ANNUAL REPORT 2009

VKG

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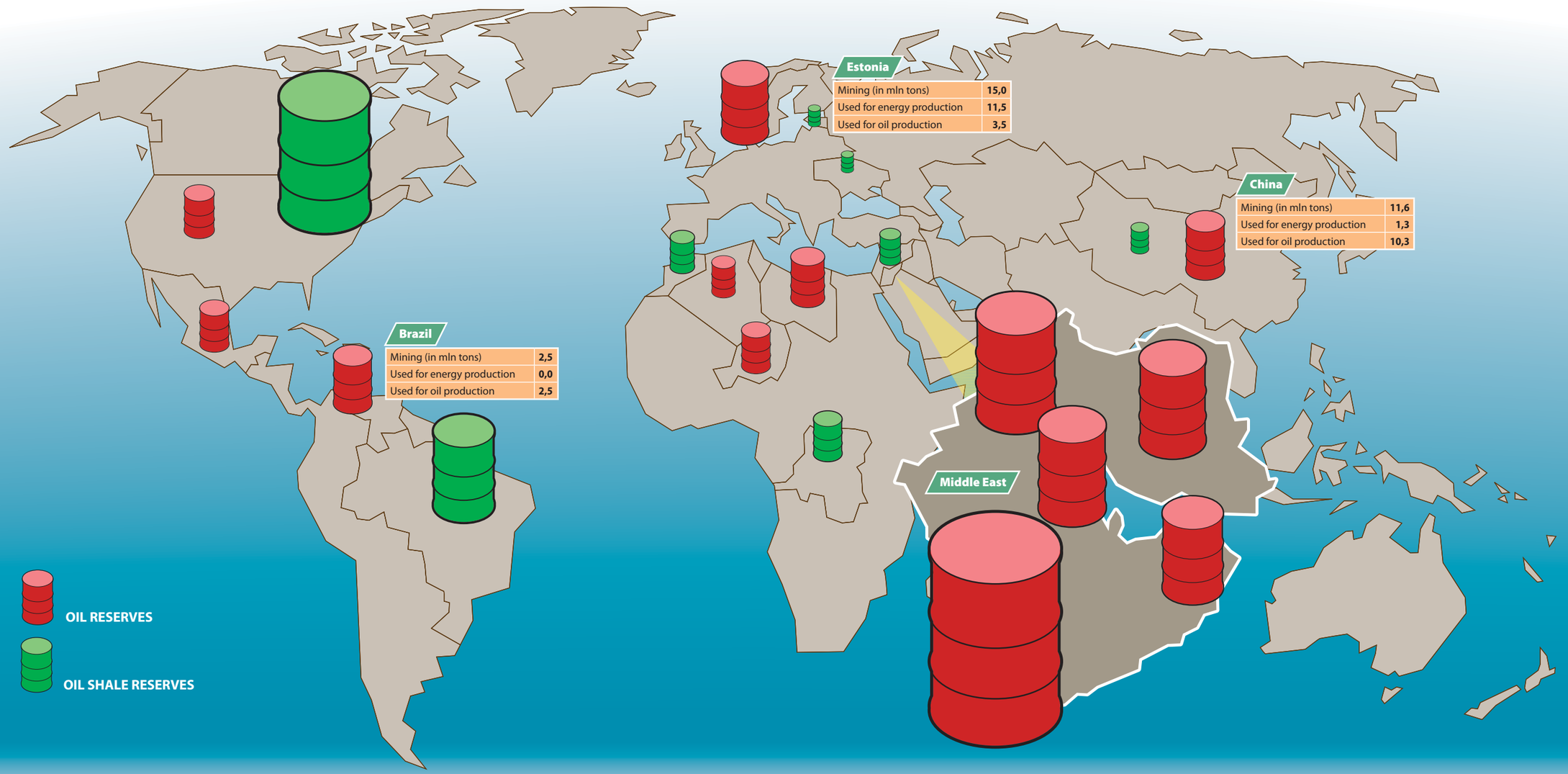
Oil and oil shale reserves worldwide

Oil shale is found in many countries around the world, and its reserves are important, its processing, however, takes place in few locations. Estonia is the third country in the world, after big countries Brazil and China, where an industrial processing of oil shale takes place. The main products derived from oil shale are fuels – both shale oil and shale gas.

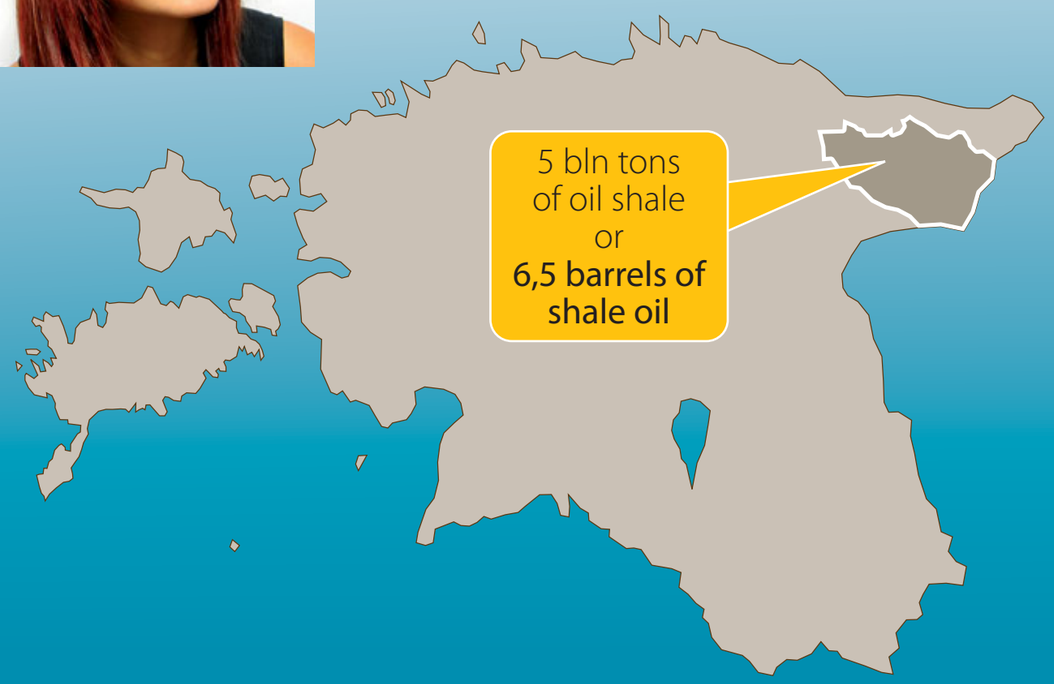


Oil shale in Estonia

There are 5 bln tons of oil shale, or 6,5 barrels of shale oil in Estonia. Shale oil is not only fuel oil.

APPLICATION FIELDS OF SHALE OIL:

- **Marine fuels**
- **Fuel oils**
- **Fine chemicals for perfumery and cosmetics**
- **Raw materials for tyre industry**



VKG as the biggest Estonian producer of shale oils and chemicals

VKG covers the whole production chain, starting with the mining and processing of oil shale up to the manufacturing and marketing of the most sophisticated chemicals.

VKG

- The biggest Estonian chemical enterprise
- At present employs over 1 300 people
- 2009 turnover is 1,7 bln kroons and profit is 141 mln kroons
- In 2009 started the operation of the new plant
- Has started an independant construction of its own mine
- Production forecast for 2010 is 270 000 tons of crude shale oil

ACTIVITY FIELDS OF THE COMPANY:

- Activity fields of the concern:
- Oil shale mining
- Production of shale oils and chemicals
- Production of synthetic resins
- Production and distribution of heat and electricity
- Repair, assembling, transport and water supply services.

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Address of the Chairman of the Board

Despite a complicated situation, VKG is still on its way toward its goals and production development.

It does not mean of course the concern haven`t drawn any so-called compulsory lesson from a low level of economy.

As well as other enterprises which have successfully faced out the economic crisis, VKG overwiewed critically within last two years all its activities. As a result, the activity of two separate business units has been stopped - Viru Vesi AS and VKG Resins AS. Despite a very conservative least-cost budget, the concern had to approve some additional negative budgets within the year. The concern has managed to reduce its fixed costs by over 25 %. A large part in this achievement was played by an innovative approach due to which a modern supply system is being used in the enterprise, the recent international development Mercell. Cost optimization and production effectivization will spread over next year. Despite positive trends of raw materials markets during last few months, our main words for this year are discipline and strong centrality of purpose.

In parallel with economic-reasoned lines of activity, the concern`s focus on social responsibility has grown, as well. In 2009 new initiatives of regional support were started, in the beginning of 2010 a VKG sustainability report was published among the first ones in Estonia. In 2009 the concern started work on adoption of the international standard SA-8000 on social responsibility. Herewith we want to give more information to local residents about our activity in the field of nature preservation and to demonstrate our care for both our own employees and local residents.

A long-term work on development of an oil shale processing complex gave its first results in 2009. At the end of the year the new oil shale processing plant PETROTER has been opened at VKG which produced its first hundreds of tons of shale oil by the end of the year. The mine Ojamaa being in construction at the concern will give its first fine oil shale for the new plant already in the beginning of 2010, and since 2012 should be operated at full capacity. By the end of this year the concern is planning to finalize the building of a new turbine what will enable to considerably increase the amount of electricity produced by VKG.

VKG issues for itself big challenges and pursues its objectives as a reliable partner to its employees and customers. I am sure the concern`s development would persist, and we have one more interesting year before us which will to a wide extent define a concern`s position to start into the next period of economic growth.

Priit Rohumaa
Chairman of the Board


Priit Rohumaa, Chairman of the Board of VKG, at his desk.


Priit Rohumaa being awarded by the Senior of Ida-Viru County as "The best employer of Ida-Virumaa 2009".


Priit Rohumaa presents the new VKG plant to the President of the Republic of Estonia.


Handing over of scholarships n. a. VKG.

High points of the period

- February 2009 – the 10th anniversary of VKG
- March 2009 – the cement plant project is frozen due to an economic depression in the market of construction materials
- April 2009 – the cooperation with Eesti Energia Kaevandused AS in the field of drivage works in Ojamaa mine is stopped. VKG has decided to make mine drivage by itself.
- June 2009 – the state proposed a fixed plan of semicoke taxation which gave to the concern an opportunity not to speed up the construction of the cement plant.
- July 2009 – construction of Ojamaa mine starts.
- August 2009 – 99 new jobs are created to operate the new VKG plant.
- September 2009 – finalizing of construction and installation works at the new VKG plant, first start-up operations.
- September 2009 – VKG obtains a government grant to select a technology of diesel fuel production from shale oil.
- September 2009 – VKG employs Ahti Puur who acts since as a new financial director and a Deputy Chairman of the Board.
- October 2009 - Ida-Viru County Administration initiated an Assessment of Environmental Impact of a 12 km long conveyor for Ojamaa mine.
- December 2009 – the new VKG plant processed first 500 tons of oil shale and produced 50 tons of crude oil.
- 21.12.2009 – inauguration of Petroter plant by the President of the Republic of Estonia and celebration ceremony at VKG for the 85th anniversary of the First Estonian Oil Shale Industry.


President of the Republic of Estonia at the new VKG plant.


Construction works at the new VKG plant in summer 2009.


Start of construction of a slant shaft in Ojamaa mine.


Ahti Puur, new VKG financial director.

VKG Development Activity

In fuel and chemical industries the year 2009 determined with its drastic oil price slump in the beginning of the year deceleration or even stop of development activities in almost all fields, for both short- and long-term activities. Many undertakings dated from good times have been stopped, a part of projects have been suspended till better days, others frozen or totally stopped. VKG constitutes no exception to this trend – already at the end of 2008 it started with time scheduling of several development projects and severe lay-down of priorities` order. The 2009 investment and development budgets of all VKG subsidiaries have been restricted to a minimum.

The first half-year ran in an atmosphere of a strict economy and short-term objectives oriented to the main activity. The development activity focused on rehabilitation, conversion of activities, suspension and/or painless stop of projects. The most important examples hereof could be the termination of formalin production and the conservation of its unit, and rehabilitation of industrial production of resins, which resulted in the liquidation of VKG Resins AS in its capacity of a separate commercial unit by the end of the year.

In the second half-year the situation in the oil market stabilized, financial markets also restarted their operation according to the crisis. The stabilization of VKG situation along with upside of its business operations demonstrated that the major part of hard and complicated decisions made at the end of 2008 and at the beginning of 2009 had been correct, and VKG could cope with a difficult situation in the optimal way.

Below there are some examples of investments and development activities of VKG enterprises in 2009.

Extension of shale oil production

Oil Plant PETROTER

The biggest VKG investment which was fully in progress according to its time schedule despite an economic austerity in 2009, was the building of a new oil plant with efficiency of 0,9 mln tons, Petroter, started in 2007. Though construction works on the site were finalized in October, independent startup and testing works of technologic units started already in the midyear. In August the testing of the sequence of all technological processes in hot gas conditions (without oil shale) started, it was followed by a test period with an inert solid material in September and October. Since November they have started scheduled testing startups with oil shale.

By the end of the year the plant could reach for short time periods its design capacity of 130 tons of oil shale per hour, sustainability and operating capacity of the whole plant has now been confirmed. Some small defects detected during start-up operations have been removed within periods between startups, bigger troubles have been fixed, and improved technological solutions have been worked out. As is often the case with start-up operations of large-scale and based on new technology sophisticated industrial equipment, testing and startup works at Petroter plant are planned to be done within a 6-months period, and this period would be used to modify and redesign some technological units based on experience got during the plant operation. Operational conditions at full capacity and planned cycles are to be reached according to the timing by the midyear 2010.

In Ukraine the German company Thyssen Krupp has finalized a geologic model of Boltyshki deposit field and a planning of an oil shale open-cast mine with efficiency of 5 mln tons per year according to VKG license. As a result of this work, cost of an open-cast mine opening, time scheduling and production cost of oil shale mining have been defined. The information obtained is an important part of the assessment of profitability of the oil shale processing complex.

There was no new activity started in Ukraine in 2009 because of a drastic change of economic situation, research work on potential of Aleksinaci oil shale deposit in Serbia has been stopped, and all activities in connection with Slantsy deposit have been practically stopped, as well.


Jaanus Purga, VKG R&D Director, at his desk.


Petroter plant during construction works.


Jaanus Purga guides the Estonian Minister for Economy in his tour at VKG premises.


Oil shale layer in Ojamaa mine.

Ojamaa oil shale open-cast mine

Availability of sufficient amount of oil shale with required characteristics is the base of all stable operation of VKG oil shale processing. Accordingly, the opening of Ojamaa open-cast mine was economically the second strategic target of 2009 where no slowdown took place.

In 2009 an action plan and a budget of the open-cast opening were specified and agreed until it runs on full capacity (2,5 mln tons of oil shale per year) in the years 2012-2013. The designing of an underground part of the open-cast and surface servicing complex has been in progress, the setting up of inclined shafts and infrastructure has started. Driving equipment has been acquired, and at the end of the year a tender has been put out for the construction of a 12,5 km long conveyer from the mine servicing complex up to VKG oil plants.

In spring 2010 driving works would reach oil shale layers, and first oil shale would be supplied to Petroter plant. Supplies will be made according to tender results, and construction of conveyer and washing-house could start.

Refining of shale oils. Production of diesel fuel oils

As opposed to Estonia, oil shale is regarded worldwide mainly as an "alternative oil", and it is considered as potential raw material to produce liquid fuels, first of all motor fuels. VKG possesses the best scheme of additional oil refining among oil shale processing plants operating worldwide, what enables it to produce high-quality fuel and marine oils. Additional oil refining includes oil preparation, recovery of chemicals from process water, atmospheric distillation and coking.

VKG long-term objective is moving of shale oils up into a higher quality class, i. e. starting production of diesel oil according to EURO V standard and marine oil with 1 % sulphur content instead of fuel oils. In 2008 works started to define a refining technology for shale oils, technical conditions of process, products wanted and configuration of refinery complex were formulated.

In 2009 VKG made agreements with two worldwide leading designers of refining technology and one introducer of a new refining technology to effect pilot tests with Estonian shale oil and to develop a refining process based on the results of these pilot tests. The testing program has been fully realized within a year, and over ten possible process configurations have been developed, and those with most potential have been selected. By the end of the year technologic companies have presented to VKG their offers on design of hydrogen recovery process and technology, and technology licensing. Two solutions hereof do fully correspond to criteria of marine fuels MARPOL 2015 and diesel oil EURO V. The results of one more technology are below requirements only in two parameters, density and cetane number.

By the mid-year 2009 the Estonian Republic has decided to support through the Institution for Enterprise Development VKG activities on developing of refining technology for shale oils as a strategically important area for Estonia with 8 mln kroons of public grant to do an applied research for working out a refining technology. Its objective is to create a refinery plant in Estonia by the year 2015. By that time the quality requirements of liquid fuels, including marine ones, will become stricter over again.

In the beginning of 2010 the most appropriate technological concept of refinery will be chosen, and on its basis a revised assessment of profitability and a business plan for plant building will be drawn up. 2015 is an estimate date of a refinery startup.

Oil Shale Chemistry

The development of products with high added value from oil shale chemistry and their marketing in the international market have been for years an important development area for VKG. Although there was no possibility to undertake any new activities in this area during 2009, resins production development was still ongoing in cooperation with an American partner, and the drafting of a preliminary project of resins production line has started. The target is to make a long-term supply contract in 2010, to install a production line and start with industrial sales by the end of the year.

Cement Plant

In connection with drastic changes in the financial market and construction materials market VKG made the decision at the beginning of 2009 to temporarily suspend most part of activities related to the building of the cement plant until the situation would change. The only activities in progress are those connected with authorizations and supply of resources. The cement plant project is presumably planned to be realized within the period of 2015-2020.


View to VKG industrial area.


Oil shale belt conveyor at Petroter plant.


Oil shale.


Jaanus Purga and Nikolai Petrovich, President of the Board of VKG Oil AS, in Brazil, visiting oil shale industry in Petrobras.

VKG Environmental Activity in 2009

The environmental priority of VKG is the minimization of waste and sewage originating from processing of oil shale as a mineral product. Investments, monitoring and production optimation help towards theses concern`s targets.
In our activity we follow requirements of legal acts, regard opinion of different parties concerned and are reliable partners of governmental institutions and local authorities. We also attach much importance to cooperation with research institutions.

Within last years a great environmental job has been done, hundreds of millions kroones have been invested and important changes to make production more environmental-friendly have taken place. At the same time the legislations of the European Union and the Republic of Estonia and growing manufacturing requirements put forward ever increasing demands and new targets for the concern`s enterprises.
The most important environmental areas of focus were in 2009 minimization of aerial effluents, organization of waste management and activities related to treatment of rain and waste water. Viru Keemia Grupp AS invested in 2009 almost 100 mln kroons into environmental measures, and other 30 mln kroons as maintenance cost of the deposit of solid semi-coke residues.

The most important finished project of 2009 to be mentioned is the new shale oil plant Petroter-3000 which enables the use of fine oil shale to process shale oil. The plant is equipped with several environment protective facilities. There is a permanent monitoring system of fire gases installed on the chimney-shaft which helps following the concentrations of pollutants being emitted into the atmosphere and reacting promptly, if necessary. One of components in the technological process is the boiler designed for utilization of gas excess and for recovery of residual heat from such utilization. Also, oil shale ash from oil shale processing is more environment-friendly as the content of ash organics is considerably lower and corresponds to requirements stipulated in legal acts.
One more important environmental project is construction works of a new tank park at VKG Oil AS. The tank park cost amounts to over 40 mln kroons and was finalized in 2009. It is an efficient measure to minimize emissions from oil shale procession.

In 2007 a new semi-coke deposit was finalized in whole accordance with requirements. At this storage place semi-coke is stored accordingly to norms, and deposit ground water is collected. The deposit is operated by VKG Oil AS, and its yearly operation costs amount to 30 mln kroons. In connection with a correct operation of the deposit the quality of ground water has been significantly improved, and the affect of the deposit on environment has been diminished.

Important research works of 2009 are: "Research on Possibility of Wet Handling of Oil Shale Ash at Ash Deposit" drawn up by AS Pöyry Entec, „Works on Finding a Procedure of Co-storage of Oil Shale Ash and Semicoke at Testing Site" by IPT Projektijuhtimise OÜ, „Environmental Assessment on Regulation of Water Recharge of Konsu Lake" by Maves AS, and „Analysis of Back-Storage Possibilities for Solid Waste from Manufacturing Process" by Technological Institute of Tartu University.

In 2009 first Environment Days took place at Viru Keemia Gruppi AS, and there are plans to make Environment Days a traditional yearly event. The plans foresee pursuing discussions with local residents, scientists, representatives of national and local administrations concerning oil shale chemicals production, listening to reports and planning future activity.

The mainstreams of ecological activity for the next year are minimization of pollutants emission into the atmosphere, especially in the field of hydrogen sulphide, sulphur dioxide and aliphatic hydrocarbon, storage of oil shale and furnace ash should be solved, as well as problems related to designing of a wet deposit. The principles of sales system of greenhouse gases being introduced by the European Union in 2010 for the period of 2013-2020 are extremely important for Viru Keemia Grupp AS to plan its further economic and environmental activities. Also, it is important to minimize emissions of sulphur dioxide within next years and to find out an optimal and best technical solution hereto.

Viru Keemia Grupp acts diligently aiming to turn oil shale processing and all its activity ever more environmental-friendly.


Meelis Eldermann, VKG Technical Director.


Investment finalized in 2009: new tank park at VKG Oil AS.


Huge semi-coke hills, state-owned property, which conservation works to start in 2010.


Availability of free quotas for CO2 is one of the most important questions for VKG development in 2010.

VKG investments in 2009

The investments of Viru Keemia Grupp AS in the year 2009 amounted to 623 mln kroons (the investments amount in 2008 was over 1,2 bln kroons, the investment budjet for 2010 is 650 mln kroons). The lion`s share hereof went for the construction of the Petroter plant at VKG Oil AS.

Main investment fields are development activity (over 400 mln kroons together with the new plant) and environmental projects (over 130 mln kroons).

Considering the enterprises within the concern, the largest investments have been made at VKG Oil AS, concern`s oil shale processing enterprise, where the total amount of investments including the construction of the new oil plant nearly made 480 mln kroons. 62 mln kroons were invested at VKG Energia OÜ, and 58 mln kroons at VKG Kaevandused OÜ, enterprise where Ojamaa mine is being set up.

The most important among the projects realized in 2009 are:

- The largest investment object ever in the concern is the new oil shale processing plant Petroter at VKG Oil AS, with approximately 410 mln kroons spent in 2009. Including over 700 mln investments made in previous years, the total amount of investments made 1,2 bln kroons. Although startup operations are ongoing at the plant since autumn 2009, and in December first shale oil was produced by the plant, there will be some less significant investments required also in 2010. Getting the full-capacity operation is planned by May 2010. The new VKG plant became one of the largest industrial investment objects at the national level in 2009. The realization of the project was possible thanks to the cooperation with Nordea and SEB banks.

- The second important object in 2009 became Ojamaa mine being under construction by VKG Kaevandused OÜ. In 2009 58 mln kroons were invested into the mine. The amount of money required for the creation of the new mine will increase in the coming years many times. The mine is planned to be opened in 2012, the project will wholly require 1,2 bln kroons. The financement of the mine construction has been effected to this day by Nordea bank.

- In 2009 the installation of a new turbine set (started in 2007-2008) continued at VKG Energia OÜ. The installation of the new turbine set acquired in 2008 was started in autumn 2008 but in the beginning of 2009 the works were stopped due to lack of financement. The total amount of investments exceeds 250 mln kroons, whereby 143 mln kroons had been made in previous years, and the amount left, i. e. 105 mln kroons, have been planned for 2010 investments.

- VKG Energia OÜ goes on with renovation and reconstruction of its furnaces, turbine sets and other equipment available. In 2009 appr. 15 mln kroons were spent for this objective. The works aim safeguarding and improvement of operational reliability of furnaces and turbine sets and making operational processes more environmentally-safe.

- Yearly investments of VKG Elektrovõrgud into operational reliability of power supply networks required in 2009 approximately 8 mln kroons, investments into new connections came additionally in the same amount.

- Among the largest environmental projects of 2009 the continuation of tank park reconstruction at VKG Oil AS. The works in tank parks have been started since 2007, and until now the investments have amounted to appr. 200 mln kroons, 45 mln hereof in 2009. The works are planned to be finalized in 2010.


Petroter plant.


Road from VKG production to Ojamaa mine.


Anatoli Tchepelevich in the laboratory keeping in hand phenols with high purity level.

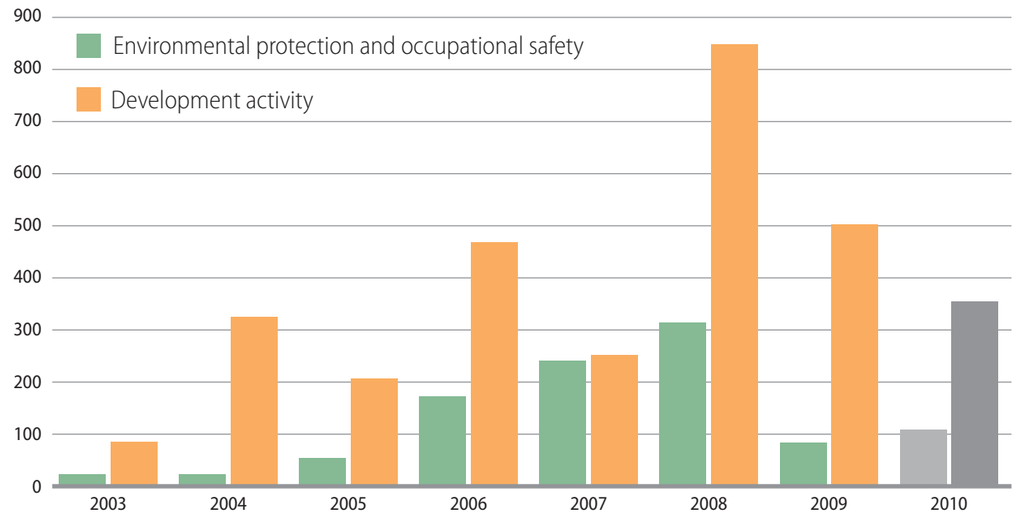

Flower grown on a semi-coke hill.

Profit and Loss statement

Consolidated P&L statement in thousands kroons

	2006	2007	2008	2009
Sales Return	1 503 614	1 787 066	2 057 776	1 677 229
Special Purpose Funding	428		1 434	2 155
Cost of Goods Sold	980 644	1 178 282	1 567 161	1 324 017
Gross Profit	523 398	608 784	492 049	355 366
Marketing Costs	34 039	39 384	46 262	50 889
General Administrative Expenditures	180 248	176 746	138 955	113 210
Other Commercial Income	13 992	14 594	24 193	19 951
Other Commercial Expenditures	18 367	29 700	35 195	22 741
Profit	304 736	377 548	295 830	188 477
Financial Income & Expenditures	-3 409	-81 424	-48 917	-47 891
Income Before Taxation	301 327	296 124	246 913	140 586
Extra Expenditures				
Income Tax	2 300	2 200	2 100	
Net Profit for the Accounting Period	299 027	293 924	244 813	140 586

Investments for development activity, environmental protection and occupational safety



Balance sheet

Consolidated balance sheet in thousands kroons

	2006	2007	2008	2009
ASSETS				
Money and Accounts	52 282	68 039	19 322	53 052
Financial Instruments			221 339	18 691
Shares and Other Securities		1 550		
Payables from Buyers	162 512	185 679	170 351	147 866
Different Claims for Money and Deferred Claims	28 485	29 735	29 745	27 606
Prepayments	1 848	4 428	3 976	4 551
Inventory Stocks Totally	105 461	174 197	210 493	101 872
Current Assets Totally	350 588	463 628	655 226	353 638
Long-Term Financial Investments	36 442	72 553	71 331	63 915
Tangible Fixed Assets	1 880 422	3 095 781	3 958 808	4 233 721
Intangible Fixed Assets	500	212 515	210 404	209 236
Goodwill	75 644	39 308	39 308	39 308
Fixed Assets Totally	1 993 008	3 420 157	4 279 851	4 546 181
ASSETS TOTALLY	2 343 596	3 883 785	4 935 077	4 899 818
LIABILITIES AND EQUITY				
Debt Instruments	234 921	224 379	275 350	435 834
Prepayments from Buyers	1 928	4 548	1 619	1 700
Payables to Suppliers	135 052	133 592	225 845	185 428
Tax Debts	19 990	24 308	33 687	33 922
Deferred Debts	26 773	24 419	41 854	27 731
Short-Term Assessments	130	9 497	33 227	41 822
Financial Instruments (option)			11 828	37 838
Deferred Income from Target Financing	1 067	1 205	1 099	1 053
Other Prepaid Income from Future Periods	13 806	507	2 787	677
Short-Term Liabilities Totally	433 667	422 455	627 298	766 005
Loans, Debt Warrants and Capital Rent	478 947	948 892	1 312 114	1 355 262
Deferred Income from Target Financing	6 719	7 085	7 144	6 044
Other Long-Term Debts		20 571	30 606	43 131
Long-Term Liabilities	485 666	976 548	1 349 863	1 404 438
Liabilities Totally	919 333	1 399 003	1 977 161	2 170 443
Minority Interests		387	1 002	
Share Capital	108 073	100 000	100 000	100 000
Reserves	681 583	1 010 368	1 543 302	1 067 010
Retained Earnings from Prior Periods	380 580	1 080 103	1 059 899	1 422 282
Profit for the Accounting Period	299 027	293 924	257 783	140 586
Stock in Treasury (minus)	-45 000			
Outstanding Exchange Difference			-4 070	-503
Equity Totally	1 424 263	2 484 782	2 957 916	2 729 375
LIABILITIES AND EQUITY TOTALLY	2 343 596	3 883 785	4 935 077	4 899 818

Oil Shale Mining

VKG holds a permit to mine 75 million tons of oil shale, which covers the company demand for the next 20 to 25 years. Mining fields are situated in as yet unused territories and in the most favourable locations. The oil shale they contain satisfy ideally the demands of VKG. VKG Kaevandused OÜ is responsible for oil shale mining within the company.
The Ojamaa underground mine, established in 2007, is located to the south of VKG industrial territory and holds oil shale deposits estimated at 60 million tons. By 2011, the Ojamaa mine will reach its maximum capacity with an annual oil shale output of 2,5 million tons.
In 2009 they started with the construction of a slant shaft, 35 high-qualified miners have been employed. This March the mine is planning to produce first tons of fine oil shale to be used at VKG Petroter plant. At the end of 2010 the plans foresee construction start for a mine crushing complex and a 12-km-long conveyor .

Usnova, the second VKG Kaevandused mining field, is located to the east of VKG industrial territory extending to the Narva River, the border between Estonia and Russia. At the Usnova mining field an open cast mining is used, its deposits are estimated at 17 million tons of oil shale.

In order to continue its oil shale supply after the available mining fields have been exhausted, VKG aims to apply for a permit to mine oil shale in new mining fields near Uus-Kiviõli, Oandu and Seli. The total volume of these oil shale deposits is 437 million tons.
In December 2007, a permit was issued to VKG for exploring and mining ca. 350 million tons of oil shale in the Boltyshki deposit in Ukraine. The Boltyshki site is the only Ukrainian oil shale deposit with a big industrial potential, its total volume of oil shale reserves is estimated to be 3.8 bln tons. Due to many restrictions, the volume of excavated reserves is considerably smaller. The Boltyshki deposit is located 250 km to south from Kiev, in the Kamensk district of Cherkassy Region. Oil shale is here deposited deeper than Estonian one – 40 to 120 meters beneath the surface. The calorific value of the registered oil shale is 2000 to 2500 kcal/kg, what is equal to the same index of Estonian oil shale.
Also, VKG is interested in the big oil shale deposit Alexinace in Serbia. The cooperation with the Geology department of Belgrad University started in 2008 has been finished because of economic depression, but the concern is planning it to be continued in 2010.


Trilobite petrified in a piece of Estonian oil shale.


Equipment in use in the mine.


Drivage works in Ojamaa mine.


Team of miners at Ojamaa.

Oil Shale Processing

The oil shale won underground and in open cast is transported by rail to VKG industries situated in Kohtla-Järve, where it goes to shale oil plants of VKG Oil joint stock company.

In its plants VKG Oil extracts up to 80 % of energy potential of its raw material in form of shale oil and shale gas, and it is a very high rate for production units. From one ton of oil shale it can be extracted appr. 16,5 % of crude shale oil and appr. 500 m3 of shale gas. In 2009, VKG Oil processed 1,8 mln tons of oil shale and produced 215 000 tons of crude shale oil. The production forecast for 2010 is 340 000 tons of crude oil.

The crude shale oil is refined from mechanical impurities, tar water containing oil shale phenols is separated, and then shale oil is distilled into different fractions. The final products of oil shale processing are various heating oils for boilers and additives to marine fuels, oil coke used in the electrode industry and shale oil bitumen used in road construction. The shale oil produced by VKG Oil is used in all Baltic Sea ports. Due to its high qualities, this oil is in demand by all the ships navigating in severe conditions of the Arctic Ocean and the Baltic Sea.

Oil coke is produced by coking shale oils distillation residue, and it is used as a quality raw material for manufacturing anode masses and electrodes. Oil coke has low sulphur content, good graphitization, low content of harmful contaminants, such as vanadium, nickel, zinc and natrium. Electrodes made from oil coke have relatively low electrical resistance and low specific loss.

VKG Oil AS has five oil plants. Four of them were built within the period of 1940–1990, and they are operating with Kiviter technology where vertical retorts are used. Kiviter-type retorts are very effective and reliable. During last years VKG Oil has made a big contribution to automation and mechanization of its plants, and this activity has enabled to increase the plants` efficiency even more.

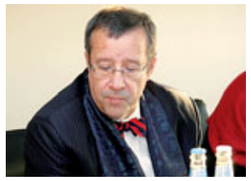
In October, 2009 VKG built a new oil shale processing plant. The new plant operates using the Solid Heat Carrier technology called Petroter. The new plant bears the same name.

Preparation works for the construction of a new plant started at VKG at the beginning of the year 2002. Project preparation works started in 2005, construction works started at the beginning of 2007. All buildings and equipment belonging to the new plant were finalized by October, 2009.

27 enterprises took part in the designing and construction works for the new plant, the biggest subcontractors among them were Remeksi Keskuse AS, Fredmaster AS and Viru RMT OÜ. The new plant employs 100 people.

The project costs have amounted to 1,1 billion kroons. The new VKG plant is one of the biggest industrial investments starting their operation this year, and it was financed by Nordea Pank and SEB. The new plant is planned to reach its normal operation mode by May, 2010, and as the result hereof the production capacity of VKG will increase by 40%.

Within next years VKG plans to extend its oil production and to build new oil plants. To do this, it has been planned to use the amount granted with the yearly mining licence of the concern which is now 3.5 mln tons per year, and to apply for additional mining licences for Uus-Kiviõli mine. Thanks to that it could be possible to increase the amount of raw material to be processed up to 6 mln tons per year. According to the Development program of the enterprise, the plans are to increase oil production from actual 350 000 tons up to 500 mln tons per year. When this goal is achieved, we would like to construct a modern oil refinery aiming the production of motor oil.


President of the Republic of Estonia, guest at VKG (November 2008).


Handing over to Nikolai Petrovich of a symbolic key of Petroter plant.


Petroter plant.


New tank storage park at VKG Oil AS, finished investment of 2009.

Oil Shale Chemistry

Besides energy carriers shale oil and shale gas, VKG Oil also produces oil shale chemicals. The retort water separated when processing the oil shale is directed into phenol recovering units, where total phenols are extracted from the water.

To ensure the widest use of oil shale phenols, total phenols are extracted in the phenol rectification unit. The most valuable part hereof are alkylresorcinols with their high reactivity; they can be widely used as raw material in the synthesis of chemical products.

Now the enterprise produces fine chemicals with high purity (over 99%) in ten tons, and a part of chemicals even in hundreds tons. The plans for future are to increase these capacities even more – a designing of a new unit is ongoing, and its construction is planned to be started in the years 2010 – 2011.

These fine chemicals produced at VKG Oil AS are used in various compounds, for example, in car, rubber and construction material industries, in pharmacy and perfumery. In 2007, VKG Oil started extracting 2-metylresorcinol (MR) from total oil shale phenols. It is mainly used in production of hair colours. At present time such fine chemicals as 5MR, 2,4-dimethyl-resorcinol, 2 MR, 4-dimethylresorcinol and 4 MR are in production. Use of oil shale as raw material for chemical industry makes VKG Oil a unique oil shale processing company in the world.

The second area of use for oil shale chemicals are adhesives, resins and products for construction chemicals, which belong to VKG Oil production, as well.

The company plants in Kohtla-Järve and Kiviõli produce industrial adhesives for resin-bonded chipboards and veneer in Estonia and neighbour countries. Now the enterprise produces UF-, PF-, ja SF- resins.

„In 2009 the enterprise kept developing its activity in this area. To expand resins production, an American partner has been involved, and in 2009 designing of a new production line started. The plans foresee the final phase of the project to come by the end of 2010, which will be followed by the construction of the new production line and the output of first production."

Anatoli Tchepelevich, initiator of the project for phenols production.

Employees of the unit for phenols recovery at VKG Oil AS.

One of the oil shale processing fabrics at VKG Oil AS.

Equipment for production of synthetic resins.

Oil Shale Power Industry

While shale oil produces energy in heating boilers and machines of VKG customers, shale gas creates values within the company itself. All the shale gas from VKG Oil is used by the energy producer of the company, VKG Energia. VKG Energia owns 2 electric power stations with total heat power of 700 MW. The power stations of the company can burn both shale gas and oil shale. It lets to cover thermal demands of VKG itself, as well as heat requirements of its neighbouring production plants. The heat power generated covers also needs of residents of Järve city district of Kohtla-Järve. In order to use its production capacities more effectively, VKG Energia acquired 41 % of shares in joint stock company Kohtla-Järve Soojus, heat supplier to the city of Jõhvi and Ahtme city district of Kohtla-Järve. In 2007, the design of heating main was started in order to ensure heating water transport from VKG Energia power stations into the central heating network of the cities Jõhvi and Kohtla-Järve.

The electrical capacity of VKG Energia power stations is 47 MW, and it is quite enough both to cover power consumption in VKG and to sell energy to other customers.

Since the beginning of 2010 the enterprise has relaunching its project on construction of a new turbine which had been freezen in spring 2009 due to the economic depression.

The concern has restarted the project at the first opportunity in order to use excessive generator gas and heat energy (steam) from Petroter oil plant for combined production of both electric and heat power, as old turbine sets at VKG Energia cannot cope with converting of all additional amount of heat energy into electricity. The objective of works which are starting this spring is the installation of a new 27 MW steam tourbine, an electric generator and a cooling tower. The total amount of investments made is 253 mln kroons, whereby 148 mln kroons were spent in 2009 to purchase equipment, and 105 mln are to be spent for investment plans in 2010.

The new turbine set is a combined production unit with much higher efficiency coefficient, it will turn the cycle of combined production of electricity and heat more effective and long. Air pollution will decrease as additional generator gas has a very low sulphur content, and it will be possible to use valuable CO2 quota more savingly after the new turbine is put into operation.

VKG Elektrivõrgud, also a part of VKG, owns the distribution network covering the territory between the cities of Narva and Sillamäe. This region with appr. 100 000 residents gets its electricity supplied through the network of VKG Elektrivõrgud, 430 km hereof are high and medium voltage transmission lines, and 380 km are low-voltage transmission lines. Yearly VKG Elektrivõrgud reinvests big amount of money in maintenance and good condition of lines, substations and other units, and it allows to drastically decrease the share of energy losses and to improve the working safety of the power network. Beside old customers the company wins every year new energy consumers, and it increases the operation efficiency of VKG Elektrivõrgud. Together with meeting the demands of private clients and small enterprises, VKG Elektrivõrgud plays an important role in meeting the demands of big production plants located in Narva and Sillamäe.

Andres Veski, Member of the Board of VKG Energia OÜ, on the opening ceremony of the sulphur recovery unit.

VKG Energia OÜ.

VKG Elektrivõrgud OÜ.

An employee of VKG Energia OÜ.

Infrastructure enterprises

All above mentioned production sectors of the company have been directly connected to production of goods. But the operation of subsidiaries described in this chapter is based on rendering services to other production units within and outside the company. An enterprise with a large experience of rendering repair and assembly services, Viru RMT, was established on the base of the previous repair and assembly unit of the former oil shale processing plant. The company is dealing with maintenance and repair of technological equipment, producing of metal constructions and pieces, rendering assembly services, repair and assembly of all types of communications, as well as maintenance of automation systems in daughter companies within VKG. Since 2003, Viru RMT started rendering services in construction of water and wastewater networks, designing of automation control systems and maintenance and development of their software. In 2008-2009 Viru RMT was one of four main contractors for the Petroter plant, and its task was automation of the whole plant, as well as design and construction of oil shale feeding system. The realization of this project required the enterprise to outsource ten subcontractors, all of them finished their work by mid-2009.

VKG Transport, daughter enterprise within the company, as one of the biggest Estonian transport enterprises, renders both international and domestic motor transport and railway services in the field of logistics. Carriage rolling stock of VKG Transport consists of more than 1300 tanks to transport light and dark oil products and chemicals. The enterprise transports hazardous cargo, effects repair and maintenance of railway tracks, forwarding services, rent of rolling stock and tanks wash.
VKG Elektriehitus joint stock company (until 27.03.2007 Narva Elektriteenused) belongs to VKG since July 2006 and renders complex electrical services (mainly in electrical construction) to network enterprises and owners in Ida-Viru County and across Estonia. The customers of the enterprise are VKG Elektrivõrgud (former Narva Electricity Supply Networks) and VKG Energia. The biggest clients are the Port of Sillamäe, Sillamäe Thermal Power Station, Sillamäe Oil terminal and other companies having own objects in the port territory or in the Sillamäe free economic zone, where Narva Elektriteenused is the general contractor for the construction of external power supply networks. The enterprise acts as well as a subcontractor for electric works on other regional construction sites.


Yuri Rybakov, member of the board of Viru RMT.


Carriage rolling stock of VKG Transport AS.


Employees of Viru RMT.

Car cistern of VKG Transport AS.

Recognition of VKG

AS Viru Keemia Grupp and its daughter enterprises have been awarded 14 times in whole. In 2009 VKG OIL AS won the main enterprise award: Best Estonian Enterprise 2009. Review of awards and titles got by the concern:

1. in the frame of the contest „Enterprise Award 2009" VKG Oil AS won in the cathegory „Exporter 2009".
2. in the beginning of 2010 VKG got the title of Doer of the Year in Ida-Virumaa
3. VKG Elektriehitus AS won in 2009 the title of „the best employer of Narva 2008"
4. in the frame of the contest „Enterprise Award 2008" VKg Oil AS was elected among TOP-3 enterprises in the cathegory „Innovator 2008"
5. in the frame of the contest „Enterprise Award 2008" VKG Oil AS was elected among TOP-4 enterprises in the cathegory „Industrial Enterprise 2008".
6. in the frame of the contest „Enterprise Award 2007" VKG Oil AS won in the cathegory „Industrial Enterprise 2007".
7. in the frame of the contest „Enterprise Award 2007" VKG Oil AS was elected among TOP-5 enterprises in the cathegory „Industrial Enterprise 2007".
8. in the frame of the contest „Enterprise Award 2007" VKG Oil AS was elected among TOP-5 enterprises in the cathegory „Exporter 2007".
9. in the frame of the contest „Enterprise Award 2006" VKG Oil AS was elected among TOP-5 enterprises in the cathegory „Local Developer 2006".
10. in 2005 Narva Elektrivõrk AS (now VKG Elektrivõrgud OÜ) won the III-rd place in the contest „The most employees-friendly enterprise" in the cathegory „Family-friendly".
11. in the frame of the contest „Enterprise Award 2005" VKG Oil AS was elected among TOP-5 enterprises in the cathegory „Innovator 2005".
12. The Wall Street Journal Europe mentionned in March 2004 AS Narva Elektrivõrk (now VKG Elektrivõrgud OÜ) as the 10th best European employer among 15 best European employers. This conclusion was made on the basis of a respective research by this Journal.
13. on the basis of a research „Best employers – best results" made in the years 2003/2004 Narva Elektrivõrk AS (now VKG Elektrivõrgud OÜ) won the title „Perfect Estonian Employer".


Priit Rohumaa being awarded as the Doer of Ida-Virumaa 2009.

Nikolai Petrovich, member of the board of VKG Oil AS, picking up the award for the best enterprise.


Members of the enterprise contest 2009.


Team of VKG Oil AS at the enterprise contest.

Social Responsibility

The history of Kohtla-Järve as a town starts in 1946, over 20 years after the oil shale processing complex was established in the region. In the very beginning of the century, before the industrial history of the region started, the future town territory was surrounded with small villages and farms which got ever larger as a result of industrial development due to specialists arriving to get job. Villages expanded during this process had been amalgamated into one town which got the name of Kohtla-Järve and arisen due to the start of operation in the enterprise. Since then the First Estonian Oil Shale Processing Enterprise, later the Lenin Oil Shale Processing Plant, AS Kiviter and VKG, bears its share of responsibility for the regional development.

For years Kohtla-Järve Oil Shale Processing Complex was one of the biggest regional enterprises. Up to now the image of VKG is high in the region, and it employs best specialists, both regional and national. In 2006-2009 the average wage at VKG was higher than the regional and national averages, the wages fund at the concern made in 2009 over 300 mln kroons.

Gross produce, average	2006	2007	2008	2009
Estonian average	9 108	11 027	12 605	12 259
Ida-Virumaa average	6 740	8 383	10 012	10 114
VKG average	9 344	11 400	13 049	14 051

Within last difficult time of economic depression the concern could keep over 90% of its employments. Thanks to the construction of Petroter plant other big regional enterprises were provided with job, as well. Nearly every family residing in Kohtla-Järve is related with the work at VKG or enterprises providing services for VKG.

None of organizations can exist without public support, that is why one VKG objective among others is being a reliable partner to its employees and Kohtla-Järve residents. VKG offers to its employees a lot of advantages stipulated in the collective agreement which has been made between the administration of VKG and the Trade Union.

The concern keeps and develops traditions of oil shale industry which penetrate all levels and areas of an industrial enterprise. Yearly the concern organizes traditional events separately for local residents, labour veterans, children of concern`s employees. Internal traditional events at the enterprise are intended to keep and improve relations between the administration and its employees.

The second large area of social responsibility for the concern is the town and its residents. There are a lot of programs in action at VKG to support different fields of town life – the most support is given to sport events, culture and child welfare organizations. Before Christmas VKG considers applications for sponsoring aiming to help the weakest regional residents.

Support of the Regional Development

Support of Education

One of the VKG priorities in the region is education. VKG helps promoting education and training of oil shale engineers both on national and regional level with grants, scholarships and enabling them to do practical works.

In 2003 VKG founded its nominal grant in the Technical University of Tallinn. Starting from the academic year 2005/2006, VKG began its cooperation with Virumaa College of Tallinn Technical University (the college is located in Kohtla-Järve). In 2008 VKG was entitled by TTU as „Golden Sponsor".

VKG Brings Christmas Joy

Christmas is a very special time of waiting for joy and miracle for all the people without distinction of age, sex or occupation. However, some people need a special care and help at this time, and namely those who cannot fully enjoy Christmas because of illness, old age or loneliness.

To make each Christmas time merrier, each year in December VKG receives applications for Christmas gifts from children and social institutions of the town of Kohtla-Järve and the district.

VKG for Arts

VKG is convinced about necessity and beauty of oil shale industry. Its development and modifications over time are reflected best of all by paintings making part of the private collection of VKG or owned by the Oil Shale Museum. VKG supports Estonian and first of all local artists, and thanks to their interest towards oil shale industry VKG could make a large art collection during these last years. You can see the pictures at the site www.vkg.ee.

VKG for Sports

VKG supports holding local sport activities, such as Alutaguse ski marathon, Sinivoore motocross and chess tournament in remembrance of A. Talpas. Although the apparent priority for VKG sponsor support is wrestling, during last years we also sponsored holding tournaments in ice hockey, chess, sumo and other sports, which we believe are important to promote sports in the region.

VKG as a Promoter of Local Culture

Since February 2010 the concern has started its cooperation with the biggest cultural institution, Concert Centre of Jõhvi. The aim of this cooperation is to enable residents of children`s homes, local poors and pensioners visiting cultural events at reduced rates or free of charge, to support initiatives of young people in cultural area and increase the number of festivals taking place in the region.

VKG initiatives to support its employees

1. Collective agreement

A collective agreement made between employees and administration is an additional initiative of the enterprise in order to support its employees. The current collective agreement expires on 31.12.2011. In 2008 the concern spent 6,5 mln kroons to execute its obligations under the collective agreement. This amount did not change in 2009. Pursuant to the decision of the management, the collective agreement at VKG is extended over both trade union members and other employees of the company.

2. Corporate events

In 2008 a Chemical Worker`s Day, town festival, under the guidance of VKG took place the eighth time. This festival is specific to an oil shale town and according to tradition takes place on last Saturday of May, it is planned for workers of oil shale processing industry and their families. The program of the Chemical Worker`s Day includes a concert, different contests and competitions between enterprises. Chemical Worker`s Day became an entertainment for whole the town, with some thousands of people as participants.

For the sixth year in a row the concern organized in cooperation with town authorities a holiday for its long-service employees. According to the tradition existing at VKG, the holiday takes place on October 1st in the house of Culture Centre of Kohtla-Järve. Each time there is a concert program prepared for long-service employees, and there is a table set with champagne. The holiday is assisted by over 400 long-service employees of our production.

In August 2009 a traditional First Year Pupil`s Day took place at VKG. Each year about 50 children get congratulations from the concern. First Year Pupil`s Day takes place at VKG for the ninth year in a row and has became a full tradition of the concern along with Long-Service Employee`s Day and Chemical Worker`s Day.

3. Internal newspaper

One tradition at VKG among others is a plant`s internal newspaper which has started to be published since the beginning of 1975. Then the paper was bilingual, monthly and was named Leninist. Since than, both the name and the design of the paper have undergone several changes. The internal newspaper Viru Keemik has been published since 2001. During this time over 80 numbers have been published.

4. Trade Union of Chemical Workers

The Trade Union of Chemical Workers acting at VKG includes the employees of VKG Oil AS, Viru RMT OÜ, VKG Energia OÜ, Viru Vesi AS, VKG Transport AS, VKG Resins AS, AS ISS Eesti, AS Nitrofert, AS Novotrade Invest. The professional association of employees of chemical enterprises acts as an organization since 1948 when the first collective agreement was made. Its leader since 1974 until now is Vello Pärnits.


Honouring of Heiki Nabi, World Champion, in the airport of Tallinn.


Reception of residents of the town of Kohtla-Järve at VKG.


Chemical Worker`s Day, 2008.


First-form Pupil`s Day, August 2008.


President Arnold Rüütel taking part in Chemical Worker`s Day.


Signing a support agreement for a doctorate study grant n. a. Paul Kogerman, 2008.


VKG organizes a party for its veteran workers.

VKG supports local culture.

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