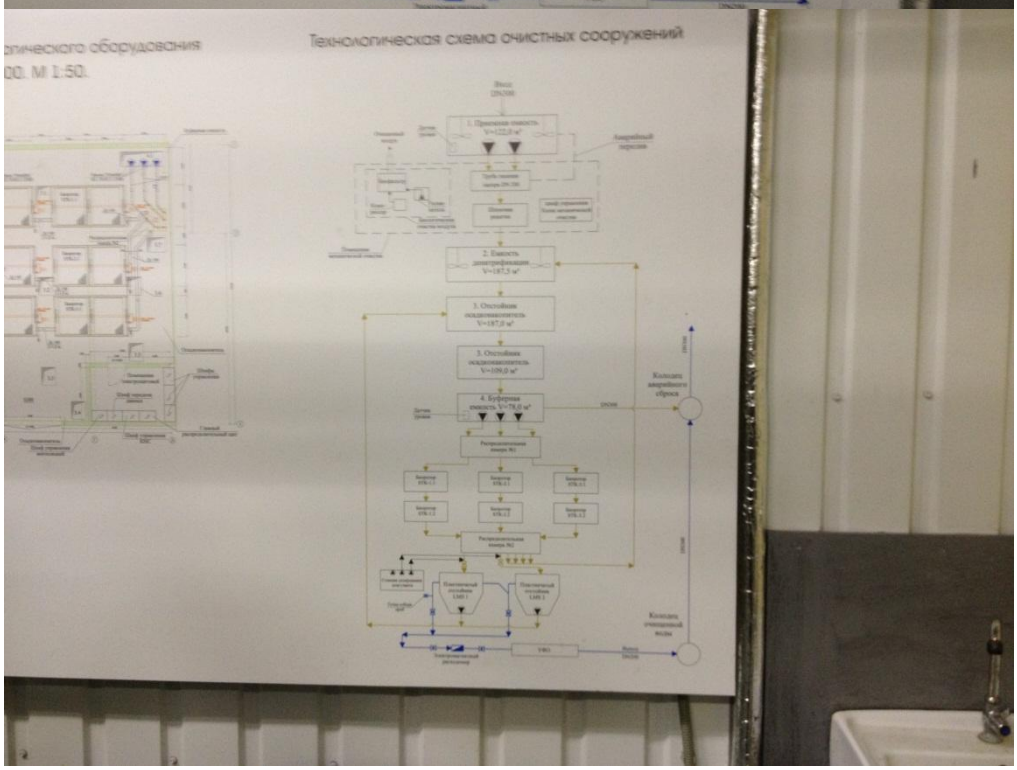

ОАО "АУРАТ"
АУРАТ
ОКП 21 6350
АКВА-АУРАТ™18
ТУ 2163-069-00205067-2007
для хозяйственно
питьевого водоснаб
Масса нетто 29 кг
Партия-
ОТК
РОССИЯ

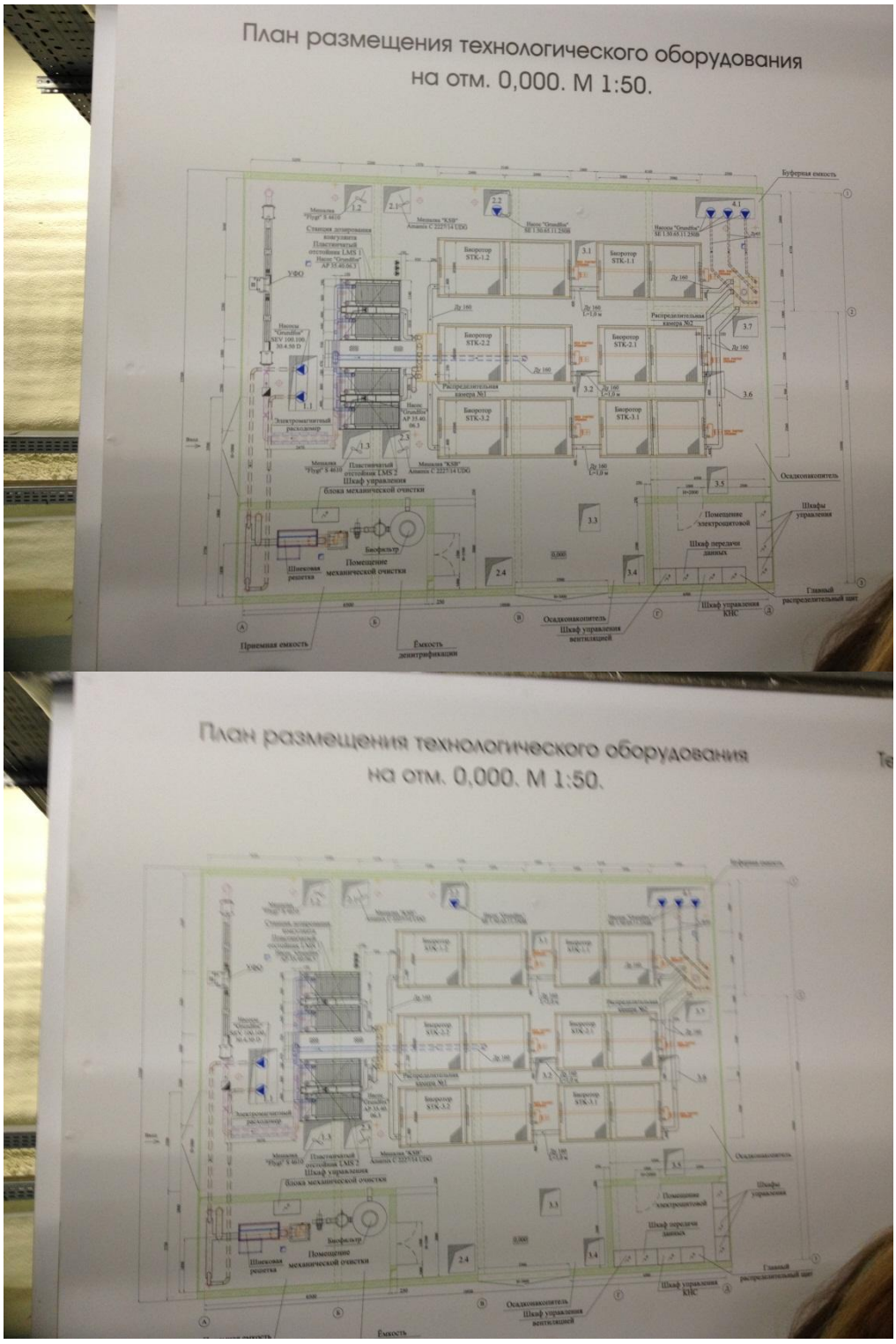

ОАО "АУРАТ"
АКВА-АУРАТ™18

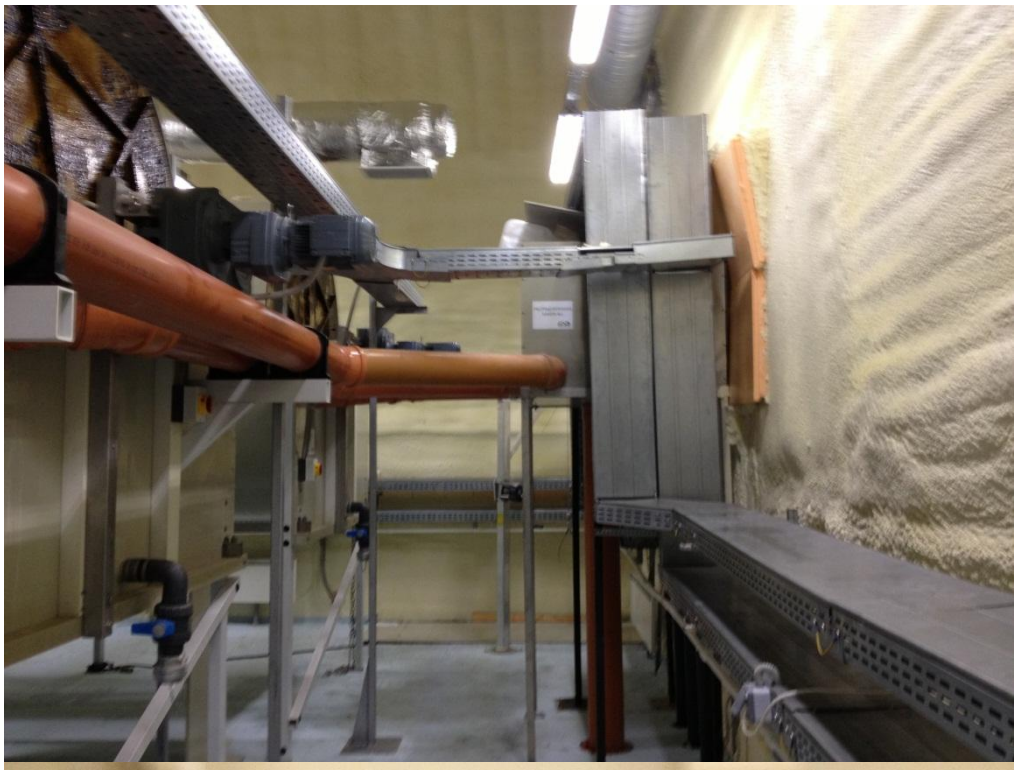

БИОРОТОР
STK 2.2
Альянс Электро

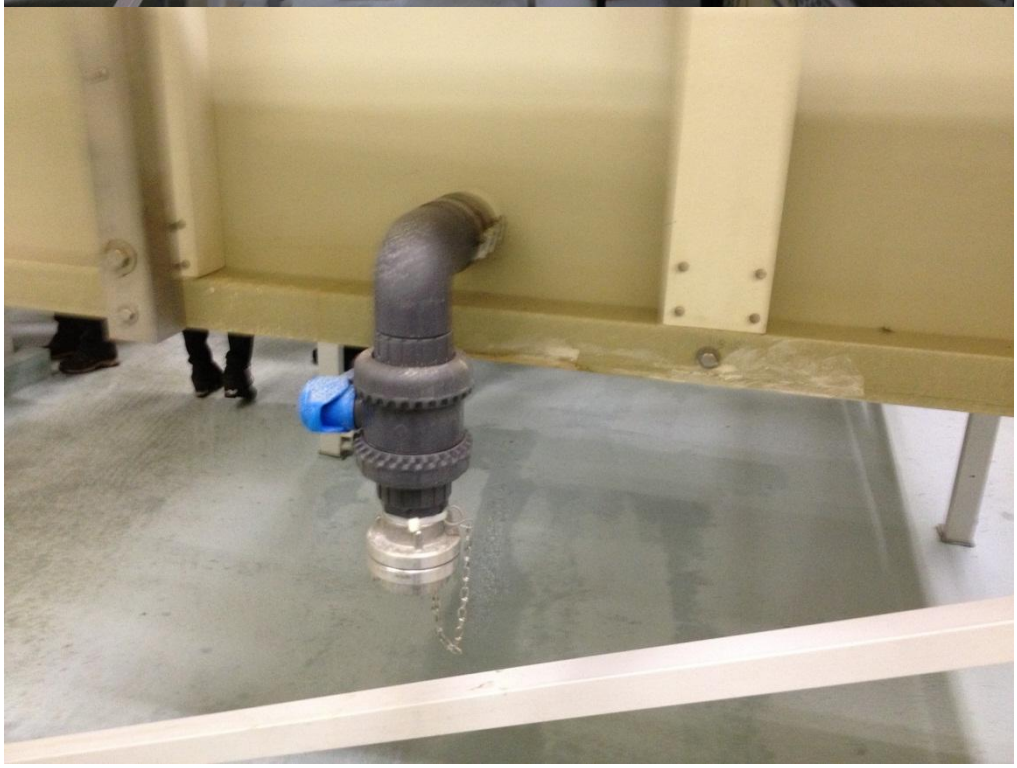

Технологическая схема очистных сооружений
Вход
DN300
1. Приемная емкость
V=122,0 м³
Аварийный
перелив
2. Емкость
денитрификации
V=187,5 м³
3. Отстойник
осадконакопитель
V=187,0 м³
3. Отстойник
осадконакопитель
V=100,0 м³
Колодец
аварийного
сброса

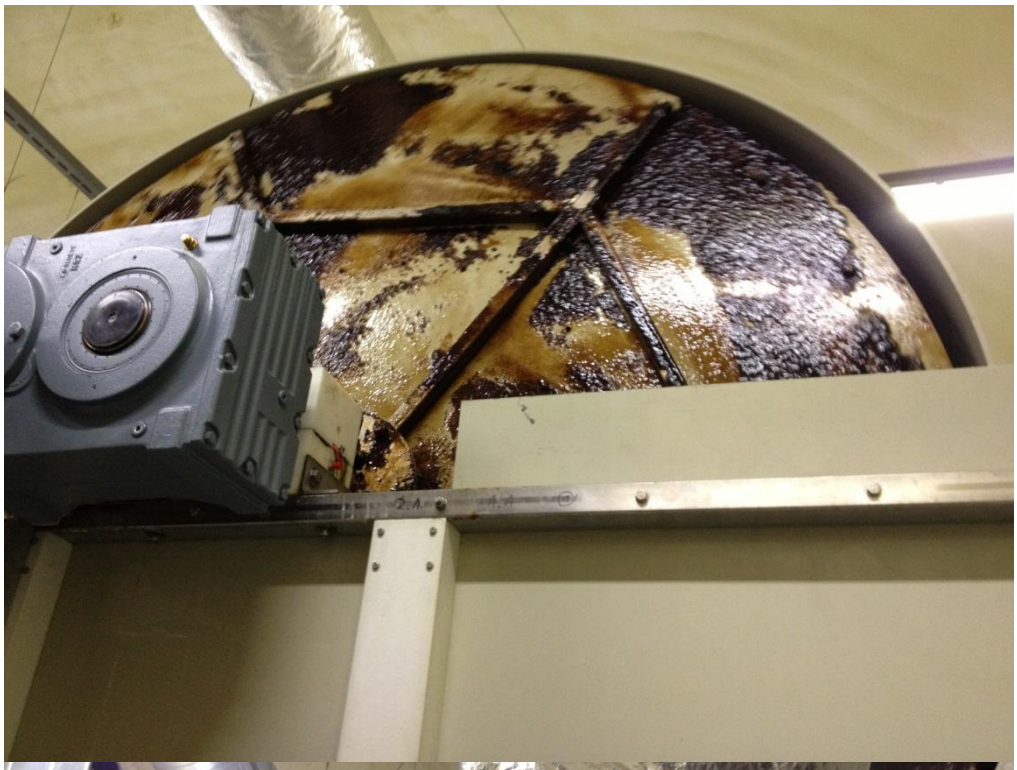

2. Емкость денитрификации V=187,5 м³
3. Отстойник осадконакопитель V=187,0 м³
3. Отстойник осадконакопитель V=109,0 м³
4. Буферная емкость V=78,0 м³
Датчик уровня
DN300
Колодец аварийного сброса
Распределительная камера №1
Распределительная камера №2
Биореактор STK-1.1
Биореактор STK-2.1
Биореактор STK-3.1
Биореактор STK-1.2
Биореактор STK-2.2
Биореактор STK-3.2
Пластинчатый отстойник LMS-1
Пластинчатый отстойник LMS-2
Колодец очищенной воды
УФО


Технологическая схема очистных сооружений


План размещения технологического оборудования
на отм. 0,000. М 1:50.
Буферная емкость
Биоротор STK-1.2
Биоротор STK-1.1
Биоротор STK-2.2
Биоротор STK-2.1
Биоротор STK-3.2
Биоротор STK-3.1
Распределительная камера №1
Распределительная камера №2
Осадконакопитель
Шкафы управления
Помещение электрощитовой
Шкаф передачи данных
Главный распределительный щит
Шкаф управления КНС
Шкаф управления вентиляцией
Шкаф управления блока механической очистки
Биофильтр
Помещение механической очистки
Шнековая решетка
Приемная емкость
Емкость деинтрификации
УФО
Электромагнитный расходомер
Вход



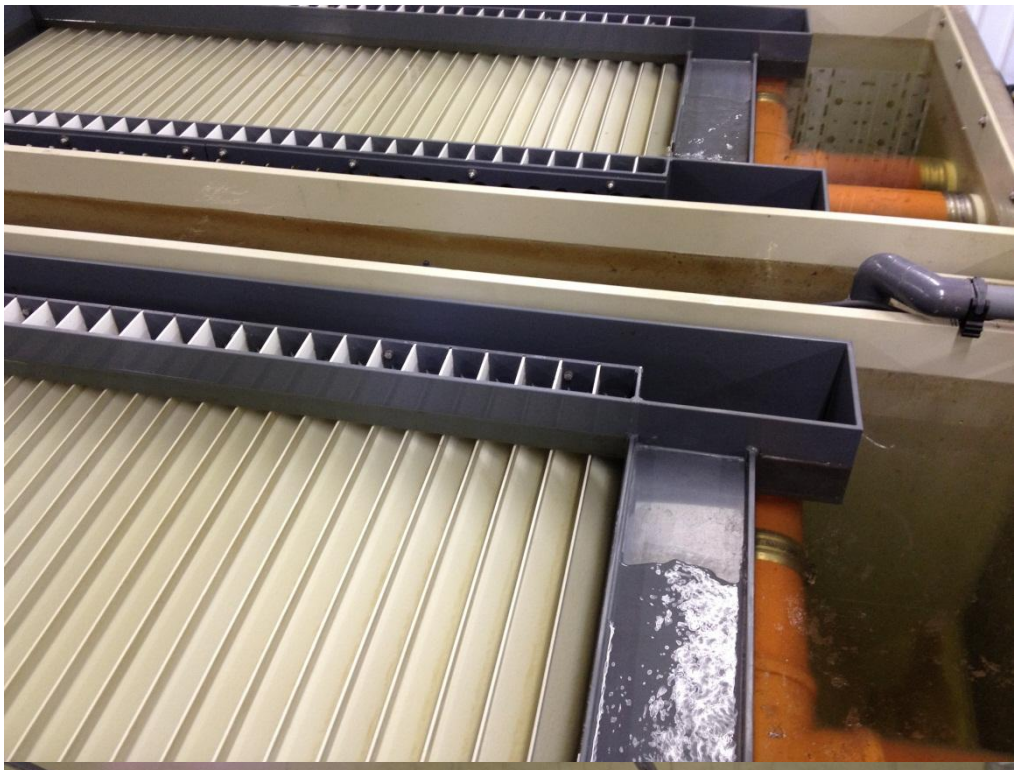





СТАНЦИЯ
ДОЗИРОВАНИЯ
КОАГУЛЯНТА


НАСОС
"GRUNDFOS"
AP 35.40.06.3


РАСПРЕДЕЛИТЕЛЬНАЯ
КАМЕРА №2




Альянс Электро


International Advanced Water Technologies Centre
Established in 2010
IAWTC
PARTNER ORGANIZERS:
— SUE "VODOKANAL OF ST. PETERSBURG" (RUSSIA)
— LAHTI SCIENCE AND BUSINESS PARK (FINLAND)
GENERAL INFORMATION:
OBJECTIVES:
EVENTS ARE HELD IN THE FORM OF:
• Conferences
• Scientific workshops
• Laboratory studies
• Interactive lessons
• Lectures
• Training courses
EDUCATIONAL PROGRAMS OF THE CENTRE ARE FOCUSED ON DIFFERENT CATEGORIES OF PARTICIPANTS, INCLUDING:
• water experts;
• water quality control experts;
• wastewater experts;
• profile and non-profile students of higher educational institutions;
• high school students.
Training is conducted by top experts from Russia and other European countries.
GET MORE INFORMATION AND TAKE PART IN THE ACTIVITIES OF THE CENTRE:
www.vodokanal.spb.ru


Создан в 2010 году
МЦПВТ
ПАРТНЕРЫ-ОРГАНИЗАТОРЫ:
— ГУП «ВОДОКАНАЛ САНКТ-ПЕТЕРБУРГА» (РОССИЯ)
— ИННОВАЦИОННО-ТЕХНОЛОГИЧЕСКИЙ ЦЕНТР
Г. ЛАХТИ (ФИНЛЯНДИЯ)
ОБЩАЯ ИНФОРМАЦИЯ:
Международный центр передовых водных технологий был создан в 2010 году под эгидой рабочей группы по экологии и природосбережению Делового совета северного измерения в сотрудничестве с Экологическим партнерством Северного измерения.
Местонахождение: Санкт-Петербург, ул. Шпалерная, 56, филиал ГУП «Водоканал Санкт-Петербурга» «Информационно-образовательный центр»
ЦЕЛИ:
• Организация международного сотрудничества по вопросам устойчивости и управления водными ресурсами;
• Обмен опытом по применяемым технологиям в области водоснабжения и водоотведения, охраны окружающей среды и рационального использования природных ресурсов;
• Аккумулирование, обобщение и продвижение знаний об инновациях, как в области используемых технологий, так и в области управления в сфере водопроводно–канализационного хозяйства;
• Содействие продвижению инноваций,
• Организация мероприятий по обмену информацией, идеями, технологиями производства и управления в сфере водных ресурсов
• Эколого–просветительская деятельность в сфере сохранения и устойчивого использования водных ресурсов, инновационных технологий, направленных на улучшение состояния Балтийского моря.
УЧЕБНЫЕ МЕРОПРИЯТИЯ ПРОХОДЯТ В ФОРМЕ:
• Конференций
• Научно-практических семинаров
• Лабораторных занятий
• Интерактивных занятий
• Лекций
• Стажировок
УЧЕБНЫЕ ПРОГРАММЫ ЦЕНТРА ОРИЕНТИРОВАНЫ НА РАЗНЫЕ КАТЕГОРИИ СЛУШАТЕЛЕЙ, В ТОМ ЧИСЛЕ:
• на специалистов в сфере водоподготовки;
• на специалистов в области контроля качества воды;
• на специалистов в области очистки сточных вод;
• на специалистов в области очистки сточных вод;
• на студентов профильных и непрофильных высших учебных заведений;
• на учащихся старших классов.
Обучение проводят лучшие эксперты из России и стран Европы.
УЗНАВАЙТЕ ДОПОЛНИТЕЛЬНУЮ ИНФОРМАЦИЮ И УЧАСТВУЙТЕ В УЧЕБНЫХ МЕРОПРИЯТИЯХ ЦЕНТРА:
www.vodokanal.spb.ru
(раздел «Международный центр передовых водных технологий»)
Контактные телефон/факс: (812) 438-43-17, 438-43-46
Контактный e-mail: Alekseev_AG@vodokanal.spb.ru
или ioc@vodokanal.spb.ru


ЕМКОСТЬ
ДЕНИТРИФИКАЦИИ 2,3
Альянс Электро

Appendix 4 Pricelist for the production of “Topol-Eko” in North-western Federal District

	Model	Standard assembling, which depends from soil type (in Rubles)					Amount of sand for facility (m3)				
		Sand	Clay loam	Clay	Quicksand	Rocky soil			Price ex warehouse in St. Petersburg	Delivery	installation supervision
Prices for "Topas"	ТОПАС 5	34 749 р.	36 774 р.	38 799 р.	43 052 р.	53 815 р.	3 м ^{3}	Price of model range "Topas"	79 900 р.	4 500 р.	7 875 р.
	ТОПАС 5 Long	39 690 р.	41 715 р.	43 943 р.	47 993 р.	59 991 р.	3,5 м ^{3}		102 500 р.	4 500 р.	7 875 р.
	ТОПАС 5 Пр	34 749 р.	36 774 р.	38 799 р.	43 052 р.	53 815 р.	3 м ^{3}		86 900 р.	4 500 р.	7 875 р.
	ТОПАС 5 Long Пр	39 690 р.	41 715 р.	43 943 р.	47 993 р.	59 991 р.	3,5 м ^{3}		109 800 р.	4 500 р.	7 875 р.
	ТОПАС 8	40 622 р.	42 647 р.	44 874 р.	48 924 р.	61 155 р.	4 м ^{3}		106 050 р.	4 500 р.	9 750 р.
	ТОПАС 8 Long	46 697 р.	48 924 р.	50 747 р.	54 999 р.	68 749 р.	4,5 м ^{3}		119 600 р.	9 375 р.	9 750 р.
	ТОПАС 8 Пр	40 622 р.	42 647 р.	44 874 р.	48 924 р.	61 155 р.	4 м ^{3}		115 200 р.	4 500 р.	9 750 р.
	ТОПАС 8 Long Пр	46 697 р.	48 924 р.	50 747 р.	54 999 р.	68 749 р.	4,5 м ^{3}		126 900 р.	9 375 р.	9 750 р.
	ТОПАС 10	49 329 р.	51 759 р.	53 379 р.	57 834 р.	72 293 р.	5 м ^{3}		133 800 р.	9 375 р.	11 813 р.
	ТОПАС 10 Long	54 392 р.	56 417 р.	58 442 р.	62 694 р.	78 368 р.	5,5 м ^{3}		152 000 р.	9 375 р.	11 813 р.
	ТОПАС 10 Пр	49 329 р.	51 759 р.	53 379 р.	57 834 р.	72 293 р.	5 м ^{3}		164 500 р.	9 375 р.	11 813 р.
	ТОПАС 10 Long Пр	54 392 р.	56 417 р.	58 442 р.	62 694 р.	78 368 р.	5,5 м ^{3}		143 900 р.	9 375 р.	11 813 р.
	ТОПАС 15	52 569 р.	54 594 р.	56 619 р.	60 879 р.	76 090 р.	5 м ^{3}		155 900 р.	9 375 р.	13 688 р.
	ТОПАС 15 Long	56 417 р.	58 442 р.	60 669 р.	64 922 р.	81 153 р.	5,5 м ^{3}		175 000 р.	9 375 р.	13 688 р.
	ТОПАС 15 Пр	52 569 р.	54 594 р.	56 619 р.	60 879 р.	76 090 р.	5 м ^{3}		186 050 р.	9 375 р.	13 688 р.
	ТОПАС 15 Long Пр	56 417 р.	58 442 р.	60 669 р.	64 922 р.	81 153 р.	5,5 м ^{3}		168 900 р.	9 375 р.	13 688 р.
	ТОПАС 20	84 696 р.	59 657 р.	61 682 р.	63 504 р.	67 757 р.	6 м ^{3}		204 900 р.	13 125 р.	15 750 р.
	ТОПАС 20 Long	69 579 р.	72 009 р.	74 034 р.	76 059 р.	95 074 р.	6,5 м ^{3}		222 600 р.	13 125 р.	15 750 р.
	ТОПАС 20 Пр	84 696 р.	59 657 р.	61 682 р.	63 504 р.	67 757 р.	6 м ^{3}		211 900 р.	13 125 р.	15 750 р.
	ТОПАС 20 Long Пр	69 579 р.	72 009 р.	74 034 р.	76 059 р.	95 074 р.	6,5 м ^{3}		231 000 р.	13 125 р.	15 750 р.
	ТОПАС 30	75 735 р.	78 975 р.	80 595 р.	86 265 р.	107 831 р.	10 м ^{3}		257 000 р.	13 125 р.	17 625 р.
	ТОПАС 30 Long	94 163 р.	96 593 р.	98 618 р.	102 263 р.	127 829 р.	10,5 м ^{3}		268 500 р.	13 125 р.	17 625 р.
	ТОПАС 30 Пр	75 735 р.	78 975 р.	80 595 р.	86 265 р.	107 831 р.	10 м ^{3}		262 500 р.	13 125 р.	17 625 р.
	ТОПАС 30 Long Пр	94 163 р.	96 593 р.	98 618 р.	102 263 р.	127 829 р.	10,5 м ^{3}		278 000 р.	13 125 р.	17 625 р.
	ТОПАС 40	95 378 р.	97 808 р.	99 833 р.	103 883 р.	129 854 р.	13 м ^{3}		328 100 р.	13 125 р.	23 625 р.
	ТОПАС 40 Пр	95 378 р.	97 808 р.	99 833 р.	103 883 р.	129 854 р.	13 м ^{3}		338 100 р.	13 125 р.	23 625 р.
	ТОПАС 50	113 400 р.	115 425 р.	117 450 р.	121 905 р.	152 381 р.	15 м ^{3}		376 300 р.	15 000 р.	33 375 р.
	ТОПАС 50 Пр	113 400 р.	115 425 р.	117 450 р.	121 905 р.	152 381 р.	15 м ^{3}		386 700 р.	15 000 р.	33 375 р.
	ТОПАС 75	169 412 р.	171 842 р.	173 867 р.	177 512 р.	221 890 р.	18 м ^{3}		495 200 р.	18 750 р.	35 250 р.
	ТОПАС 75 Пр	169 412 р.	171 842 р.	173 867 р.	177 512 р.	221 890 р.	18 м ^{3}		505 200 р.	18 750 р.	35 250 р.
	ТОПАС 100 Пр	215 379 р.	220 239 р.	224 289 р.	231 984 р.	289 980 р.	22 м ^{3}		684 100 р.	30 000 р.	37 125 р.
	ТОПАС 150	292 127 р.	300 227 р.	312 377 р.	312 377 р.	400 596 р.	24 м ^{3}		990 300 р.	37 500 р.	45 000 р.
	ТОПАС 150 Пр	292 127 р.	300 227 р.	312 377 р.	312 377 р.	400 596 р.	24 м ^{3}		1 010 300 р.	37 500 р.	45 000 р.

Prices for "Topaero"	ТОПАЭРО 3	52 569 р.	54 594 р.	56 619 р.	60 872 р.	76 090 р.	5 м ^{3}	Price of model range "Topaero"	184 500 р.	9 375 р.	13 688 р.
	ТОПАЭРО 3 Long	56 417 р.	58 442 р.	60 669 р.	64 922 р.	81 153 р.	5,5 м ^{3}		198 900 р.	9 375 р.	13 688 р.
	ТОПАЭРО 3 Пр	52 569 р.	54 594 р.	56 619 р.	60 872 р.	76 090 р.	5 м ^{3}		193 300 р.	9 375 р.	13 688 р.
	ТОПАЭРО 3 Long Пр	56 417 р.	58 442 р.	60 669 р.	64 922 р.	81 153 р.	5,5 м ^{3}		205 900 р.	9 375 р.	13 688 р.
	ТОПАЭРО 4	59 657 р.	61 682 р.	63 504 р.	67 757 р.	84 696 р.	6 м ^{3}		226 400 р.	13 125 р.	15 750 р.
	ТОПАЭРО 4 Long	69 579 р.	72 009 р.	74 034 р.	76 059 р.	95 074 р.	6,5 м ^{3}		245 800 р.	13 125 р.	15 750 р.
	ТОПАЭРО 4 Пр	59 657 р.	61 682 р.	63 504 р.	67 757 р.	84 696 р.	6 м ^{3}		236 100 р.	13 125 р.	15 750 р.
	ТОПАЭРО 4 Long Пр	69 579 р.	72 009 р.	74 034 р.	76 059 р.	95 074 р.	6,5 м ^{3}		255 250 р.	13 125 р.	15 750 р.
	ТОПАЭРО 6	75 735 р.	78 975 р.	80 595 р.	86 265 р.	107 831 р.	10 м ^{3}		285 900 р.	13 125 р.	17 625 р.
	ТОПАЭРО 6 Long	94 163 р.	96 593 р.	98 618 р.	102 263 р.	127 829 р.	10,5 м ^{3}		299 400 р.	13 125 р.	17 625 р.
	ТОПАЭРО 6 Пр	75 735 р.	78 975 р.	80 595 р.	86 265 р.	107 831 р.	10 м ^{3}		291 300 р.	13 125 р.	17 625 р.
	ТОПАЭРО 6 Long Пр	94 163 р.	96 593 р.	98 618 р.	102 263 р.	127 829 р.	10,5 м ^{3}		309 700 р.	13 125 р.	17 625 р.
	ТОПАЭРО 7	95 378 р.	97 808 р.	99 833 р.	103 883 р.	129 854 р.	13-15 м ^{3}		338 900 р.	13 125 р.	23 625 р.
	ТОПАЭРО 7 Пр	95 378 р.	97 808 р.	99 833 р.	103 883 р.	129 854 р.	13-15 м ^{3}		349 400 р.	13 125 р.	23 625 р.
	ТОПАЭРО 9	113 400 р.	115 425 р.	117 450 р.	121 905 р.	152 381 р.	15-17 м ^{3}		428 200 р.	15 000 р.	33 375 р.
	ТОПАЭРО 9 Пр	113 400 р.	115 425 р.	117 450 р.	121 905 р.	152 381 р.	15-17 м ^{3}		441 200 р.	15 000 р.	33 375 р.
	ТОПАЭРО 12	169 412 р.	171 842 р.	173 867 р.	177 512 р.	221 890 р.	18-20 м ^{3}		550 200 р.	18 750 р.	35 250 р.
	ТОПАЭРО 12 Пр	169 412 р.	171 842 р.	173 867 р.	177 512 р.	221 890 р.	18-20 м ^{3}		563 200 р.	18 750 р.	35 250 р.
	ТОПАЭРО 16	192 396 р.	196 041 р.	199 078 р.	204 748 р.	255 935 р.	20-22 м ^{3}		783 300 р.	18 750 р.	36 187 р.
	ТОПАЭРО 16 Пр	192 396 р.	196 041 р.	199 078 р.	204 748 р.	255 935 р.	20-22 м ^{3}		797 100 р.	18 750 р.	36 187 р.
	ТОПАЭРО 24	292 127 р.	300 227 р.	312 377 р.	320 477 р.	400 596 р.	24-26 м ^{3}		1 100 300 р.	37 500 р.	45 000 р.
	ТОПАЭРО 24 Пр	292 127 р.	300 227 р.	312 377 р.	320 477 р.	400 596 р.	24-26 м ^{3}		1 126 500 р.	37 500 р.	45 000 р.
	ТОПАЭРО 32	348 900 р.	356 780 р.	363 348 р.	375 814 р.	469 767 р.	28-30 м ^{3}		1 566 500 р.	37 500 р.	46 500 р.
Prices for "Ciklon"	ЦИКЛОН 1	31 450 р.	33 475 р.	35 500 р.	39 400 р.	49 250 р.	2,5 м ^{3}	Price of model range "Ciklon"	84 150 р.	4 500 р.	6 750 р.
	ЦИКЛОН 1 Пр	31 450 р.	33 475 р.	35 500 р.	39 400 р.	49 250 р.	2,5 м ^{3}		98 450 р.	4 500 р.	6 750 р.
	ЦИКЛОН 2	33 950 р.	35 975 р.	38 000 р.	42 180 р.	52 725 р.	3 м ^{3}		100 650 р.	4 500 р.	9 440 р.
	ЦИКЛОН 2 Пр	33 950 р.	35 975 р.	38 000 р.	42 180 р.	52 725 р.	3 м ^{3}		114 950 р.	4 500 р.	9 440 р.
	ЦИКЛОН 3	36 140 р.	38 050 р.	40 550 р.	45 010 р.	56 260 р.	3,5 м ^{3}		133 650 р.	4 500 р.	10 870 р.
	ЦИКЛОН 3 Пр	36 140 р.	38 050 р.	40 550 р.	45 010 р.	56 260 р.	3,5 м ^{3}		145 750 р.	4 500 р.	10 870 р.
Prices for "Toppolium"	ОТП-1	is not in operation					does not need	Price of model range "Toppolium"	29 900 р.	4 500 р.	7 125 р.
	ОТП-1 Long	38 354 р.					2 м ^{3}		43 500 р.	4 500 р.	7 125 р.
	ОТП-2	is not in operation					does not		45 600 р.	4 500 р.	7 500 р.
	ОТП-2 Long	44 267 р.					3 м ^{3}		65 100 р.	4 500 р.	7 500 р.
	ОТП-3	is not in operation					does not		54 900 р.	4 500 р.	7 875 р.
	ОТП-3 Long	48 317 р.					3,5 м ^{3}		71 800 р.	9 375 р.	7 875 р.
	ОТП-4	is not in operation					does not		65 100 р.	4 500 р.	8 250 р.
	ОТП-4 Long	57 996 р.					4 м ^{3}		90 300 р.	9 375 р.	8 250 р.
	ОТП-5	is not in operation					does not need		83 800 р.	4 500 р.	8 625 р.
	ОТП-5 Long	62 046 р.					4,5 м ^{3}		123 500 р.	9 375 р.	8 625 р.
Prices for "Topbio"	ТОПБИО	46 697 р.	48 924 р.	50 747 р.	54 999 р.	65 999 р.	4,5 м ^{3}	Price of model range "Topbio	101 900 р.	9 375 р.	9 750 р.

* Assembly costs if facility is less than 100 km far from city boundaries. If more than 100 km (without delivery) – plus 50 Rubles for km.

** Prices are shown with goods and services tax included