

YEARBOOK
2011



VKG

VIRU KEEMIA GRUPP

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Introductory Word of the Chairman of the Management Board



The main value of every company is in its employees. However, VKG is certain that the company's success is provided not only by the people working at the company, who set ambitious goals and put into effect everything that has been planned, but also by the people who live in the neighbourhood and support the development of the company.

For VKG, the time when economic success was based only on the accurately calculated price of the produced goods is far behind. At the moment, our success mainly consists in the right development decisions and in **the possibility for development**. At VKG, everything that is needed for successful performance is available: properly functioning production facilities, raw material for the next 20 years, reliable team, and good partners. **Now we need to provide room for our development. We can do this only in cooperation with the public and through public support, without which no company is able to develop or function.**

VKG is one of the most visible responsible promoters of enterprising in Estonia. It is corroborated by the facts that in 2011 the company received an Environmental Award, while both in 2010 and in 2011 it received the title of a responsible company. For us, these awards first of all reflect VKG's desire to share its success with the region we are operating in and use it for the benefit of the area. Petroter I plant, the opening of Ojamaa mine, the construction of the heating pipeline from Kohtla-Järve to Ahtme, a unique oil shale conveyor, the construction of Petroter II plant, and the shale oil refining facility – this is just a short list of our present and future investments. At the same time, in spite of the long list of our projects, our main aim is not to become the largest, the most powerful, or the most successful company in Virumaa. We want to be a sustainable employer and a development engine in the area.

We aim to become the favourite one.

Priit Rohumaa

Chairman of the VKG Management Board

A handwritten signature in black ink that reads "Priit Rohumaa". The signature is written in a cursive, flowing style.

The Member of the VKG Board has been awarded a White Star Order



Nikolai Petrovič
Member of the Management Board



On February 23rd, 2012 the Member of the VKG Board and head of the best Estonian Enterprise 2009 VKG Oil AS Nikolai Petrovich was awarded **a IV class White Star Order** for the participation in the development of the region by the President of the Republic of Estonia Toomas Hendrik Ilves.

According to Nikolai Petrovich, his order belongs to the whole VKG team.

Introduction

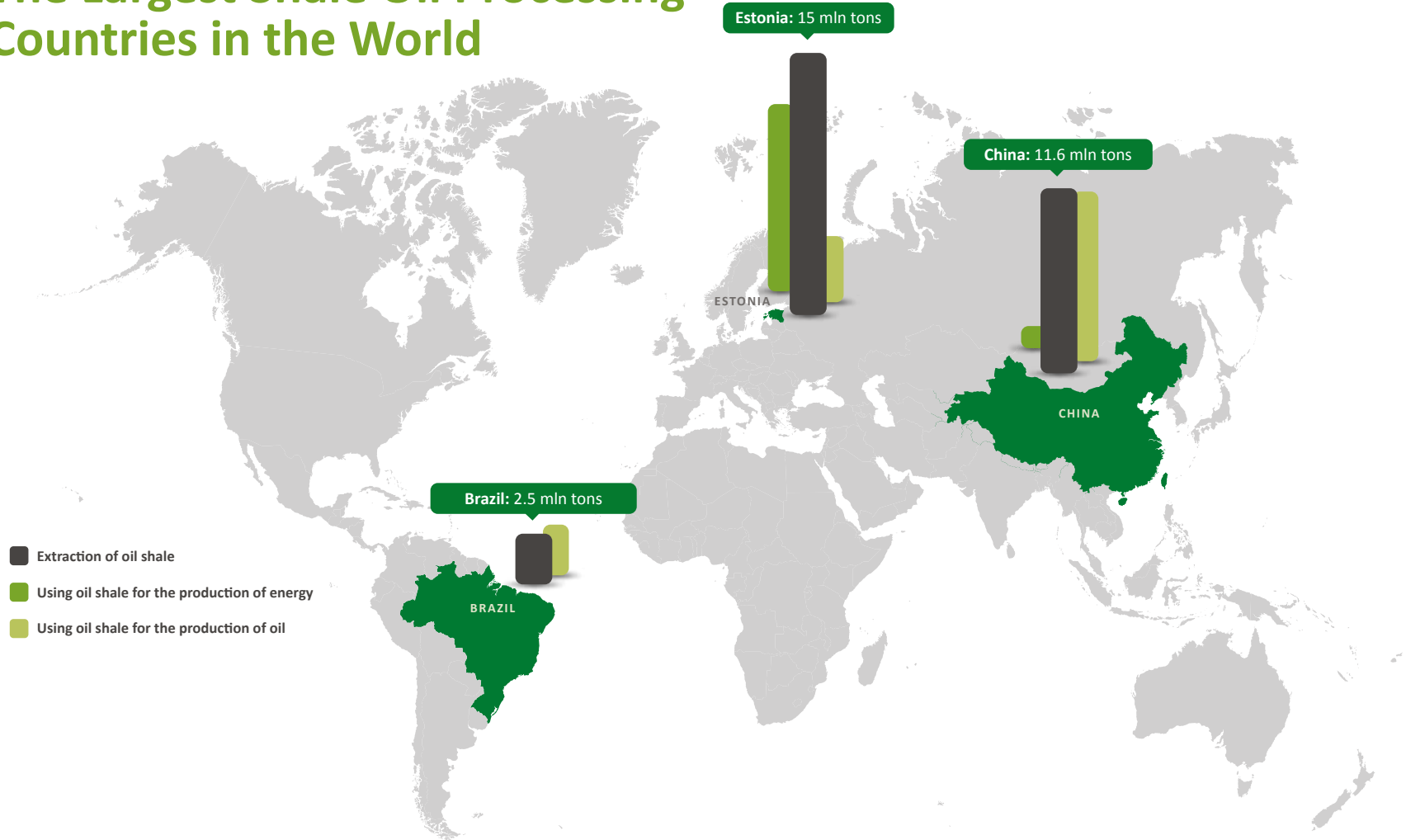
Oil shale can be found in several countries in the world, and its reserves are very large. However, it is extracted and processed only in a few places. In addition to such large countries as Brazil, China, Germany and Israel, at present Estonia is the third place on the globe where oil shale is processed on an industrial scale. The main products of oil shale are fuels, both in the form of shale oil and shale gas.

VKG is the largest manufacturer of shale oil and chemicals in Estonia. In 2011, the processing capacity of the group amounted to 2.4 mln tons of oil shale, and the amount of produced crude oil made up 365,000 tons. VKG covers the entire oil shale processing chain, starting from its extraction and processing and finishing with marketing of fine chemicals. In the world, VKG comes second for its processing capacities after the oil shale processing facility in Fushun, China, and before the oil shale processing company Petrobras in Brazil.

Awards and Recognition of VKG in 2009 – 2011

- **The Best Estonian Company 2009**, VKG Oil AS
- **“The Best Company in Ida-Virumaa 2010” Award**, VKG
- **A Responsible Estonian Company 2010**, VKG
- **A Responsible Estonian Company 2011**, VKG
- **“Environmental Award 2011”** in the category *Environmental Management*, VKG
- In 2003-2012, VKG and its subsidiaries have been acknowledged more than 20 times.

The Largest Shale Oil Processing Countries in the World



VKG's Activities

- Extraction of oil shale
- Production of shale oil and chemicals
- Production of synthetic resins and chemical products for construction
- Production and distribution of heat and electricity
- Provision of repair, assembly, transportation, and water supply services
- Construction of construction blocks

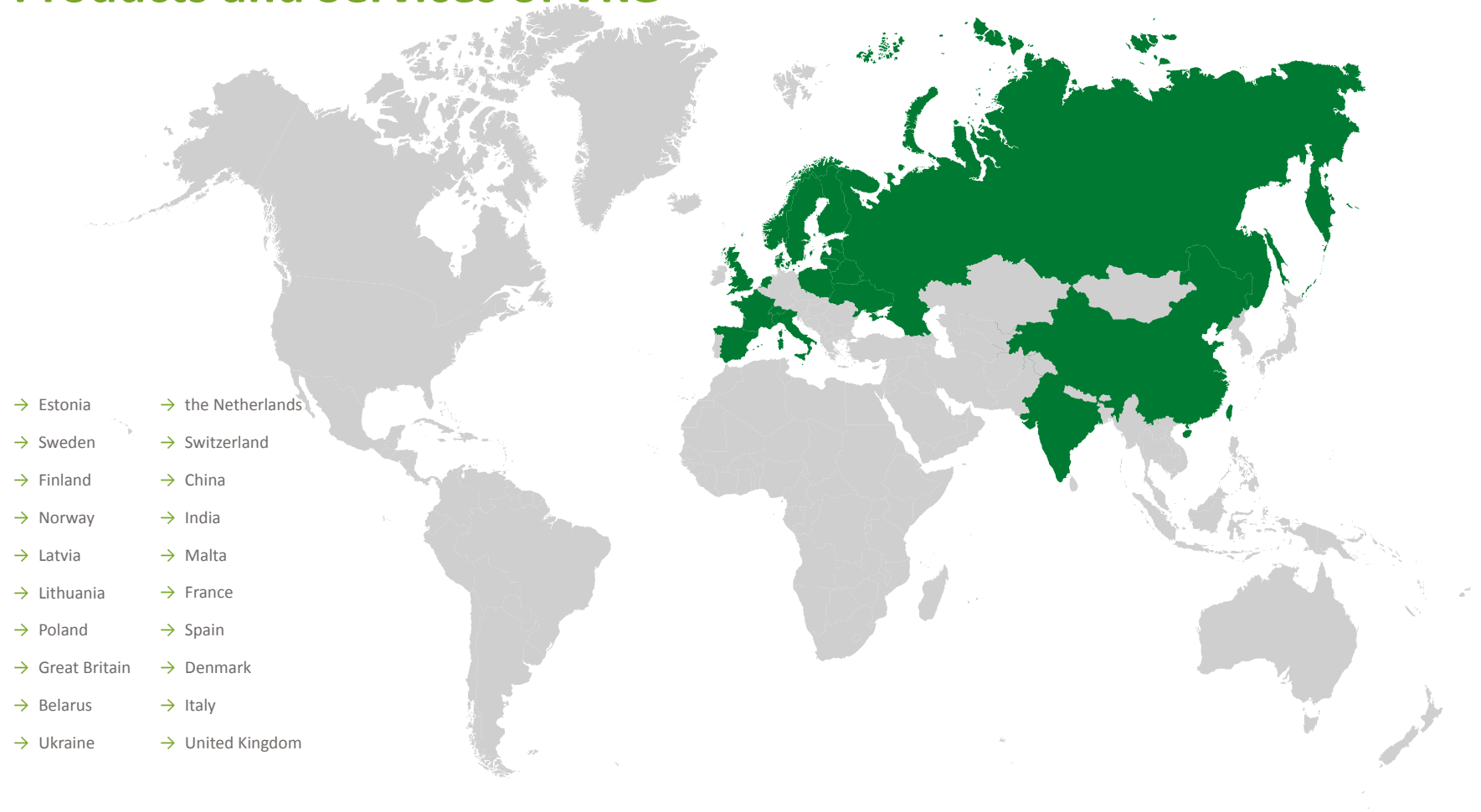
Use of Oil Shale

- Ship fuels
- Fuel oils
- Fine chemicals for perfumes and make-up
- Raw materials for tire fitting industry
- Construction of building materials, construction blocks

Main Indicators

- The largest chemical industry company in Estonia
- Over 1,800 employees
- In 2011, the turnover and the profit made up 183.5 and 29.4 mln EUR respectively
- A new mine with the total capacity of 3.2 mln tons of oil shale per year is under construction
- In 2010, an oil shale plant, operating on the basis of a new Petroter technology, reached its full capacity. At the moment, Petroter II and Petroter III plants are being designed.

Geographical Distribution of the Products and Services of VKG



Events in the

→ JANUARY

The start of large projects in the field of environmental protection: reconstruction of the fractionating column, the start of designing the area for ash accumulation at Petroter, the continuation of reconstruction of water purification stations on the territory.

→ FEBRUARY

VKG contested the issue of Uus-Kiviõli extraction permit. VKG believes Uus-Kiviõli reserves should be distributed between the two applicant companies, VKG and Eesti Energia, fairly.

→ MARCH

VKG took over the local heat production and distribution company Kohtla-Järve Soojus AS (the Contract of Purchase and Sale of 60% of share capital was signed in December 2010 together with Eesti Energia AS).

Also in March, the brand-new heat-only boiler station was opened. The new heat-only boiler station provides the district with heat during the period of construction of the heating pipeline, i.e. during 2012.

→ APRIL

VKG purchased the bankruptcy estate of Silbet Plokk OÜ. Within a year, the first employees were hired by the company, and the new subsidiary named VKG Plokk was founded. Hannes Niinepuu became the Member of the Management Board. The goal of VKG is to restore the production of blocks.

The erection works aimed at the construction of the crushing and courting facility started in Ojamaa mine. The launch of the facility is scheduled for the 1st half of 2012.

→ MAY

Organisation of the Kohtla-Järve folk festival – the Chemists' Day – in cooperation with Silmet Molycorp, Eastman, and Novotrade Invest, the largest chemical industry companies in the area. The number of participants exceeded 7,000 people.

VKG signed large-scale 3-year grant contracts with Eesti Kontsert and Rahvuskooper Estonia. The total amount of current grant contracts amounts to 100,000 EUR.

Year 2011 at VKG

→ JUNE

In cooperation with PriceWaterhouseCoopers consulting agency, VKG carried out the analysis of the economic impact of the group, and it was revealed that VKG Shale oil production value chain impact is about 1% of the Estonia gross domestic product (GDP) and almost 1% of the Estonian tax revenue.

VKG and Jõhvi Kontserdimaja launched the first photo contest in Virumaa titled “You are beautiful, Virumaa!”. The contest award panel included Evelin Ilves and Kaupo Kikas. This contest is going to become an annual initiative, and the contribution of young photographers is especially valuable.

→ AUGUST

VKG restored the tradition of celebrating the Miners’ Day. The budget of the folk event, which took place on 28 August, amounted to over 60,000 EUR, and the number of its visitors exceeded 25,000 people.

→ OCTOBER

VKG had an official opening of the new VKG Energia turbine, which is going to increase the volumes of production of electric power of the group by 40% and save the valuable CO2 quota. The cost of the turbine is 16 mln EUR. The project was financed by Nordea, Pohjola and SEB Bank.

→ NOVEMBER

The city government of Kohtla-Järve initiated the development of the detailed plan for the post-processing facility of shale oils and the strategic assessment of its environmental impact. The expected productive capacity of the post-processing facility will make up 14,000 barrels of oil shale crude oil per day. The whole amount of crude oil obtained from VKG production activities will be forwarded to the post-processing facility. At the same time, the assessment of environmental impact is going to make the largest part of the project design works in 2012, and the construction works are going to start in 2013.

→ DECEMBER

VKG filed a complaint to court concerning the decision of the Ministry of the Environment to issue Uus-Kiviõli extraction permit to Eesti Energia AS.

VKG launched a charity campaign among its employees, which is going to last for a year. At the same time, cooperation with the local representative office of Food Bank was initiated.

In December 2011, VKG provided financial support to local children’s homes.

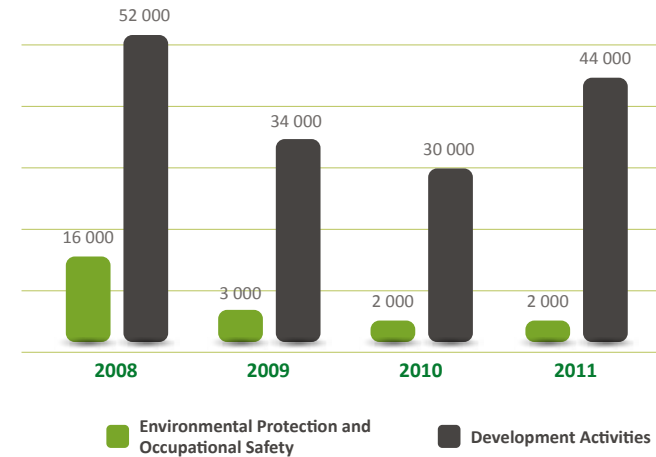
VKG received “Environmental Award 2011” in the category Environmental Management. For the second year in a row, VKG was granted the title of the national responsible company.

Economic Indicators in 2011

→ Consolidated Income Statement (in thousands of euros, unaudited data)

| | 2008 | 2009 | 2010 | 2011 |
|---------------------------------------|---------------|---------------|---------------|---------------|
| Return on Sales | 131 516 | 107 480 | 125 496 | 183 448 |
| Targeted Financing | 92 | 139 | 188 | 191 |
| Cost of Goods Sold | 100 160 | 86 378 | 102 777 | 137 575 |
| Gross Profit | 31 448 | 21 241 | 22 908 | 46 063 |
| Marketing Costs | 2 957 | 3 261 | 3 514 | 3 563 |
| Administrative Overhead | 8 881 | 7 326 | 7 167 | 8 898 |
| Other Revenue | 1 546 | 476 | 9 990 | 18 954 |
| Other Operating Costs | 2 249 | 583 | 645 | 18 455 |
| Operating Profit | 18 907 | 10 547 | 21 574 | 34 102 |
| Financial Income and Costs | -4 033 | -1 348 | -2 260 | -4 485 |
| Profit before Income Tax | 14 874 | 9 198 | 19 311 | 29 616 |
| Extraordinary Costs | | | | |
| Income Tax | 134 | | 85 | 170 |
| Net Profit for the Fiscal Year | 14 740 | 9 198 | 19 227 | 29 446 |

→ Investments into Development Activities, Environmental Protection and Occupational Safety (in thousands of euros)



→ Consolidated Balance Sheet (in thousands of euros, unaudited data)

| | 2008 | 2009 | 2010 | 2011 |
|---|----------------|----------------|----------------|----------------|
| ASSETS | | | | |
| Current Assets | 40 324 | 21 220 | 30 719 | 54 006 |
| Fixed Assets | 304 889 | 321 957 | 326 328 | 352 973 |
| TOTAL ASSETS | 345 214 | 343 177 | 357 047 | 406 979 |
| LIABILITIES AND EQUITY CAPITAL | | | | |
| Short-term Liabilities | 49 057 | 60 203 | 90 077 | 76 848 |
| Long-term Liabilities | 116 190 | 110 015 | 95 932 | 106 214 |
| Total Liabilities | 165 248 | 170 217 | 163 001 | 183 062 |
| Equity Capital | 179 966 | 172 960 | 194 046 | 223 917 |
| LIABILITIES AND EQUITY CAPITAL TOTAL | 345 214 | 343 177 | 357 047 | 406 979 |

→ Balance Sheet Total (in millions of euros)



Priorities, Events, and Forecasts for 2012

Priorities

- Start-up of **Ojamaa mine** in the 2nd half of 2012
- The beginning of construction of **Petroter II and Petroter III plants** in 2012
- **Resuming production of construction materials** at VKG Plokk OÜ; the aim is to use oil shale mineral constituent from Petroter as a raw material in the production of construction materials
- **A start up of the Kohtla-Järve - Jõhvi - Ahtme heating pipeline**

Ahti Puur

Chief Financial Officer,
Deputy Chairman of the Management Board



Forecasts for 2012

- Volume of extracted oil shale – **1.1 mln tons**
- Volume of processed oil shale - **2,4 mln tons**
- Consolidated turnover – **200 mln EUR**
- Consolidated profit – **30 mln EUR**
- Volume of investments - **78 mln EUR**
 - incl. into mining - **36 mln EUR**
 - incl. into Ahtme heating pipeline - **15 mln EUR**

Events in 2012

- **March** – the beginning of construction of the heating pipeline running from Kohtla-Järve to Ahtme, and its start-up in January 2013.
- **March** – the start-up of the long overland conveyor at Ojamaa mine.
- **August** – opening of Ojamaa mine.
- **Year 2012** – the beginning of construction of the Petroter II plant.

Research & Development

Forward-looking development activities serve as the basis for future economic success of the company. VKG is certain that the rational use of oil shale is an important part of Estonian economy both at present and in the future.

Forward-looking shareholders of VKG have contributed to development activities both in good and in difficult times. In 2011, the economic situation at the company enabled us both to intensify our work on the projects that have already been initiated and to create new development trends with a long-term perspective. In addition to numerous searches for contacts and partners abroad, our development activities were primarily focused on the expansion of production and product development in Estonia, while among foreign activities, we carried on the performance of the cost-benefit analysis and geological research, connected with oil shale, in Ukraine.

Jaanus Purga

VKG R&D Director,
Member of the Management Board



Production of Diesel Fuel from Oil Shale

In 2011, the last testing stage of the shale oil refining technology project, which was initiated in 2007, was carried out before the designing of the project of the plant. In May, a European engineering company submitted the comparison of two technologies and the cost-benefit analysis, prepared at the commission of VKG, to the Management Board of VKG and its shareholders. Since in spite of the differences in production processes, both technologies proved to be equally cost-effective, before making the final choice, it was decided to carry on conducting large-scale pilot tests with both technologies. In June 2011, VKG Oil produced a few tons of the “future” oil shale, which was processed into engine fuels at the pilot plants of technology providers. At the end of the year, the obtained results confirmed the adequacy of the decision made in spring, since in the course of pilot tests, the providers of both technologies changed the configuration of the process.

Simultaneously with pilot tests, negotiations with the providers of technologies concerning license agreements, design contracts, and guarantee terms and conditions were initiated. Negotiations with the providers of hydrogen were also carried out, and in the end, the preparation of the design contract was initiated. Negotiations concerning financing were also started, as well as the recruitment of the project team.

At the beginning of 2012, both technology providers will submit new offers that are going to be updated on the

basis of the results of pilot tests, and after that, a solution which is going to serve as a basis for the development of the project of the plant will be selected. The construction of the plant is scheduled for 2013 – 2016.

Oil Shale Extraction

The opening procedures of Ojamaa mine have also reached their final stage. By the end of the year, the 12.5-km long oil shale conveyor, which is the only one in Estonia, and oil shale enriching factory had been built. During the entire year, the mine was also providing supplies for the Petroter I oil plant, while boring works were carried out. The start-up of the conveyor and the enriching plant has been planned for the beginning of 2012, while starting from the 2nd half of 2012, Ojamaa mine will be capable of meeting the VKG demand for oil shale to the fullest extent.

In order to provide long-term oil shale reserve for the existing VKG production and the expected expansions, VKG is also applying for excavation permit in one more research field in Estonia.

Production of Alkylresorcinol Resins

The construction of the line for production of modern alkylresorcinol resins, the planning of which has taken several years, started in spring 2011 after the final coordination of the configuration of technological process and product specification with partners had taken place. After numerous tests, which lasted for years, VKG in coopera-

tion with one of its partners has managed to bring the quality of oil shale alkylresorcinol resins into compliance with the highest modern requirements. As a result, a long-term supply contract was concluded, according to which VKG has an obligation to erect a production facility and to produce alkylresorcinol resins on the basis of Honeyol. At the same time, VKG's partner has an obligation to purchase and market them.

By the end of 2011, all technological equipment had been ordered, and the largest part of civil engineering works had been performed. At the beginning of 2012, erection works will commence, and the first production lot on the new production line will be ready in June 2012.

Production of Construction Materials from the Residual Products of Oil Shale Industry

Large-scale use of mineral matter of oil shale is very important for reducing the environmental impact of oil shale industry and for optimal use of oil shale, being an unrecoverable natural resource. The plant for production of light-weight concrete blocks, which uses oil shale ash and which was acquired by VKG in 2011, is the first step in this direction. In light-weight concrete blocks, produced by VKG Plokk OÜ, oil shale ash is used instead of cement, while the mechanical and thermal properties of these blocks are as good as the ones displayed by the blocks produced from traditional cement and sand. At the end of January, VKG Plokk started up its new production line. All the products bear the registered ROCLITE brand name.

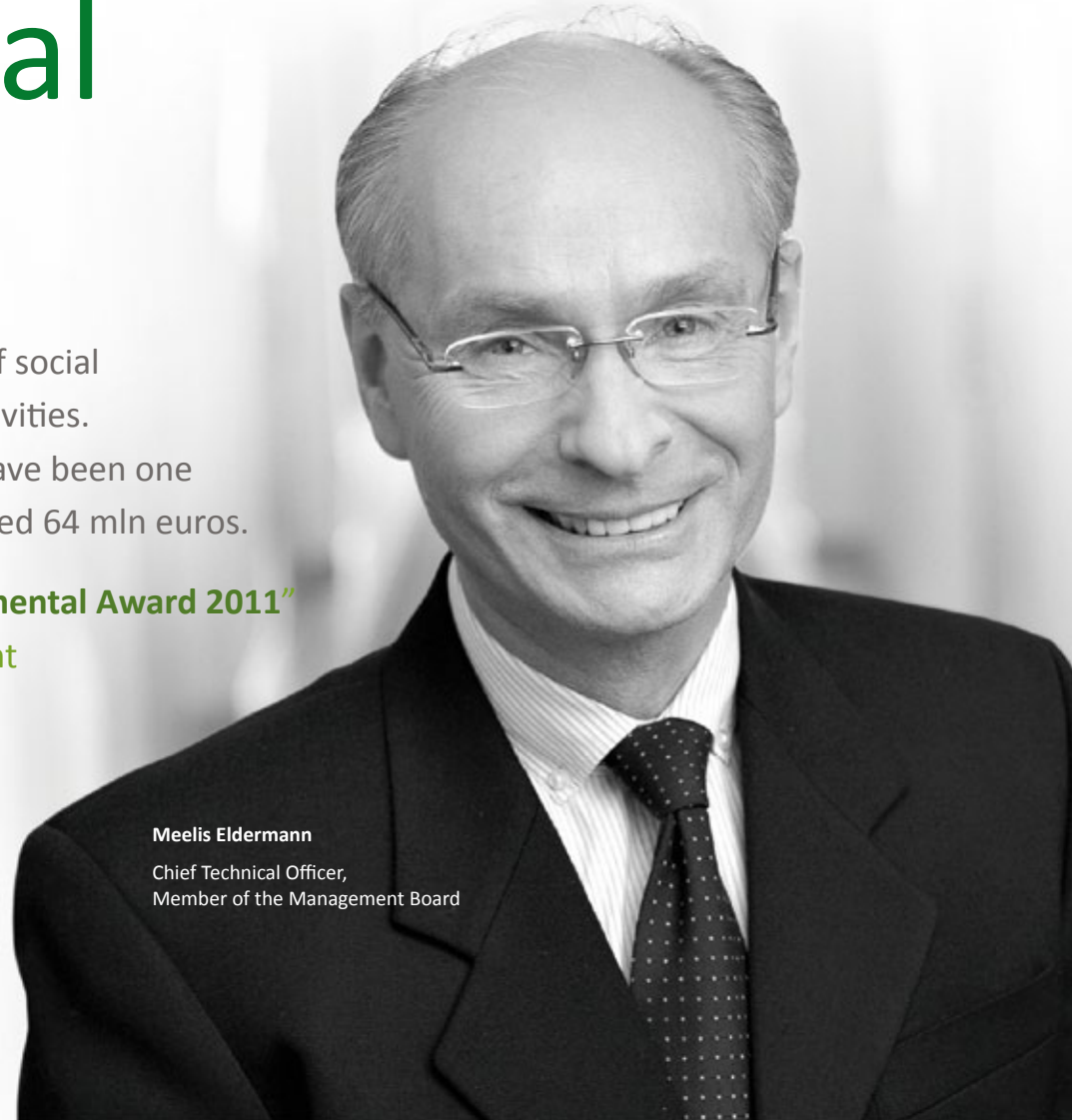
Environmental Activities

Environmental activities of VKG are the backbone of social responsibility of the group and its development activities. VKG's investments into environmental protection have been one of the most significant in the country and they exceed 64 mln euros.



In December 2011 VKG received “**Environmental Award 2011**” in the category Environmental Management

In 2012-2020, the estimated **investments into environment exceed 50 mln euros**. In 2012, the environmental activities and projects, which for the most part were started in 2011, will continue. This year major attention will be paid to the quality of ambient air and to its improvement. In addition to that, ash landfill maintenance works have also started.



Meelis Eldermann
Chief Technical Officer,
Member of the Management Board

Research and Plans for 2012

- The plan for eliminating the sources of pollution that influence the quality of ambient air in the industrial area of VKG Kohtla-Järve will be ready.
- The plan of environmental activities of the group will be ready.
- Energy audit of the group will be carried out.
- The construction of the Petroter II plant is under planning.
- The report concerning the assessment of environmental impact of the Petroter II plant will be ready.
- The research of cost-effectiveness of using mine waters as cooling water.
- The research of the possibilities for increasing the bonding of SO₂.
- Strategic assessment of environmental impact of shale oil post-processing facility.

Projects Aimed at Reducing Industrial Impact

- The cleaning-up and closing of the old wet ash landfill of VKG Energia for the protection of water, air, and soil from industrial impact.
- The closing of the old ash landfill at VKG Soojus Ahtme thermal power station.
- The heating pipeline servicing Ahtme district will be completed.
- The implementation of the 3rd stage of the project aimed at purification and disposal of industrial wastewater.
- The continuation of reconstruction of oil production container park in order to reduce the amount of emissions into air.
- In the field of occupational safety, it has been planned to place special emphasis on workplace health promotion. For 2012, the practical training of operating in an emergency situation for the company's staff comprising over 1,800 employees has been scheduled.

An aerial photograph of a lush green valley. In the foreground, a herd of sheep grazes in a field. A small, cylindrical stone tower stands in the middle ground. In the background, rolling hills are visible under a soft, golden light, suggesting a sunrise or sunset. A small farmstead with several buildings is nestled in a valley to the left.

Social Responsibility

VKG is one of the most vigorous promoters of the concept of social responsibility in Estonia. The following aspects are the group's priorities in this field:

Environmental Protection

The goal of VKG is to reduce or eliminate industrial impact. In 2001-2011, the amount of investments into environmental protection was 64 mln euros.

Our employees

Our priorities are occupational safety, extensive collective agreement with additional benefits, the chemists' trade union, the salary of the employees, which exceeds the average salary on the district and national scale.

Ida-Virumaa

An ongoing dialogue with the locals, the support of cultural and sports institutions and events, the organisation of traditional folk events in the district (the Chemists' Day, the Miners' Day, the Day of the Elderly People), the support of local education, and also scholarships named after VKG both in Ida-Virumaa and at Tallinn University of Technology are VKG's own initiatives, aimed at narrower target groups

Culture and Sport

The support of nationwide important organisations (Rahvusoooper Estonia, Eesti Kontsert, Estonian Wrestling Federation).
The collection of paintings on the topic of oil shale industry.



In the last two and a half years, the amount of financial support provided to local and nationwide sports, cultural and educational institutions had exceeded 350,000 euros. In 2011, VKG provided help and support to the following organisations:

Nationwide organisations

Eesti Kontsert
Rahvuskooper Estonia
Estonian Aviation Museum
Estonian Wrestling Federation
Maarja Päikesekodu
National Development Fund
Sports Events Team (*Spordiürituste Korraldamise Klubi*)

Virumaa organisations

Ahtme Arts School
(*Ahtme Kunstide Kool*)
Hockey Club *Viru Sputnik*
Football Club *FC Lootus*
Ida-Virumaa Sports Association
(*Ida-Virumaa Spordiliit*)
Jõhvi Concert Hall
(*Jõhvi Kontserdimaja*)
Jõhvi Music School
(*Jõhvi Muusikakool*)
Kiikla Children's Home
Kiikla Community Centre

Events

PurFest festival at Purtse river
ELO – all-republic youth winter games
Events organised by Tallinn University of Technology:
Energy Week, Chemistry Week
BEST engineers' competition
JOFF – Jõhvi Film festival
Rakvere Gymnasium Film Festival
Mäetaguse Manor Days
Maidla Manor Lights
Summer camp for the Rescue Board
Alutaguse Cycling Mini Rally
Viru ski marathon at Mõedaku Sports Centre
Christmas tournament

VKG's Own Initiatives for the Promotion of Local Life

The first photo contest in Virumaa: "You are beautiful, Virumaa!"

In 2011, the photo contest "You are beautiful, Virumaa!" took place in Virumaa for the first time. The contest was set in motion by Viru Keemia Grupp and Jõhvi Concert Hall, and other companies from the district joined in later. The aim of the contest was to capture the beauty and diversity of Virumaa, and also to offer some kind of hobby for young photographers.

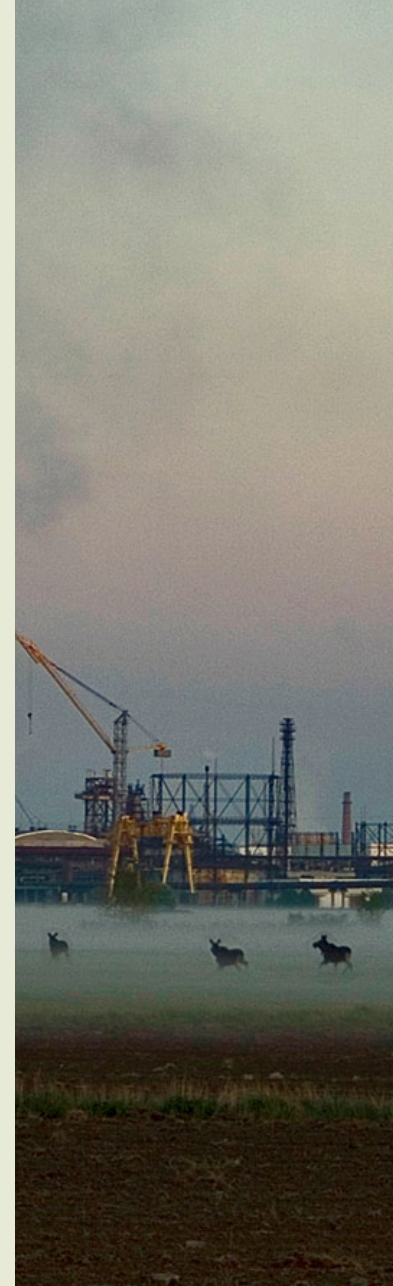
The contest award panel in 2011 consisted of Evelin Ilves and Kaupo Kikkas. The first contest lasted slightly longer than four months (from 27 June 2011 until 1 November 2011), and during that time, around 1,500 beautiful shots by about 300 authors were submitted. Over 30 photographers were acknowledged at the end of the contest. In 2012, the next photo contest has started, at the end of which a photo exhibition will be organised and a brochure with the photographs of Virumaa will be published.

Detailed information about the contest: www.vkgsoojus.ee/konkurss.

Electrical Safety Campaign for Children

At the beginning of 2012, VKG Elektrivõrgud OÜ started the electrical safety campaign, which is first of all meant for pre-school and elementary school children. The goal of the campaign is to inform small children about the danger of electricity and to increase their level of awareness. For the campaign, a poster and an education game about electrical safety have been created. Posters are distributed in all local schools and kindergartens. The aim of the bilingual game is to provide children with small hints concerning electrical safety. In the future, the company is planning to publish useful information in the children's section of its webpage as well as to add the overview material concerning electrical safety.

Additional information about the campaign: www.vkgev.ee/lastele.





Kaljo Kiisk Scholarship for Young Filmmakers

In 2009, VKG in cooperation with Jõhvi Concert Hall and Jõhvi parish government founded the scholarship for young filmmakers, named after Kaljo Kiisk, the director and actor from Ida-Virumaa.

The founders of the scholarship want to commemorate Kaljo Kiisk (1925-2007). The goal of the scholarship, which amounts to 2,500 EUR, is to support young filmmakers, who have used Ida-Virumaa in their creative work, and to encourage young filmmakers to discover, explore, and capture the diversity of Ida-Virumaa. At the beginning of 2012, the founders will issue the second scholarship. The first scholarship was granted to Liis Nimik (Alasti Kino, www.alastikino.ee) for the film "Helene elukool" from the series about Estonian success stories.

Introduction of Charity Work among Employees

In December 2011, VKG proclaimed the beginning of the Charity Year in the team consisting of over 1,800 employees. The company started with creating opportunities for charity work for its staff. In December and January, the company's employees donated food products to Jõhvi Food Bank and also toys and children's clothes to local children's homes and kindergartens. In 2012, VKG is planning to add a different new charity initiative every subsequent month. The campaign is titled "Being a Good Person is Easy".

Additional information about VKG's social initiatives can be found on Facebook and on the group's homepage:

→ www.vkg.ee

→ www.vkgsoojus.ee

→ www.vkgev.ee

→ www.facebook.com/virukeemiagrupp

Maintaining the Traditions of the Industry

The Chemists' Day

A folk festival organised at the initiative of VKG in cooperation with the largest chemical companies in the region, such as Molycorp Silmet, Eastman, Novotrade Invest. The tradition of the Chemists' Day was restored in 2000, and in 2011 the 10th Chemists' Day took place, in which over 7,000 people took part.

The Day of the Elderly People

In cooperation with Kohtla-Järve city government, every year VKG holds the Day of the Elderly People. The veterans of labour in the oil shale industry as well as all other elderly people who have made a contribution into the development of their lovely city, take part in this event.

The Miners' Day

In 2011, VKG restored the tradition of celebrating the Miners' Day. VKG attaches great importance to celebration of the Miners' Day as a folk festival in the future. The organisation of the holiday is the company's display of respect and a deep bow both to all miners and to local inhabitants. Over 25,000 people took part in this event in 2011, while the budget of the Miners' Day exceeded 60,000 euros.





An aerial photograph of an industrial complex, likely an oil shale processing plant. The image shows several large, multi-story buildings with light-colored facades and dark roofs. There are extensive green spaces, including lawns and trees, interspersed among the buildings. In the background, more industrial structures and a red-roofed building are visible. The overall scene is a mix of industrial infrastructure and natural greenery.

Fields of Activity

Our business philosophy is the full discovery of mineral and organic potential of the most valuable useful mineral in Estonia and the management of the entire oil shale industry chain, starting from oil shale extraction and finishing with marketing of fine chemicals.



Oil Shale Extraction

VKG is operating within the entire oil shale processing chain, starting from oil shale extraction and finishing with marketing of fine chemicals. Oil shale extraction is the latest area of the company's business, since for many years VKG supplied the total amount of oil shale, required for its production activities, from Eesti Energia Kaevandused AS. Starting from 2012, Eesti Energia Kaevandused does not satisfy VKG's need for raw material any longer, and in 2013, VKG will have to be able to provide itself with raw material by its own means.

VKG obtained extraction permit for Ojamaa mine in 2004. The preparation works for opening the mine started in 2007, and in July 2009, the works on the site commenced. It is expected to open the mine in August 2012. In the same year, the mine is also expected to reach its full capacity.

Starting from August 2010, Ojamaa mine started supplying fine oil shale to Petroter I plant. During 2011, Petroter I plant received raw material only from Ojamaa mine.

VKG is also interested in oil shale deposits abroad: the group already holds the extraction permit in Ukraine for about 350 mln tons of oil shale. The company's long-term strategic goals include the construction of one modern oil shale extraction and processing facility outside Estonia.

- In Estonia, VKG has the excavation permit for **75 mln tons of oil shale** (Ojamaa and Sompaa mines).
- Ojamaa mine should be able to meet the needs both for fine oil shale for Petroter technology and for crushed stone for Kiviter technology.
- When working at its full capacity, Ojamaa mine will provide **from 2.5 up to 3.5 mln tons of oil shale per year**.
- The total volume of investments into the construction of Ojamaa mine amounts to **108 mln euros**. The main investor under the project is the consortium of the largest Scandinavian banks **Nordea, SEB, and Pohjola**.
- In 2011, Ojamaa mine supplied **over 670,000 tons of fine oil shale** to the VKG Petroter I plant (in 2010, the volume of fine oil shale **supplies reached 70,000 tons**).
- At the end of 2010, **the construction of the 12-km conveyor, the only one in Estonia**, started. In January, the conveyor start-up works will be launched. A long overland conveyor joins VKG production facility and Ojamaa mine.
- The main partners of VKG under the Ojamaa mine project are **the largest European machine construction groups**.

Social Responsibility



- During the construction of the mine, the company maintains an **ongoing dialogue with local inhabitants and the local government**.
- The new mine will help to create **over 400 new well-paid workplaces in the area**.
- VKG is one of **the largest supporters of sports events in Mäetaguse parish** and the promoter of healthy lifestyle.
- When extracting oil shale, **the method of chamber mining**, which has proved to be reliable and cost-effective in Estonia and which avoids sinking of the ground surface, will be used.
- At Ojamaa mine, **modern extraction machines, which have proved to be reliable and cost-effective**, will be used.





Oil Shale Processing

Oil shale extracted from mines and quarries will be transported by railway wagons to VKG production facility in Kohtla-Järve, where it will be forwarded to VKG Oil AS oil factory.

VKG Oil is the group's largest subsidiary, whose main field of activity is production of shale oil and chemicals. VKG Oil manages to extract about 80% of the energetic potential of oil shale in the form of shale oil or gas, which is a very good indicator for processing equipment. The equipment that works on the basis of Kiviter technology obtains about 180 litres of crude oil and about 500 m³ of oil shale gas with the caloric energy of 800-900 kcal from one ton of oil shale. The Petroter I plant, at which fine oil shale with lower caloric energy is used as a raw material, obtains 120 litres of crude oil and 40 m³ of gas with the caloric energy of 8,000-10,000 kcal from one ton of oil shale. The final products are various fuel oils for heat-only boiler stations and ship fuel additives, as well as petroleum coke for the purposes of electrode production, oil shale bitumen for roadway paving, and sheet metal for metal industry.

Shale oil produced by VKG Oil AS is used in all ports of the Baltic Sea as a ship fuel, and due to its excellent properties, it is also in high demand on all ships sailing under severe conditions of the Arctic Ocean and the Baltic Sea.

- In 2011, VKG Oil processed about **2.4 mln tons of oil shale**, out of which **365,000 tons of oil** and **about 21 tons of fine chemicals** was obtained.
- The total amount of investments in 2011 made up **over 2,4 mln euros**.
- The main partners of VKG Oil are well-known companies all around the world.
- The company is using two oils shale processing technologies: Kiviter, which uses crushed stone and on the basis of which four oil shale processing factories, built in 1940-1990, are operating, and Petroter, which uses fine oil shale and which is **an environmentally-friendly oil shale processing technology**, updated by the engineers of the company.
- The Petroter I plant, opened in December 2009, reached full capacity in less than a year after it was opened. In 2010, the new plant processed **260,000 tons of oil shale**, while in 2011, it processed **over 670,000 tons of oil shale**.
- In 2011, designing of **Petroter II plant was started**. In 2012, it is expected to start the construction works.
- The company operates successfully on the Baltic market, to which **about 20% of the total volume of produce** is exported.
- At present, VKG Oil holds the environment, quality, occupational health and safety management certificate, which is valid until 2012, on the basis of standards ISO 9001:2008, ISO 14001:2004, and OHSAS 18001:2007.

Social Responsibility



- The main advantages of Petroter technology, developed by VKG Oil AS, are that it is **environmentally friendly and it enables the use of fine oil shale**.
- VKG Oil, with its staff comprising 600 employees, is **one of the largest employers in the area**, and the average salary at VKG Oil exceeds both countywide and nationwide indicators.
- The company has undertaken additional obligations to its employees (overtime pay for evening and night shifts, additional benefits, bonuses and additional payments for family events), which **exceed hundreds of thousands of euros per year**.
- Management of the company is carried out **in close cooperation with employees**.
- VKG Oil supports local specialized education and awards **several scholarships every year**, named after the company, to the best students of Tallinn University of Technology and Virumaa College of Tallinn University of Technology.
- In 2009, VKG Oil received **the title of the Best Estonian Company**.
- The company has already been using the system of management by objectives for several years, on the basis of which the employees' salaries depend on their performance.



Oil Shale Chemistry

In addition to such energy sources as shale oil and gas, VKG Oil AS also produces oil shale chemicals. One of the most valuable parts of Estonian oil shale are fine chemicals with high reactivity – alkylresorcinols, which are used for the production of perfumes, medicines, make-up, engineering and tyre fitting industries as well as in many other branches of the industry. VKG Oil produces fine chemicals with high level of purification (over 99%) in tens and even hundreds of tons (2-methylresorcinol, 5-methylresorcinol). In the future, it is expected to increase capacity – in 2010, the designing stage of the new production equipment for fine chemicals was completed; in 2011, it was constructed; and in 2012, it will be launched. The company is exporting to the demanding Japanese market as well as to India and China.

Alongside with an increase in production, the company also carries out successful development activities for the production of other phenolic compounds. In 2010, the engineers of VKG Oil separated 2,4-dimethylresorcinol, used for the production of UV-filters, and 2,5-dimethylresorcinol. The development activities are also scheduled for 2012 in order to start the production of new compounds on an industrial scale.

Another important field of application of oil shale chemicals are glues, resins, and construction chemicals. The plant of VKG Oil in Kohtla-Järve produces industrial resins for particle boards and plywood plants as well as for furniture manufacturers both in Estonia and in neighbouring countries. The use of oil shale as a raw material in chemical industry makes VKG Oil AS the most unique oil shale processing company in the world.

- In 2011, the company produced **about 21,000 kg of fine chemicals** and **over one thousand tons of construction chemicals**.
- In 2012, it is expected to produce **29,000 kg of fine chemicals**.
- The price of one kg of fine chemicals with the level of purification of 99% can **exceed 800 USA dollars**.
- Alkylresorcinols are found only in Estonian oil shale; the technology of their separation is **a protected invention of the engineers of VKG**.
- Fine chemicals produced by VKG Oil are used in **Lexus cars**.
- In 2012, the new fine chemicals production facility will start operating, which is going **to increase the capacity of the equipment by up to 50%** and enable the production of twice as many chemicals with as before.

Social Responsibility



- With the help of the scholarship, named after the company, VKG supports active studying and offers in-service training to a large number of local students. **In 2011, about 90 students underwent in-service training** in the company, coming from the local college, from Mainor High School, and from Narva Vocational Training Centre. For good work, trainees receive a good salary.
- In addition to the requirements set out by law, VKG employees are also **provided with additional benefits**, which are listed in the collective agreements concluded between the Management Board and the employees.
- Both in 2010 and in 2011, considerable investments were made into carrying out **maintenance works of the territory of the production facility**.





Oil Shale Power Industry

While oil shale provides energy for heat-only boiler stations and machines of VKG's customers, oil shale gas is a valuable resource within the group. The whole amount of oil shale gas produced by VKG Oil AS, is used by VKG Energia, the energy producer in the group, for the production of heating and electricity. VKG Energia has two power stations with total thermal capacity of 700 MW. Electrical production capacity of the company is 47 MW; and starting from September 2011, it amounts to 80 MW (in autumn, the new VKG Energia turbine was launched). The construction of a new turbine with the capacity of over 30 MW will enable to arrange the combined production of heat and power even more effectively.

Starting from March 2011, VKG also holds 100% of the local heat manufacturer and supply company Kohtla-Järve Soojus AS. From 1 January 2013, VKG Soojus (formerly Kohtla-Järve Soojus AS) will stop heat production in the oil shale electric power plant in the districts of Ahtme and Jõhvi, where the number of inhabitants equals to 50,000 people. Heat is going to be supplied through the pipeline about 18 km long, which will run from the territory of VKG production facility to the Jõhvi-Ahtme central heating network and will use residual heat emerging during the processing of oil shale. Getting ready for the rearrangement of heat supply, VKG Soojus has taken over the entire customer service in Jõhvi and Kohtla-Järve districts. In the result, VKG Energia OÜ has become an exclusively industrial and energy-producing company, the main goal of which is to provide the area with heat supplies, and to produce electricity for the purposes of VKG and neighbouring companies.

The heat produced by VKG Energia also covers the demand for heat of the VKG group and neighbouring installations to the fullest extent. The heating pipeline project, developed by the two VKG energy companies, the goal of which is the supply of heat produced on the basis of oil shale gas to other towns of Ida-Virumaa, started in 2006, when the company acquired 40% of share capital of Kohtla-Järve Soojus. The heating pipeline project was completed in the middle of 2010. The estimated cost of the project is about 20 mln euros. The construction is going to start in March 2012, and the pipeline will be put into operation on 1 January 2013. At VKG Soojus AS, the reserve and peak load heat-only boiler station that works on natural gas will remain in operation, providing a reliable heat supply in the area.

- In 2011, VKG Energia produced **over 300 GWh of heat** and about **170 GWh of electricity**. VKG Soojus produced about **230 GWh of thermal energy**.
- Thermal power stations that belong to VKG Energia OÜ can work on **oil shale, on char gas,** and **on generator gas**.
- Both in 2010 and in 2011, VKG Energia accepted **the whole amount of char gas with high calorific value, produced at the Petroter I plant**.
- In recent years, the investments made into stations have turned the company into an energy producer and distributor with enormous potential.
- VKG Energia is **the second largest electrical energy production and distribution company** in Estonia.
- In 2011, the amount of the energy company's – VKG Energia and VKG Soojus - investments into environmental protection and development activities made up **over 6,5 mln euros**.
- **All neighbouring industrial companies use the produced thermal energy in the form of steam:** VKG subsidiaries, the manufacturer of mineral fertilizers AS Nitrofert, and the manufacturer of benzoic acid Eastman.
- The annual steam consumption is **over 200 GWh**.
- The inhabitants of Kohtla-Järve and Kohtla parish consume heat from heating water through the district heating network at the rate of **about 100 GWh per year** and starting from the year 2013 - **over 300 GWh**.

Social Responsibility



- In spite of the 19 mln euro investment into Kohtla-Järve-Ahtme district heating pipeline, VKG is certain that the price for the heat in the area can remain to be one of the lowest in Estonia.
- When designing the pipeline, the request of the town of Kohtla-Järve concerning cheap heat supplies to smaller settlements was taken into consideration. Thanks to VKG's new initiative, in the future, small settlements will receive thermal energy **up to three times cheaper**.
- VKG Energia is **the first company in Estonia that started using the sulphur trap** (the cost of the device is around 10 mln euros). The next sulphur trap is expected to be built in 2014.
- The works aimed at bonding sulphides, contained in generator gas, during co-combustion of generator gas and oil shale already in the boiler, and at reducing the amount of emissions into air, are to be continued.
- The new turbine was put into operation in autumn 2011, which enabled **the use of the estimated CO₂ quota more rationally**, since with increased production of electrical energy, the air pollution decreases.



An aerial photograph showing a power line tower in a lush green landscape. The tower is a lattice structure with several insulators and cables extending from it. The background shows a winding road and more greenery under a bright sky.

Electrical Energy Distribution

In terms of sales volumes, VKG Elektrivõrgud OÜ is the second largest electrical energy distribution company in Estonia, following the distribution network belonging to Eesti Energia.

The main field of activity of VKG Elektrivõrgud is the forwarding of electricity through the network and the sale of distribution services and the services related to operational management of the electrical system of the company. Besides, the company also provides design, construction, repair, usage, checking, and maintenance services for electrical installations. The lines of VKG Elektrivõrgud supply the area with about 100,000 inhabitants with electricity. VKG Elektrivõrgud has: 4 high voltage 110 kV substations, 8 average voltage 35 kV substations, 333 low voltage 6-10 kV substations, 387 km of overhead lines and 435 km of cable lines.

VKG Elektrivõrgud is the only electrical energy distribution company in its service area, which is why its uninterrupted functioning is very important for local people. The service area of the company includes the cities of Narva, Narva-Jõesuu and Sillamäe, Vaivara Parish, and Viivikonna district in Kohtla-Järve. The main goals of the company are to increase the network service quality level and to continuously reduce the number of blackouts and the amount of electric losses.

Every year VKG Elektrivõrgud makes enormous investments into the maintenance of the lines, substations, and other equipment, and from year to year it has significantly decreased the share of electric losses, and improved the reliability of the network. In addition to existing consumers, every year new consumers start using the company's services, and this intensifies the work of VKG Elektrivõrgud even more. Alongside with the satisfaction of needs of private consumers and small companies, VKG Elektrivõrgud plays a crucial role in supplying electricity to large industrial companies located in Narva and Sillamäe.

- VKG Elektrivõrgud is one of the few companies in Estonia that is good at avoiding electric losses and blackouts. In 2011, technical and commercial losses (the difference between the amount of energy entering the network and leaving it) made up **6.65%**.
- Every year, **millions of euros** are invested into the improvement of **reliability of electrical supply network** and its optimisation.
- In 2011, the sale of network services made up **205.47 GWh**.
- The company's System Average Interruption Frequency Index (SAIFI) is one of the best in Estonia (in 2010 – 0.6; in 2011 – 0.382).
- By 2017, the company is planning to make the entire meter system remotely readable. As of the end of 2011, **47% of meters are remotely legible**.
- In 2011, the quality management system applied at the company was updated with the aim of paying more attention to occupational safety. As a result, the company is using the quality management system that conforms to ISO 9001:2008 and OHSAS 18001:2007 standards.
- The Management Board of the company regards **training of its employees** an essential part of the company's activities. It organises competence-based training, further training, training in the field of safety, as well as knowledge checks for its staff.
- Compared to other companies operating in the same branch of industry, VKG Elektrivõrgud is a company with a relatively **low danger to the environment**. However, in spite of this fact, the company's risk assessments are carried out all the time. The operations related to environmental risks are performed only by the specialists who have undergone special training.
- The customer satisfaction survey, conducted in 2011, showed that the **customers** of the company are **satisfied with the services** they receive; they are very satisfied with electricity supply (blackouts are rare), the response time in case of breakdowns, the politeness and correctness of customer service, etc. The results of the survey show that administration is smooth, and the systems function properly.

Social Responsibility



- The company's employees have an opportunity of becoming members of the trade union. **Collective agreements** are concluded between the Management Board and the employees, which guarantee additional benefits for the staff.
- The company is using the system of management by objectives, on the basis of which the employees receive **additional payments** depending on their performance.
- In 2011, the average salary in the company **considerably exceeded the countywide average**.
- In its sponsorship policy, VKG Elektrivõrgud concentrates mainly on **supporting sports and cultural events** in the area. During the year, the company supported the following institutions/organisations: Narva Choir School, Sports Club *Maletäht*, Sports Club *BK Narva*, Narva Art School, the Department of Culture of Narva City Government, Narva Children's Art Centre, Narva Paemurru Sports School, Noorus-Sputnik Non-Profit Association, Paemurru Sports Club Narvic Non-Profit Association, Pontis Non-Profit Association, Sports Club *Viktoria*, Estonian Authors' Society, Studio Theatre Ilmarine Non-Profit Association, Sports School *Energia*, Sports Club *Narva PSK*, Ida-Virumaa Association of Large Families *Suur Perekond*.







Subsidiaries of VKG

While the group's production areas listed above are directly connected with oil shale processing, the group's subsidiaries demonstrate new development trends, related to the strategic activities of the group. We are talking about provision of new services and production of new products, as well as entering new markets.

Facts

- VKG Transport AS has been operating **since 1999**.
- There are **130 employees**.
- In 2011, the turnover amounted to **18 mln euros**, and the profit made up **5,2 mln euros**.
- About 30% of the turnover of the company is made up of services provided inside the group, which are mainly associated with oil shale processing.
- VKG Transport AS is **the Baltic region' biggest transportation enterprise** dealing with hazardous chemicals portage.
- The amount of investments in 2010 and 2011 reached **1,1 mln euros**. The investment forecast for 2012 is **1,2 mln euros**.
- The employees of VKG Transport are members of the trade union, and **collective agreements** are concluded between the employees and the company, which provide employees with extra benefits.
- Together with other group subsidiaries, VKG Transport supports the traditions of Kohtla-Järve as an industrial city. Besides, the company pays considerable attention to improvement of the internal climate of the company and tries to motivate employees through inside events.

VKG Transport AS

VKG Transport AS is one of the largest transportation companies in Estonia, which provides international road and railway transport logistic services.

Main fields of activity of the company:

- lease of railway tanks, cement wagons, and open wagons
- organisation of international and domestic railway and road transportation of goods
- provision of forwarding services
- international and domestic shipping of dangerous products, or ADR-shipping by road tank vehicles
- services related to special road transport
- railway construction, maintenance and repair services
- domestic container transportation

The wagon fleet of the company consists of about 1,500 railway wagons (tanks for transportation of light and dark oil products, open wagons for transportation of bulk products, cement wagons, and tanks for chemicals). The majority of wagons belonging to the company run on the territory of the Russian Federation and make domestic shipping operations.

In addition to railway vehicles, VKG Transport also owns tank vehicles suitable for the transportation of various chemicals, which operate on all European highways. All vehicles conform to the terms and conditions concerning transportation of dangerous goods (ADR). The staff has undergone special training.

The company holds all licenses and activity permits required for provision of the services listed above, and it follows environment, quality management, occupational health, and safety management systems ISO 9001:2008, ISO 14001:2004, and OHSAS 18001:2007.

Viru RMT OÜ

Viru RMT OÜ has developed from the former repair and assembly department of the oil shale chemical plant, and it has extensive experience in the field of provision of repair and assembly services.

Main fields of activity of the company:

- repair and maintenance of technical equipment
- production, repair, and installation of metal structures
- production of metal parts
- provision of erection services
- development of automatic systems and their maintenance both within and outside the VKG group

From 2003, Viru RMT has constructed water supply and sewage networks, designed automatic control systems, maintained and developed software. In 2006, the company started to perform insulation works, paint industrial equipment, test and fix gas cutting equipment.

In 2007, provision of equipment painting services was initiated. The company is also continuously developing the production of industrial tanks, metal structures, and steel equipment.

Facts

- The turnover of Viru RMT OÜ in 2011 amounted to **11,6 mln euros**.
- In 2011, the number of employees is about **300 people**.
- During the construction of Petroter I plant, Viru RMT was one of the four main contractors at the site, whose main duty was to design and build all automatic systems at the plant, as well as the oil shale feeding system.
- The company's customer portfolio includes companies primarily within the VKG group.
- From the middle of 2009, Viru RMT has been involved in the construction of Ojamaa mine; the company is responsible for the assembly of the long overland conveyor.
- The company holds the certificate **ISO 9001:2000** (TÜV) and the occupational health and safety management system certificate **OHSAS 18001**.
- Viru RMT is one of the few companies in Estonia which maintains lifting equipment and self-propelled cranes with the lifting capacity of 140 tons and the lifting height of up to 80 metres.

Facts

- The largest customers of the company are the **companies of the VKG group, Eesti Energia Jaotusvõrk OÜ, state institutions and local governments** both in Northern and in Southern Estonia.
- The partners of the company are **ABB AS, Harju Elekter Grupp, OÜ Elektros candia Baltics, SLO Eesti AS, Tameo MT OÜ, Esvika Elekter AS, Onninen AS.**
- In 2010, VKG Elektriehitus built the main substation and underlay shaft at Ojamaa mine, including electrical works at the underground conveyor.
- The company's turnover in 2011 **exceeded 3.4 mln euros.**
- In 2008, the company received **the title of the Best Employer** for the fastest increase in salary at Narva companies.
- A strong trade union is operating at the company. **Collective agreements** are concluded between the Management Board and the employees, providing extra benefits to employees.
- Since 2002, VKG Elektriehitus has been **the member of the Estonian Association of Electrical Enterprises (EAEE).**
- The company is updating the **ISO 9001** and **ISO 14001** certificates and implementing the **OHSAS 18001** certificate.

VKG Elektriehitus AS

VKG Elektriehitus AS is the company belonging to the VKG group, dealing with industrial energy and the provision of electrical construction services.

The company has developed from the electrical construction department of Narva Elektrivõrgud AS, which is why VKG Elektrivõrgud is still the largest customer of the company. In spite of the fact that a large share of the turnover of VKG Elektriehitus still comes from Ida-Virumaa, where the company's duty is maintenance of the most eastern electrical networks in Estonia (from Narva to Sillamäe and Vaivara parish), the company's strategic interests are first and foremost directed outside of Ida-Virumaa.

The company has two production facilities in Narva and Kohtla-Järve. It provides construction services all over Estonia.

In addition to providing construction services outside of the group, the company also plays a crucial role in VKG's large projects. Since 2009, VKG Elektriehitus has performed all electrical and construction underground and overland works at Ojamaa mine. In 2010, the most important touchstone was electrical works connected with the construction of the new turbine at VKG Energia OÜ, with the capacity of 30 MW. This project was completed in August 2011, and it was one of the largest industrial and energy projects in 2011 in Estonia (the new turbine enables to set up the combined production of thermal and electrical energy at VKG Energia power stations much more effectively than before).

VKG Plokk OÜ

In April 2011, VKG became the owner of the bankruptcy estate of the former Silbet Plokk OÜ. Before suspending its activities, Silbet Plokk was a production facility the main field of activity of which was production of construction blocks from oil shale ash.

The purchase of bankruptcy estate of Silbet Plokk was a very useful project for the group in the long-term perspective, since for production of construction blocks, the residues of processing of oil shale can be used as a raw material. After the launch of the updated production process, the company will be able to recycle several hundred thousands of tons of dangerous residues, and to restore about 200 workplaces in the area, which were previously offered by Silbet Plokk.

At the end of 2011, a new subsidiary of the group was established – VKG Plokk OÜ. The first 20 employees have already been recruited. The aim of the freshly recruited team is to restore the production of construction blocks and to find synergy between two production facilities. In January 2012 the production on construction block was started up and the selling activity started under the founded Rocklite brand.

Facts

- VKG Plokk OÜ is a unique company in Estonia that manufactures construction materials, using **shale ash as one of the components when producing aerated concrete blocks**.
- We offer wall blocks of new quality, produced on a modern production line, fitted with the equipment of the German company **Masa-Henke Maschinenfabrik GmbH**.
- A wall block made from aerated concrete is an **environmentally friendly** and **ecologically clean** anorganic wall material, which is produced with the help of the autoclave method.
- The company is implementing the ISO quality management standard.
- The company which is going to start operating in 2012 will restore **75 workplaces** in the region.

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