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## Russian utility stocks hold potential to fill in foreign investors' investment portfolios

Simon A. Birg, Chief Investment Strategist of FINAM Investment Company

GIVEN THE INCREASING RISKS OF ECONOMIC SLOWDOWN IN LEADING MAJOR INDUSTRIALIZED NATIONS AND LOWER EXPECTATIONS FROM STOCK MARKET INVESTMENTS IN DEVELOPED NATIONS, EM STOCK MARKETS, INCLUDING RUSSIA, HAVE BECOME MORE ATTRACTIVE IN THE EYES OF PORTFOLIO INVESTORS.

An analysis of 2007 economic forecasts shows that in the coming year the Russian Federation will experience an extremely positive internal macroeconomic environment, which should be conducive to the expansion of its stock market. Despite the fact that price performance of Russian power companies' stocks to a greater extent reflects the dynamics of the entire stock market, the power industry has a lot of specific features related to the ongoing reforms which are producing an impact on the investment appeal of Russian power companies.

Recent years the Russian power industry underwent substantial changes, thus laying the groundwork for qualitative changes on the domestic power market. The reform process aims to boost investment appeal of Russian energy assets. In spite of the fact that the power sector is exposed to additional risks associated with ongoing reforms, Russian power companies deserve special attention of investors, as in-depth analysis makes it possible to identify additional factors for growth in power shares and, consequently, profits in energy stocks. In this article we shall review factors that determine investors' interest in making portfolio investments in Russian power shares.

At the initial stage of the establishment of privately-owned utilities companies,



demand for shares of these companies was based on strategic investors' aspiration to gain monopolistic benefits related to management of power assets and to minimize risks associated with uncertainty in the course of reforms. Apart from strategic investors, demand of portfolio investors is largely driven by such factors as market capitalization and liquidity of power concerns' shares and anticipated return of investments in these stocks.

Of the Western investment funds that invest financial resources in Russian utilities companies, the overwhelming majority are hedge funds and high-risk equity funds that specialize in investments in emerging markets or directly in Russia. We would like to point out the following well-known fund families: Templeton, Credit Suisse, Nordea,

DWS, Pictet Funds and Prosperity Capital. The increasing investment attractiveness of Russia paved the way for Western pension and mutual funds, a new category of investors, to enter the Russian stock market. According to their investment statements, the above funds may channel their funds into countries that hold investment grade credit rating from at least two international rating agencies. Since October 2003 – when Moody's assigned the investment grade credit rating to Russia, national stock index, RTS went up almost 5 times the level of the pre-investment-grade period.

Nowadays, as an attractive component of BRIC countries, Russia could theoretically attract sizeable portfolio investments from conservative investment funds.

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## Mutual Interests in the Field of Energy

Boris Ayuev: 'The System Operator first of all applies the market mechanism for the power system control'

THE SYSTEM OPERATOR BECAME THE FIRST TARGET STRUCTURE COMPANY CREATED AS A RESULT OF RAO UESR REFORM. AND IT'S FIVE YEARS NOW SINCE THE COMPANY BEGAN TO ADMINISTER THE RUSSIAN UNITED POWER SYSTEM. SINCE JANUARY 1ST, 2008 THE COMPANY WILL REFER TO AS THE SYSTEM OPERATOR FOR THE UNITED POWER SYSTEM JOINT-STOCK COMPANY (IN ABBREVIATED FORM - SO UPS). CHAIRMAN OF BOARD OF THE SYSTEM OPERATOR MR. BORIS AYUEV WILL TELL US ABOUT THE PRINCIPLES OF THE COMPANY WORK AND PROSPECTS OF SYNCHRONOUS INTERCONNECTION OF THE POWER SYSTEMS OF RUSSIA, CIS AND EUROPE.

— Mr. Ayuev, will you name us the functions the System Operator will carry out after RAO UESR re-structuring is over?

— The base functions of the System Operator

are established by the applicable legislation of the Russian Federation. First of all, I mean power system control and maintenance of its reliable performance and development. Also, such System Operator's tasks as providing reliable functioning of power systems and their development are no less important for the field.

After RAO UESR restructuring is finished, the System Operator will get a number of key functions including monitoring generation and network facilities and the progress of implementing investment projects in the electric power industry. Fulfilling these functions, we can make the power system more reliable in its current condition and provide the most effective development and proper operation of the Russian power system in all planning horizons. These functions have already been legally assigned to the System Operator.

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## NOREM's First Year in Russia



IT HAS BEEN MORE THAN A YEAR SINCE THE LAUNCH OF THE NEW WHOLESALE MARKET OF ELECTRIC POWER AND CAPACITY (NOREM). FYODOR OPADCHY, DIRECTOR OF DEVELOPMENT AND SUPPORT OF MARKETS JSC "SO-TDU UES" WILL TALK ABOUT THE FULFILLMENT OF HOPES THAT WERE BASED ON THE MAIN PRINCIPLES OF NOREM AND HOW MUCH THE NEW ORGANIZATIONAL MODEL OF THE MARKET PROMOTES IMPROVED WORK RELIABILITY OF THE UNIFIED ENERGY SYSTEM OF RUSSIA.

"It is possible to say, that in September of last year, the energy sector entered a new era of its development. To ensure the successful operation of NOREM, the System Operator has resolved a considerable list of problems. We have also developed and introduced new technologies of planning methods, powerful hardware-software systems, and an information exchange system with Market and Observation Unit (ATS) "automatic telephone exchange" participants.

The main result from a technological standpoint was the successful introduction of the new market. With the NOREM launch, investors were able to clearly see the risks and results of their investments in the power sector facilities. This made investments into

the sector more attractive, especially in power producing companies.

The hope invested in NOREM paid off. According to new rules, the free trade sector was reorganized into the "Day-Ahead Market", which together with already existing market-balancing, allowed more flexibility for electric power sellers and buyers to respond to changes in supply and demand.

If in previous model of the wholesale market there were two sectors, one which sold electric power according to regulated prices, and in the other according to free prices; now, in the new model of wholesale market there is no division of participants into regulated and free trade sectors: All buyers are participants of the unified electric power and capacity wholesale market. Today access to the wholesale market, planning regulations in production and consumption of electric energy, and financial consequences of each deviation of actual volume from the scheduled ones are clear and understood by all market participants.

These dramatic changes associated with the NOREM launch, substantially improved the reliability of Unified Energy System operations which performs one of the major tasks of the System Operator. With the NOREM launch was the commissioning of a totally new unique monitoring system of the condition of the generating equipment where all levels of dispatching management: Regional Dispatching Office, ODE, Central Dispatch Administration are involved.

Today the condition of each generator at each power plant, working in structure of the Integrated Power System, energy that it produces, its participation in primary regulation of frequency and voltage is recorded hourly.

At obvious increase in new market conditions, the System Operator role and primary task has not changed: Each day we provide reliable operations of the Unified Energy System of Russia. However with the introduction of NOREM, the System Operator created conditions for more precise and responsible observance of the market rules by its all participants: from administrative command principles of management in

relations with electric power sellers and buyers, we moved to the market methods.

Additionally, in order to form the optimum methods for the Day-Ahead it requires precise and trustworthy information that the System Operator has. He makes the long-term forecast of consumption, makes actualization of perspective of the analytic Unified Energy System model for years ahead and defines the demanded technical parameters of generation.

The role of the System operator in further NOREM development is very important because the process of the final target model of country power sector formation is not completed yet. In the near future two more markets - the power market and the system services market will be launched. The capacity market is planned to be launched in the short-term until the end of this year; but, in the long-term in 2008, it will provide an opportunity to meet the demand for the electric power in particular region for the next several years.

As soon as it is launched, then investors will receive more signals for investments into the power sector; then, not only will the energy sector develop, but entire national economy as well. The System Operator, who is substantially responsible for the power supply system development, is the person who is highly interested in launching of the energy market and is completely ready for it. The system services market is necessary for reliable operations of the Unified Energy System in Russia and maintenance of appropriate electric power quality.

All these innovations are designed to physically and economically optimize relationships between various participants of the productions and current consumption of energy. Today the tools are defined for determining actual supply and demand of electricity and power.

In terms of strengthening the market stability the development of legal framework will be performed and the System Operator will play an active role in this process. Today, all relations of the System Operator with market subjects are well-regulated at the level of governmental orders of the Russian

Federation that define the rules of operation-dispatching management in power industry.

First of all, we talked about the wholesale market rules approved by Supervisory Council Observation Unit "Automatic Telephone Exchange" (ATS), which are the appendices to the Treaty of Accession related to the wholesale market trading system. Certainly, the regulatory framework of the wholesale market demands adjustments. It is the normal working process which is carried out in order to further development and improve overall market performance. It is necessary to understand that when we speak about "entering the energy market" and "entering the market" system, we mean not only innovations in technologies and legislation, but also very significant changes in relations between wholesale market participants.

Without the rulings from the Russian Federation government that actual realization of similar market mechanisms is impossible. The development and acceptance of the appropriate regulatory documentation is also required from the governmental organizations and wholesale market infrastructural organization".



## EuroSibEnergo: Strategic Assets in Reliable Hands!



EUROSIBENERGO MANAGES THE POWER COMPANY ASSETS OF "BASE ELEMENT" (BASEL). AS ONE OF RUSSIA'S LARGEST ENERGY HOLDING COMPANIES, EURO SIBENERGO CONTROLS SUBSTANTIAL STAKES IN JSC IRKUTSKENERGO, JSC KRASNOYARSK HYDROPOWER STATION (HPP), AND THE GROUP OF VOLGAENERGO COMPANIES.

The company is also engaged in the organization of ensuring energy security and the efficiency of energy producing companies. One focal area for EuroSibEnergo is conducting detailed analysis of macroeconomic, long-range consequences of energy sector reformation for Russia as a whole and for other regions.

EuroSibEnergo entered the Russian energy industry at the time of structural changes in the sector; its activities are associated with the emergence of energy reforms. Within a very short time, EuroSibEnergo has not only earned the credibility as one of the most efficient and professional teams in the power industry, but also has significantly contributed to the successful realization of the changes taking place in Russian energy sector.

Over the years all companies operating under the control of EuroSibEnergo have substantially improved their industrial performance, implemented programs to improve production efficiency and management, and implemented large-scale cost-reduction programs. JSC Irkutskenergo, JSC Krasnoyarsk HPP, Group of Volgaenergo Companies actively modernize and replace power facilities. The company also takes part in sector reforms, all steps in this direction are performed strictly according to approved energy legislation.

EuroSibEnergo already has established traditions. One of them is the organization

of annual International Energy Forums where anyone can participate and gain precise and distinct answers to the questions related to the course of reforms in the energy sector for Russia and the leading world powers.

EuroSibEnergo continues to develop energy reform and power supply for its activities. EuroSibEnergo-Engineering LLC and "MAREM+", created for these purposes, are actively conducting fruitful work.

### JSC Irkutskenergo

Irkutsk Joint-Stock Company of Energy and Electrification was established in accordance to the decree of the President of the Russian Federation from July 1st, 1992 No.721 "On organizational measures to reform state-owned enterprises and voluntary associations of the state-owned enterprises into joint-stock companies", 40 % of the shares of JSC Irkutskenergo belong to the state.

Today, the highly-efficient power generation base of Irkutskenergo includes various hydro-electric and thermal power plants: 3 hydraulic power plants, 9 thermal power plants, electricity transmission grids (including backbone transmission networks with voltage of 500 KW) and heat transmission networks.

### JSC Krasnoyarsk GES Hydropower Station

JSC Krasnoyarsk GES Hydropower Station is the largest Siberia power enterprise with average long-term capacity of 18 billion kW

per year which satisfies more than 50 % of the electrical energy needs of Krasnoyarsk region. On the established capacity Krasnoyarsk HPP is among the top ten largest hydroelectric power stations of the world and is the second in Russia (6000 MW). The number of units at the plant is 12 (500 MW each).

### The "Volgaenergo" Companies Group

The "Volgaenergo" Companies Group was formed on the basis of Thermal Power Plant LLC "GAS". The group includes three companies: Autozavodskaya TPP LLC, Zavodskiy Seti LLC, VolgoEnergoSbyt CJSC. The group's work is carried out under the management of EuroSibEnergo LLC.

### Marem+ Joint-Stock Company

Marem+ Joint-Stock Company is one of the largest independent organizations in the power industry in Russia. The company has the status of energy saving organization in the wholesale market of the power energy.

### EuroSibEnergo-Engineering LLC

EuroSibEnergo-Engineering LLC was founded in 2002. The spectrum of EuroSibEnergo-Engineering LLC services focuses on restoration and improving industrial performance of production equipment, optimization of manufacture processes, consumption and transmission of energy, optimization of management processes at power companies, and providing other services in the energy sector.

November 11, 2007 – November 15, 2007

## Investments In Energy – Investments Into the Future of the Voronezh Region

By Natalia Androsova

THE CHANGES TAKING PLACE IN THE ENERGY SECTOR IN RUSSIA HAVE BREATHED NEW LIFE INTO THAT INDUSTRY. IT IS VISIBLE ON A NATIONAL SCALE AND AT THE REGIONAL LEVEL. THE DEVELOPMENT PLAN OF POWER ENERGY SECTOR IS APTLY CALLED "GOELRO-2" (RUSSIA ELECTRIFICATION STATE COMMISSION) AS IT DEFINES THE DEVELOPMENT STRATEGY OF THE INDUSTRY FOR THE NEXT THREE DECADES. ADOPTED IS AN UNPRECEDENTED INVESTMENT PROGRAM WITH A PARTICULAR ROLE GIVEN TO THE COMPLEX GRIDS, REPRESENTING THE BASIS OF THE POWER INDUSTRY. IN ORDER FOR THIS INDUSTRY TO OPERATE FREELY, IT IS NECESSARY TO HAVE EFFECTIVE MANAGEMENT OF THE POWER GRID STATIONS TO PROVIDE HIGH-QUALITY TRANSMISSION SERVICES.

In Voronezh region the distribution network company JSC Voronezhenergo, provides the transmission of electricity to the region. The company structure includes four company branches: Borisoglebsk, Kalachayevsk, Liskinsk, and the Northern power grids. In each of the 32 regional districts there are also JSC Voronezhenergo regional power grids that provide reliable transmission of electricity to the region and provide for the repair and maintenance of power lines and transmission equipment. All

of these branches have regional power grids, substations, and repair and production depots that form JSC Voronezhenergo. The extent of the Company's power grids exceeds 50,000 km. Personnel totals approximately 3,500 people.

Today one of the principle company strategies is the development of the power grid complex in the region. Thus, one of the significant actions within the program's framework was signing the Agreement on Cooperation between Administration of Voronezh region, the Federal Grid Company, and JSC MRSK Center which includes the configuration JSC Voronezhenergo. The Agreement provides for the construction and reconstruction of transmission power grid stations within the next five years. In

### INVESTMENT PROGRAMS FOR THE ENTIRE PERIOD OF THE AGREEMENT TOTAL MORE THAN 7.5 BILLION RUBLES.

particular, new construction is planned in Khoholsk, Povorinsk, Liskinsk and Gribovsk and the modernization of the power grids will take place both in Voronezh and other parts of the regions.

Investment programs for the entire period of The Agreement total more than 7.5 billion rubles. In addition to the renovation and construction of new facilities, among

obligations of JSC Voronezhenergo there is a design for the perspective development of power grids in the Voronezh region 35 kV substations and more until 2015. And Voronezh Regional Administration, as one of the subscribed parties, undertakes to assist in the realization of the energy investment programs throughout the region. In particular, they are to provide district land for the construction of engineering infrastructure installation, stipulated in the investment programs, and to include budgetary funds through regionally addressed program developments in the volume necessary for the realization of technological connection to networks of JSC Voronezhenergo.

Other key work of JSC Voronezhenergo today is client satisfaction. Currently, the client is the main focus of any business and he has the right to demand high-quality service.

To avoid possible issues arising during the signing the contracts, the accuracy of reading electric usage meters, sudden cut-off of power lines, and other problems related to transmission, people should know where to direct their questions and where to receive accurate information. Therefore, JSC Voronezhenergo has created four customer service centers in Voronezh, Kalach, Liski, and Borisoglebsk.

The customer service center is an unified office where everyone can resolve issues related to new service connection contract agreements with JSC Voronezhenergo grids,



installation, sealing, repair and check of the electric usage meter, signing of the contract for power service, to receive representative assistance. It is possible submit information about intermittent electrical transmission and poor quality service.

Also customer service representatives accept data on theft of electric power or metal from the power grid station, damage of the equipment of power grids by random people. For convenience a toll-free, 24-hour, automated service accepts applications for new customers needing power connections, installation of energy meters, data on thievery, infringements in transmission and quality of electricity on an automated Russian number: 8-800-50-50-115.

## Russian utility stocks hold potential to fill in foreign investors' investment portfolios

Simon A. Birg, Chief Investment Strategist of FINAM Investment Company

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Understandably, this would be a tiny amount of these funds' assets (1-2%), nonetheless, given the size of the assets they manage, and taking into account the fact that they are larger than hedge funds and EM funds, potential investments in Russia could rise considerably in monetary terms.

This could generate a strong flow of foreign investments, including in power companies, in early 2008 if relatively favorable political and economic trends remain in place.

We would like to note that since the beginning of 2007 up to the date this article was written, the RTS index, the benchmark of the Russian stock market, posted quite modest results, adding on a mere 10.5%, one of the lowest figures among emerging markets. At the same time, it is important to point out that for the same period power stocks posted healthy gains of 23%. Meanwhile the results achieved are far more modest than changes in other emerging markets stock markets. For instance, MSCI Emerging Markets Asia increased by 44%, MSCI Emerging markets Latin America – by 47%. The biggest gainer in 2007 was China its stock index Shanghai Composite gaining more than 110%.

In recent months, the main changes in the Russian utility sector that are capable of producing a substantial impact on performance of domestic energy entities' shares are associated with the restructuring of power monopoly UES. The ongoing reforms in the power sector heighten investors' risks and, coupled with high country risks, cap long-term portfolio investments. For this reason, many foreign portfolio investments are of short-term and speculative nature.

The interest of foreign portfolio investors is limited by the reform process, currently under way in the Russian power sector, not only due to rising uncertainty and associated risks, but also owing to equity funds' investment policies set out in their investment statements and legislative

barriers related to the nature of investments, such as the number of shares in free float, market capitalization of a company, etc.

These limitations have taken a heavy toll on the investment appeal of restructured companies. Since the beginning of the reorganization process, almost all of 72 regional energos, which are owned by UES, were restructured. Such breakup depressed stock liquidity of the newly established entities and resulted in the fact that shares of smaller companies, created on the basis of regional energos, failed to become part of investment portfolios of international investors due to low market cap and liquidity. Obviously, speculative investors, which control the bulk of foreign portfolio investments, would be reluctant to become involved in such risks or be prohibited by their investment declarations to have such investment instruments in their portfolios. As a result, they have not been rushing to buy into power stocks.

Nevertheless, the reform is on its way and the first stage of RAO UES restructuring is already done – in September 2007 WGC-5 and TGC-5 were spun off. Within the second stage, all other assets will be spun off from UES. To take part in the final distribution of assets a shareholder will have to own UES shares as of the cut-off date in order to participate in the second phase of restructuring (expected in June 2008). The Russian electricity monopoly will notify its shareholders and stock market participants of the cut-off date prior to the actual restructuring.

By the time the second restructuring stage comes to a close, system-wide functions which are carried out by UES will have been fully assigned to the state, infrastructural and self-regulatory concerns. Measures within UES' final restructuring procedures involving the establishment of concerns making up the final industry structure are to be wrapped up by July 1, 2008. UES will cease to exist in July

2008 and the power holding's shareholders will be co-owners of over 30 large companies appealing for investors, friendly to minority shareholders and possessing sufficient share liquidity.

Restructuring of the Russian utility industry has led to a critical change in the sector's structure. For example, three years ago the main segment in terms of market capitalization was that representing unbundled regional energos, while now they account for only 3% of the aggregate market capitalization of Russian energy concerns. All in all, to date 65 regional energy systems have been restructured and more than 260 new companies have been established, almost all WGCs and TGCs have been established and measures are in progress to form the final structure of the remaining segments of the energy industry.

UES is currently still a shareholder of all these businesses and the company consists of concerns involved in electric power generation, transmission, distribution and sales, after reform all these areas of businesses will be carried out by new companies which are spun off from the energy holding:

- electricity generation – by wholesale generating companies (WGCs) and territorial generating companies (TGCs);
- electricity distribution – by inter-regional distribution grids (IRDGs);
- electric power will be transmitted by Federal Grid Company (FGC);
- electric power will be sold by sales companies that are spun off from regional energos in the course of restructuring regional energy systems.

After all goals are achieved, the utilities sector is expected to turn from a brake of economic growth into an industry providing fundamental for sustainable growth. We are of the opinion that the Russian utility sector holds strong growth potential in terms of capitalization, while current restructuring

will result in the revaluation of energy assets that make up UES. At present, UES' ownership structure consists of the following businesses:

1. 8 regional energos,
2. 24 hydropower generating concerns,
3. 38 thermal generating businesses within 6 WGCs,
4. 70 heat generating businesses within 14 TGCs,
5. 69 distribution grids,
6. 54 sales companies,
7. 50 transmission grid companies,
8. 77 other concerns spun off from regional energos (repair, service units, etc.).

We believe that the rise in market cap of Russian power stocks is underpinned by fundamentals. We recommend buying 53% of all the 275 utilities stocks in the Russian utilities universe. Our recommendations we present in the picture below.

In the long term, this rise will be determined largely by the interest of international portfolio and strategic investors. In our opinion, the major factors behind investment appeal of Russian power companies are systematic implementation of all steps of the restructuring process, adherence to corporate governance practices in the industry and increasing efficiency of power company operations.

Undoubtedly, macroeconomic parameters and the political situation in Russia will also go a long way towards determining the investment appeal of domestic utility companies. We maintain that high volatility of power stocks will persist due to increased interest of arbitrage players in utilities assets. Before the decision is adopted on the precise procedure for distributing stakes in new industry entities, spun off from UES, and the mechanisms for increasing holdings of minority shareholders in the power industry assets, we do not expect to see a qualitative increase foreign investors' demand for power stocks.

# Mutual Interests in the Field of Energy

**Boris Ayuev: «The System Operator first of all applies the market mechanism for the power system control»**

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**- How does the market influence the controllability of the power industry supply system functioning reliability?**

Creation of the independent System Operator is one of the key steps to improve reliability. Today the Russian power industry features an effective system of dispatch management, precise distribution of functions and spheres of responsibility. The operative interaction between all actor of the power industry is adjusted: among them are power plants, networks, market organizations, as well as large consumers.

Thus the System Operator uses mostly market mechanisms to control the power supply system work. Today it is the only effective way as in liberal economy command methods are ineffective. Certainly, the System Operator has the right to apply administrative levers in the certain situations, but in very complicated ones, such as system malfunctioning. There are strict regulations concerning the methods. In daily work the methods of financial stimulation are more acceptable. And the fact that such methods have been found and are effectively used is one of the important results of the System Operator's activity.

Another point is that the reliability of the power grid does not in the least depend on the investments. Investments are the construction of new facilities, upgrading of existing ones. There are no investments without free market, there is no market without competition, and there is no competition without separation of activities. The separation of the business types is a platform for the investment attractiveness of the industry. Thanks to that fact, it is now possible in the power system to compete and earn money – to generate energy and to sell it off.

If we want to make this new market grow, become stronger, we need time, certain conditions and serious work. The System Operator provides those conditions with its work: equal competitive opportunities, transparency, objectivity, precise adherence to the established procedures. Indeed, these procedures enshrined in great detail: a contract for participation in the electricity market covers about 700 pages. We restructured all business processes of the traditional dispatching control. Our aim was to maintain a reliable power system work within the liberal model of relations.

**- Why does the System Operator remain the state-owned company? Maybe it would be better to allocate some of its functions**

**POWER SECTOR SPECIALISTS, REPRESENTATIVES OF THE REGULATORY BODIES, AND POLITICIANS UNDERSTAND THAT THERE IS NO ALTERNATIVE FOR THE POWER SYSTEM INTERCONNECTION IN EUROPE. THE CONDITION OF ITS SUCCESS IS JOINT EFFORTS IN CONSISTENT AND PROFESSIONAL REGULATION OF THE TECHNOLOGICAL, ORGANIZATIONAL AND LEGAL PROBLEMS ON THE BASIS OF EQUAL PARTNERSHIP AND RESPECT OF THE INTERESTS OF ALL STAKEHOLDERS.**

**to the private companies?**

Owing to the significance of the function of the power management for the stability and development of the country's economy and its security, that would be a wrong step. Our main task is to ensure reliable performance of Russian UPS. Any commercial structure works for profit, which is only logical goal. But for an organization that conducts technological supervision over the power grid states, ensures its reliability and systemic development, a profit can not be an end in itself.

The state wants to be sure that those global goals rather than the short-term profit of the individual companies will always come first. The System Operator is free from commercial interests of the competition and, legally is restricted from power trading. This helps effective conducting all the necessary steps aimed at ensuring the power system reliability as well as the balance of interests of all industry participants. Due to the fact that the



System Operator is independent from private capital, the company makes and brings in to the governmental institutions reasonable suggestions concerning country's power system prospective planning. A capacity market is one of the effective mechanisms ensuring the balanced development of RAO UESR. We plan to introduce it quite soon. Since its launch it will be possible to stimulate economic development and operation of power generation capacity. The specialists of the RAO UESR Industrial Control have always been in public service. Today, we are working in favor of a new, economically driven state, and now we know how to meet challenges we face in market environment.

It's worth pointing out that the highest governmental officials were well aware of the role and importance of the System Operator. Recently, it was decided that until the termination of the re-structuring process of RAO UESR the State's share in the charter capital of the S.O. should be increased to 100 per cent. I recall that earlier it was 75 per cent plus one share.

**- At what stage is the stock transfer now?**

Today, 70 per cent of the System Operator shares are owned by RAO UESR, 30 per cent belong to the State through the Rosimuschestvo organization. Incidentally, in the process, we were given the shares of one

of the leading scientific centers of industry – the Direct Current Research Institute NIPT. The Institute is actively engaged in research and practical developments in the field of power systems reliability, so it was decided to correlate its intellectual potential with the possibilities of the System Operator.

**- From the Russian side the System Operator deals with the issues related to the possibility of the interconnection of the power systems of the RAO UESR with that of UCTE. What is the basis of the project and what will benefits the power systems interconnection bring to the participants?**

The idea to interconnect the power systems of the European East and West has long been discussed, at least for three decades. Active development of integration processes in Europe was drawn more attention to this project. Originally courageous scientific idea has now turned into scientific and technical necessity. Now it is understood and supported by the

business community as well as politicians. Obviously, the latter fact is very important to implement a unique, unparalleled project, which will affect interests of the majority of the countries of the continent. As a result the world's largest interconnection featuring total capacity of over 930 GW and covering 12 time zones may be established. A research concerning the feasibility of the project was initiated in 2005.

The significance of the incorporated power system is obvious. First, the electrical connection is necessary for electric power trading. The development of the trade relations meets interests of all countries all over the continent. The electricity import from the CIS countries will serve the EU energy supply diversification strategy. Though the CIS countries have been showing strong growth in power consumption for several recent years, they still obtain some spare capacity available for export.

For Russia switching to joint operation with the European power systems means integration into the European market and the possibility to provide the national power supply companies with additional markets. Russia enjoy key role in the integration process. It is determined by several factors among which are vast primary energy resources, developed energy infrastructure, historical ties with neighboring countries, and common interests in major continental power project. One of the main tasks determined by the Russian Energy strategy for the period until 2020 is to create integrated power infrastructure in the European and Asian neighboring countries.

**- And how may this influence the former Soviet republics?**

There is no doubt that Ukraine has special interests in such a power system interconnection because it is geographically located at the junction of two energy systems and the main transmission lines go through its territory.

Baltic States are members of the EU, but due to historical and geographical reasons their energy systems are still working within the frameworks of the Eastern synchronous zone. And the power systems interconnection is their only real opportunity to plug in to the power systems of their EU partners. Any other option involve the construction of new transmission lines, which would require considerable time and huge investment.

Taking into consideration the overall EU energy strategy, the power systems interconnection could become the basis for a new technological cooperation between Russia and Western European countries. This cooperation will improve the power supply reliability all over the continent. The advantages of the interconnection are obvious:

optimization of power plants efficiency; improvement of the electricity quality, and finally, the most important fact is that it creates a technological infrastructure, without which there would be no further steps possible to form a single Euro-Asian power space.

## In Brief

**The Sistemny Operator (System Operator) – Central Dispatch Control Directorate of the United Energy System was founded on June 17, 2002. The System Operator became the first company of a purpose structure, created within the framework of reforming the electric energy system of Russia.**

For the first time in the history of electric energy existence in Russia, the function of dispatch control was singled out as a separate company. It was a solution for the unique technological-organizational task: the existing three-level hierarchic system of the dispatch control has integrated modern economic mechanisms and incorporated technologies of centralized management, adequate to the competitive market. A new united system of dispatch control was created to work according to the precisely formulated economic algorithm of decision taking and fulfilling. The technological vertical line of management has adopted a new administrative framework and organizational unity. It is remarkable that organizational changes were carried out without affecting the reliability level of the energy system.

Simultaneously with the organizational reforms, there was going a radical modernization of the technologic component of the dispatch control system. New means of communication and hardware-software solutions were introduced.

The System Operator is independent in its activities from subjects of the energy market, it pursues no direct economic interests in the competitive struggle of the generating companies. It is liable to the state and society for the secure operation of the electric energy system, and efficient in insuring the optimal balance of interests of the state and the market members in the sphere of electric energy, ponderably contributing to the maintenance of energy-related security of the country.

The main task of the System Operator is to guarantee the secure operation of the United Energy System (UES), one of the biggest power producing association in the world. More than 6,500 staff members of the System Operator in the Central Dispatch Control Directorate and 63 branch offices execute on the 24x7 basis the procedure mode management and provide the reliability of energy systems operation in the territory of 83 entities of the Russian Federation. The controlled subjects of the System Operator are located in 9 time zones

November 11, 2007 – November 15, 2007

**Vladimir Shkatov,**

Deputy CEO of ATS NP



**- What main trends do you think will dominate the world energy industry in the future?**

- The energy industry will remain one of main factors determining the economic development of all countries in the world in the foreseeable future. The main global energy trend now is the increasing consumption of hydrocarbons given that oil and gas reserves may lower in the coming 10-15 years. It is obvious that hydrocarbons will not be replaced or considerably pushed out by alternative energy sources. This will result in the more aggressive competition among consumers of energy resources and increase in investments in new fields. Supplier will have to strengthen their cooperation. At the same time, the energy intensity of the global economy will decrease and more attention will be paid to renewable and alternative energy sources.

Against the background of this global trend, local processes are going on. For example, part of energy flows is redirected from the West to the East towards growing economies of South-Asian countries.

**- What role do you think will Russian energy industry is playing in the world now and will play in the future?**

- Russia has to consider all these factors. Indeed, our country has over a quarter of all world natural gas reserves, from 6 to 13% of world explored oil reserves and about on fifth of explored coal reserves. Russia has a great energy potential that should be efficiently used. To this end, however, a number of difficult problems should be resolved, namely export infrastructure development, raw material base restoration, attracting investments into the energy field, bridging gaps in technological progress particularly relating to the production and transporting of LNG.

Perhaps, Russia will have to raise energy resources production and export. Most analysts say Russia will remain one of the world energy leaders in the coming decade.

**Alexander Mosckalenko,**

President of G.C.E. groupz

**- What main trends do you think will dominate the world energy industry in the future?**

- 'To burn oil is like to burn banknotes in a stove', said great chemist Dmitriy Mendeleev. But despite his reproach, hydrocarbons will dominate the world energy market in the first quarter of the 21st century. At the same time, the role of alternative fuel chiefly represented by hydrogen will increase.

I mean not only fuel for power stations. Under certain conditions, hydrogen can replace natural gas. It can be produced by means of sea water electrolysis and, thus, it is almost inexhaustible unlike oil and gas. The Earth has large reserves of natural hydrogen, too.

Obviously, nuclear energy becomes increasingly important. Despite public fears, it is a serious alternative that is very environment friendly. Solar and wind energy will not develop so rapidly as hydrogen and oil-and-gas sectors.

**- What role does the Russian energy plays in the global scale and which of its potentials are used insufficiently?**

- Already now, Russia is one of the leaders by hydrocarbon reserves, namely oil, gas and coal. It is impossible to overestimate the role of our country in the world nuclear energy development as we have respective

**Kirill Kryuchkov,**

CEO of Moscow-based Energotekh company



It is obvious that small sized energy that accounts for some 10-15% of all power generation in other countries play a far less important role in Russia. Though, the Russian small sized energy sector rapidly grows, its share in the total power generation output varies from 0.2 to 1% according to different experts. With that, Russia has real prerequisites for the development of this field. First, Russia lacks power generation

technologies. The USA, Russia and France are fiercely fighting for the right to build nuclear power stations in Iran and China, provide them with fuel and utilize their nuclear wastes at a good price.

Being a kind of bridge between Asia and Europe, Russia does not use its energy resources transport potential in full. It concerns both oil and gas pipelines and power lines and chiefly in respect of eastern regions of Russia. Though, it should be told that it is power intercontinental lines that allow the quickest maneuvering among countries and continents.

**- What role do you think will Russian energy industry play in the world in the short run? And in the long one?**

- When developing hydrogen energy, we will have to transport hydrogen fuel. Russia's geographical position gives us all chances to transport this exotic fuel in the future.

As for 'the day after tomorrow'... The energy of most stars results from thermonuclear reactions when hydrogen turns into helium. The moon is rich in helium, the idea of which employment is becoming more and more popular. Possessing thermonuclear and space technologies, Russia can become a leader in this sphere. In addition, geothermal resources and unique experience in boring extra-deep holes can be our advantage in producing such an alternative fuel as terrestrial heat.

capacities and, judging by the growth rate of the Russian economy, this shortage will further increase. Significant investments proved, as a rule, by state guarantees are needed to modernize the existing facilities and develop them. Moreover, it takes 3-5 years to build a 'big' power plant. Small sized energy allows solving these problems much faster.

Second, up to 70% of the Russian territory has decentralized power supply and our vast country does not have a developed infrastructure allowing electric power to be delivered to remote consumers with minimal losses.

Third, the burnt associated oil gas would allow covering the deficit of electric power of it was used to produce it. Notably, the construction of 'large' power plants is not reasonable as there is too little gas for them and the payback time of such projects is long.

Fourth, small sized power generation is one of the ways to reduce risks industrial enterprises run due to the power industry liberalization. Taking into account the abovementioned reasons, it is obvious that the small sized energy should not be considered as a kind of promising technology overshadowed by the 'big' power industry. The small sized energy may and must become a backbone of the Russian power industry in the future.

**Vladimir Kimerin,**

General Director of Mosenergosbyt JSC



**- What main trends do you think will dominate the world energy industry in the future?**

- I think, in the near future, the power industry will develop in two directions – energy saving and creating technologies of power generation from alternative sources. The industry will get advanced technologies as related research works will be boosted. The power industry will accelerate the new technological breakthrough. No doubt, it will become more efficient, environment friendly and less dependable from raw material resources.

**- What role do you think will Russian energy industry is playing in the world now and will play in the future?**

- Russia is one of the chief players on the global energy market as it has enormous natural resources. I think it will keep on playing this role increasingly integrating in the European Energy Area. Russia may become a kind of energy bridge between Europe and Asia. In this connection, exporting electric power will become very important as our country produces it at a quite competitive price. A united energy exchange will probably have to be created. The main task of the Russian power industry will, however, remain to meet the growing requirements of the Russian economy.

**- Which potentials of the Russian power industry are used insufficiently and can become one of the backbones of its development in the future?**

- First and foremost, it is water power generation. We largely lag behind other countries by using water resources for power generation. Our nuclear energy that also has a large potential is developing slowly. Alternative energy sources – wind, tidal and geysers power plants – are not used almost at all. Unlike our southern neighbours, we pay little attention to solar energy, while, say, the Krasnodar Region has the same number of sunny days as Turkey that has solar batteries almost on every house.

## Brains of power industry

### NIIPT JSC became System Operator's affiliate

By Yakov Polischuk

RUSSIAN PRIME-MINISTER VIKTOR ZUBKOV SIGNED ORDER 1406-R ON TRANSFERRING SHARES OF THE HIGH VOLTAGE DIRECT CURRENT POWER TRANSMISSION RESEARCH INSTITUTE JSC TO THE REGISTERED STOCK OF THE SO-CDA UESR JSC. THE DEAL ON ACQUIRING 100% OF SHARES WAS OVER ON OCTOBER 22 AND THE NIIPT BECAME THE AFFILIATE OF THE SYSTEM OPERATOR.

The St. Petersburg-based NIIPT JSC is the leading Russian electric power research centre. Its basic research objectives are works on providing reliability, stability and viability of Russia's UES, developing direct current and various conversion

systems, creating, introducing and functional testing automated monitoring, control and registration systems for power pools.

Under the power industry restructuring, its both material and intellectual resources are being redistributed. The scientific-production base owned by RAO UES of Russia is handed over to industry target infrastructure companies at the final restructuring stage, which is only natural as the future of the Russian power industry largely depends on advanced scientific developments conducted by branch research institutes. The System Operator that is one of the main industry competence centres will get additional scientific potential needed to solve tasks of state importance.

'The efficient employment of the institute's potential will help the System Operator's solve its tasks. The latter will get a unique research base allowing conducting fundamental and applied researches and developing advanced technologies in order to maintain stability, reliability and viability of the Russian UES, its well-balanced development in market conditions,' said SO-CDA CEO Boris Ayuev.

**FILLER**

The High Voltage Direct Current Power Transmission Research Institute was set up in 1945 to solve problems of introducing direct current power lines and creating the country's United Energy System. Its main directions of activity are elaborating proposals, main

technical solutions and expert conclusions on the development of the Russian UES, management of its modes, maintenance of its reliability and stability; emergency control systems and automated power pool control and registration systems; technologies and equipment for high voltage direct and alternate current transmission lines and substations; transmission and converting of electric power; high-skilled personnel training.

The institute's developments are protected by 1,000 author's certificates and patents. It was four times awarded state prizes. Its partners include the Moscow- and St. Petersburg-based Energosetproekt institute, St. Petersburg-based Eltekhnik CJSC, V.I.Lenin All-Russian Electrotechnical Institute placed in Moscow, All-Russian Electric Power Research Institute, etc.

# ENERGY HORIZONS OF SIBERIA

*OJSC Territorial Generation Company No. 11 (TGC-11) attracting investments to develop energy systems of Siberia's two key regions?*

By Ivan Bobrov

ESTABLISHED IN AUGUST 2005 WHILE RESTRUCTURING RAO UNITED ENERGY SYSTEMS OF RUSSIA (RAO UES), TGC-II IS PRESENTLY AN ENTERPRISE SUCCESSFUL IN COMPLETING ALL THE OPERATIONAL MISSIONS AND CAPABLE OF ATTRACTING LARGE-SCALE INVESTMENT FLOWS TO UPGRADE REGIONAL ENERGY SYSTEMS. BOUNDING GENERATION FACILITIES OF THE OMSK AND TOMSK REGIONS, OJSC TGC-II IS CONSIDERED ONE OF THE SIBERIA- LARGEST HEAT POWER COMPANIES. THE COMPANY MANAGERS 5 HEAT POWER PLANTS AND 2 BOILER PLANTS. OJSC TGC-II'S OVERALL ELECTRIC CAPACITY TOTALS 2,026 MEGAWATT (MW), HEAT CAPACITY – 8,241 Gcal AND THE LENGTH OF HEATING NETWORKS EXCEEDS 800 KM. THE COMPANY'S PLANTS PRODUCE 60% OF ELECTRIC ENERGY AND 75% OF HEAT POWER IN THE OMSK REGION AND 45% OF ELECTRIC ENERGY AND 90% OF HEAT POWER IN THE TOMSK REGION. OJSC TGC-II PAID TAXES OF OVER RUR 1.3 BILLION LAST YEAR.

TGC-11 is currently launching a new stage of development. The company has carried out a shift to the common share on November 1, 2007, which allowed integrating regional divisions and establishing new ones to attract investments necessary for large-scale upgrade of the energy infrastructure. Its principle directions are as follows: to mount new generating sources, to increase output of heat and electric energy, reconstruct operating plants, upgrade and refresh equipment by advanced technology and develop heating networks. Demand for heat and electric power is constantly increasing: 2006 registered a 5% jump of electric energy consumption in the Omsk Region and a 6% rise in the Tomsk Region. The long-term forecast indicates the trend to persist. Meeting the demand by economy the company boosts development of the regions considerably.

OJSC RAO UES of Russia Board of Directors approved the OJSC TGC-11 investment program on October 26, 2007. The Omsk region has the two priority lines of investment programs on thoroughly upgrading the TETs-3 (Russian acronym for Heat Power Plant No.3) and completing construction of TETs-6. The lion's share of assets necessary for carrying out of the above projects is expected to feed the company owing to IPO and an additional

emission estimated at RUR 8 billion. The TETs-3 equipment in Omsk will undergo gradual upgrade by the advanced and highly efficient steam-and-gas units (combined-cycle plants) within the coming years. The first stage is to mount 2 combined-cycle plants both totaling 120 MW and 96.5 Gcal. The will enter operation in 2011. The second stage is projected to launch three power plants summing up 90 MW and 207 Gcal. The work will be complete by 2015.



The TETs-6 first power unit in Omsk, designed to be the most advanced and high-tech coal-fired electric power-plant behind the Urals, generating 285-335 MW and 385 Gcal, will enter service in 2012. The plant will operate the above-critical parameters of steam. Full utilization of ash and slag refuse is designed to serve in producing building materials, which

is part of TGC-11's environment protection program. The company intends to utilize ash and slag dumps completely at the operating coal power plants, too. Two facilities are expected to process 260,000 t of ash a year by 2009, thus, the 1-million-inhabitant Omsk will get both better environment and valuable raw for the construction industry.

The Tomsk region is already carrying out two projects of the TGC-11 investment

(ZiO) new boiler will produce 120 Gcal per hour. The second boiler of similar parameters will feed PRK in late 2009.

The second investment project of the company in the Tomsk region is to mount a T-50 50-MW turbine at the Tomskaya GRES-2 (hydro reactor energy plant), which will increase the plant capacity by 20% and allow producing 106 Gcal while generating electric energy. The project will provide new districts of Tomsk, Vostochniy and Solnechniy, where the local authorities plan to launch up to 1 million sq.m. of living quarters.

In OJSC TGC-11 they mention that while performing their own investment program, the Company stakes on using the most promising innovation technology in the heat and electric power energy sector. The development strategy, used by OJSC TGC-11, will give a strong growth impulse for science intensive branches of industry, including in Omsk Region, due to using science, industrial and technical potential.

According to the plan on reforming the power branch, RAO UES as the natural monopolist will stop existing in summer 2008. It will be replaced by a new energy management structure of Russia, where a considerable role will be played by self-adjustable companies. The introduction of this structure has already begun. In particular, the Siberian Power Association was established this spring in the Siberian Federal Region as an integrated coordinating center, called upon to connect all the levels of responsibility "authorities-owner-customer" within the federal region. TGC-11 Director General Sergey Kozhemyako was elected President of Association.

"Performance of large-scale investment programs in the sector is possible only in tight partnership between power engineering experts, authorities, publicity, business," emphasizes Sergey Kozhemyako. "We don't forget that primarily we are socially responsible for power supplies of our vast territories against the state and publicity. When the sector's self-adjustable companies start operating those worried about the power industry future will receive an exact signal signifying that after RAO ceases to exist management of the key live-providing branch won't suffer. Further more, I'm sure the new system of management will open new horizons for the energy sector, ensure exact links and effective coordination of all participants in the market. Mission of the Siberian Power Association we see in such a way."

## Coal mining sector review

DENIS GOREEV, IC FINAM ANALYST

AS A RESULT OF 7 MONTHS OF 2007 COKING COAL EXTRACTION VOLUME IN COAL SECTOR INCREASED BY 8.7% AS AGAINST THE SAME PERIOD OF THE PREVIOUS YEAR (FROM 37.7 MIO IN 2006 TO 41 MIO IN 2007). IF COAL MARKET CONDITIONS ARE GOOD AND THERE ARE NO PROBLEMS WITH TRANSPORTATION, SUCH EXTRACTION GROWTH RATE CAN HOLD GOOD OVER THE WHOLE YEAR.

Coal sector index grew approximately by 15% during recent 9 months and virtually the whole growth took place in the third quarter of 2007. Investors' interest in the sector companies' shares is evident – coal prices rise so we can expect high income following the results of the year. Year end index anticipation is 20%. Domestic coal allocation volume has also increased by 8.9% for 3 quarters in 2007. Main consumers here are ferrous metallurgy and chemical-recovery enterprises. Coking coal concentrate prices began rising in the first and the second quarter of 2007 and continued this trend in the third quarter. In comparison with 2006 average growth rate made up 7-10% and it can grow more, because of an increase in metallurgy and chemical-recovery enterprises demand. Thermal coal prices at foreign markets went up by 5% on an average as compared to the year of 2006. The main reason is the problem regarding transportation of Australian coal to foreign markets. If the situation doesn't change, coal prices will continue rising.

Coking coal production volume in Russia made up 19.82 Mio tons as a result of first 7 months. That was 5% more than for the similar period of the previous year. Russian coke and semi-coke export volume in January-July of 2007 in comparison with the similar period in 2006 was multiplied by 2.5 times rising from 734.7 thousand tons to 1.84 Mio tons. Principal consumer of Russian coke (and coking coal) is Ukraine having a strong shortage of these raw materials. The demand will have been high until the end of the year, so Russian companies have a good chance to collect high export revenue.

Sakha Republic (Yakutia) coal assets auction sale became an important event in the sector. There was only one lot –



68.86% of "ElgaUgol" and 75% minus one vote of "YakutUgol" ("Mechel" already has 25% plus one vote of it). This lot also included 320 km of an unfinished Ulak-Elga railroad. Because of an absence of ArcelorMittal - a principal rival to Mechel, the latter won the auction easily. Starting price increased at 27% during the auction. Now the winner can provide it's facilities with a sufficient amount of coking coal as well as expand its export to APR-states, which now experience an increase in demand for coking coal and its concentrate.

At the very end of the quarter Rospadskaya OJSC announced its interim financial results for the first six months of the year 2007. Rospadskaya showed an increase in revenues by 55% (from \$218 Mio to \$339 Mio) as compared to the similar period in 2006. Net profit increased by 77% this year (from \$51 in 2006 to \$90 in 2007). The reasons are the same - production and sales growth as well as good domestic and foreign markets conditions.

Investors should pay attention to Rospadskaya shares. The securities have good growth potential (also due to a merger with Uzhkuzbassugol). Fair value of Rospadskaya shares shall make up approximately \$4.49. So our hint is – "buy".

"Belon" is a company which shares also deserve attention. The company plans a serious investment program, so it will have a positive effect on its financial and production results in future. According to industry average financial ratio a share of "Belon" costs approximately \$65. The hint is – "buy"

November 11, 2007 – November 15, 2007

**Vladimir Khlebnikov,**

General Director of WGC-1 OJSC



**- What main trends do you think will dominate the world energy industry in the future?**

- The world will need more and more energy including electric power for its development – this will be main global tendency. Experts say the power demand may double by 2030.

Owing to growing oil prices, coal energy will become the most popular. Presently most of developed countries generate 40-50% of their energy from coal and this figure is expected to increase as coal is quite cheap. There remains a chief problem of coal generation – to increase the efficiency factor of coal units from 39-44% to 55-56%. Germany is already conducting researches in this direction.

Another problem to be solved is air pollution and greenhouse gases. I think a lot of efforts are needed to eliminate these side effects of coal generation.

In my opinion, the role of nuclear power plants that are undeservingly relegated to the background will increase. I suppose we will see the development of nuclear energy, not so rapid as it was in the middle of the 20th century but considerable. Completely different

technologies will be used. For instance, a power unit with a fast breeder reactor is being constructed at the Beloyarsk NPP. To my mind, there will be a breakthrough in nuclear energy technologies.

As for renewables, hydropower will remain the primary source. Russia has one of the highest potentials for its development. The problem is how to minimize electric power losses when transferring it from Siberian hydropower plants to the central part of Russia.

Other kinds of power generation will be developed, too. I reckon wind power generation will gain momentum by 2015. Solar and tidal generation will be developed in the local scale. By the way, the tidal power plant started its operation in the Kola Peninsula this year.

**- What role do you think will Russian energy industry is playing in the world now and will play in the future?**

- We seriously lag behind in terms of technologies. But the current investment boom can help us regain lost positions. It is still early to speak about the export of electric power as it is represented only by transfers via the Ukraine. Although, everything is possible. Economic feasibility will determine everything. By 2011, the market situation in the field will become clear. Thus, we will see whether it is profitable to deliver gas and generate electric power and export it.

**- Which potentials of the Russian power industry are used insufficiently and can become one of the backbones of its development in the future?**

- First and foremost I should mention coal generation. If the problem of coal standardization was resolved by the state, we could develop coal energy rather seriously and on a competitive and economically feasible basis. Unsolved standardization issues much hinder the development of this sphere.

**Vladimir Kiryukhin,**

General Director JSC EvrosibEnerg



**— In your opinion what are the principal developments in the global energy sector in the future?**

— I am certain that the major development will be the diversification of the energy business sector. Diversification will help the largest energy holdings to make their business more flexible and to remove a considerable part of the risks that emerge in the modern world energy sector.

**— What role does the energy in Russia play today and what role will it play in the future in the framework of world energy?**

— Without a doubt, energy plays one of the vital roles both today and tomorrow. It has to do first of all with both a great resource potential and the particular geographical position of Russia.

**— What are possible sources of energy in Russia that are used insufficiently and could become tomorrow one of the cornerstones of the power sector development?**

— The possible sources of energy are nuclear power and hydropower.

## VIEW

**Boris Kuzyk**

**- What main trends do you think will dominate the world energy industry in the future?**

- If 'the future' means the first half of the 21st century that is foreseeable for strategic forecasting and planning, the main trend is a gradual transition from hydrocarbon to alternative energy, hydrogen technologies and fuel elements. The rapidly growing demand for energy carriers (especially in intensively developing countries), predetermined limit of traditional (mineral fossil) energy sources, constantly growing prices for them, global environmental threat, geopolitical instability and other factors are considered leading foreign countries to determine their long-term



energy strategy.

**- What role do you think will Russian energy industry is playing in the world now and will play in the future?**

- Russia was, is and will be for some time the key player on the global energy market. But it should give up the role of oil-and-gas donor and become an advanced innovation energy superpower. To this end, at least two conditions should be fulfilled. First, it is necessary to correct the Russian mentality and the change attitude towards the development and rational usage of our raw material resources. Second, we should institutionally (administratively, legally, financially and technologically) support the development of Russia's alternative energy industry basing on renewable energy source as one of the most important objectives of the Russian energy policy for 2030-2050.

**- Which potentials of the Russian power industry are used insufficiently and can become one of the backbones of its development in the future?**

- I think the potential of small sized energy (cogeneration power units with an electric and heat capacity of up to 10MW and power station with a total capacity of up to 30MW) can be one of them. Let us remember that from 50 to 70% of the Russian area inhabited by 20 million people lack the centralized electricity supply. These consumers can be provided with electric power and heat only by means of small sized energy, which is vital for autonomous power supply especially in emergencies as well as in remote, hard-to-reach and underdeveloped regions. First, the point is that the system of distributed energy production should be created in Russia and provided with cogeneration and tri-generation (electricity, heat/cold and pure water) power units with fuel cells, which capacity varies from hundreds of kW to several MW.

Secondly, I mean integrated power units with a capacity from 5 kW to several dozens and hundreds of kW based on renewable energy sources (solar and wind) featuring a hydrogen energy accumulation cycle. And finally, thirdly, I mean small nuclear power plants that can produce both electricity and hydrogen – alternative ecofriendly fuel and energy carrier. Generally speaking, it will be the nuclear/hydrogen energy.

# Volga IDC OJSC

We present one of Russia's promising energy companies

By Lidiya Barkhatova

THE VOLGA INTERREGIONAL DISTRIBUTION COMPANY OPEN JOINT STOCK COMPANY WAS REGISTERED IN THE CITY OF SARATOV ON JUNE 29, 2007. THE NEW COMPANY COMPRISED THE VOLZHSKAYA IDC (THE SARATOV, SAMARA AND ULYANOVSK REGIONS), MORDOVENERGO, ORENBURGNERGO, PENZAENERGO AND CHUVASHENERGO. THE VOLGA IDC TRANSPORTS ELECTRIC POWER FOR ALMOST THE WHOLE MIDDLE VOLGA AND ORENBURG REGIONS.

The Volga IDC operates in 7 regions with their total area equaling 412,000 sq.km and a population of over 13 million. The total effective power output of all companies entering the Volga IDC reached 60 billion kWh. The total length of its power transmission lines is over 220,000 km.

The company's management structure has been already created. The Volga IDC received control over the Volzhskaya IDC, Mordovenergo, Orenburgenergo, Penzaenergo and Chuvashenergo OJSCs. A system decision was taken and implemented to subdue all regional network companies to the Volga IDC by vesting the latter with a sole executive authority. Enormous work has been done to take an inventory of DC and IDC's rights and financial obligations as of June 30, 2007.

In early 2008, General meetings of shareholders of the Volzhskaya IDC, Mordovenergo, Orenburgenergo, Penzaenergo and Chuvashenergo. It will be decided how to integrate these companies into the Volga IDC. And it is planned to finish forming the Volga IDC united operation company with regional companies as its branches by April 2008.

The operating company allows raising

management efficiency and managers' responsibility for all production and economic results. The Volga IDC has a good operational experience as the Volzhskaya IDC. It has already passed the forming stage, fully adjusted corporate processes and methods of interaction with regions.

When the restructuring is over, shares of regional network companies will be converted into shares of the Volga IDC. This is a serious advantage for shareholders as the capitalization of a large interregional company will be much higher than that of separate regional distribution network companies. Thus, the price of shares



will increase, too.

Independent evaluation companies have already started their work in order to determine the shares conversion index. By the middle of 2008, the Volga IDC's shares will be brought to Russian stock exchanges, which will also raise its capitalization and dividends of shareholders.

One of the main objectives of restructuring is to enhance the reliability of power supplies and develop regional power grid systems. A new large united grid company will allow attracting considerable investments on beneficial conditions in order to build new and renew the existing grid facilities.



# Russian electric-power industry reform

## Russian electric-power industry reform model

Saakyan Yury Zavenovich Director General  
Institute of Natural Monopolies Research

Electric power industry deregulation is a difficult natural monopolies reform procedure. In view of specific features of the industry which has all production, transmission and consumption processes inseparable, its reform process is virtually an economic way of separating a whole physical process.

Russia imported an electric power industry reform ideology from the western community, which had already begun a reforming process. That is why the reform model in Russia is similar to the ones in Great Britain, USA, Australia and other "western" countries. Organizational structure of Russian electric power industry before reforming and its target model are on Fig. 1 and Fig. 2 respectively. Nevertheless, the

initial conditions, background and aims of the reform in Russia were fundamentally different so that predetermined an especial course for Russia.

The first distinguishing feature of Russian electric power industry reform model in comparison with western ones is the initial structure of the sector. In as big countries as Russia (e.g. USA, Australia, Canada), electric power industry was historically built as a local monopoly. It means there were no state-integrated energy monopoly and no integrated power supply system as a consequence. Both state and private companies provided energy for fixed areas (e.g. approximately 3000 companies of that kind in the United States). Like many countries with state-planned economy USSR developed its electric power sector using a set of large-scale integrating procedures (from

separate regional-level power supply systems to integrated regional systems and further to a completely integrated state power supply system). Such structure determined specific features of its future performance within the frame of vertically integrated model (state monopoly). The process of integration led to the numerous cross-system ties even between distant regions, so the result was the biggest in the world power supply system which even allowed using an energy-consumption peak displacement effect in different time-zones. Such an organizational model of the sector ensured power supply reliability and costs minimization due to savings because of the system scale.

Local monopoly model in power supply sector possesses fewer positive effects, than an integrated state monopoly does. First of all, cross-system ties insufficiency makes conditions for low reliability of the power supply system; second, a large scale effect could not be fully implemented within the

supply industry reform is its aims and their transformation. According to the Russian Federation Government Resolution "On Restructuring the Electric Power Industry of the Russian Federation" the aims of the reform are "provision for economy and social sphere stable performance and development; energy production and consumption effectiveness increase; reliable and stable power supply for consumers; cost-effective satisfaction of a solvent demand for electric and thermal power in the short and long term." Thus the reform had its aim to successfully perform as a sector of national economy. And the reform itself should have become a condition that the sector would perform this function.

The reason for such an approach was a crisis in Russian power supply industry in the 1990's. After the collapse of USSR a demand for electricity in Russia declined by 30% and under such circumstances the process of capacities renovation almost stopped. Year after year fixed capital depreciation had been increasing; it came up to 50-60% in the late 1990's. When in economic crisis the sector had to live under non-payment and barter conditions. Such situation made capacity renovation process impossible. Alongside with other natural monopolies electric power supply industry became one of stabilizing factors for Russian economy. Sector services rates grew slower than prices on manufactured products (in 1991-1997 electricity price rise index was 1.3 times lower than commodities price rise index – 11.1 and 14.3 thousand times respectively. Therewith in the mid ninetieth distributed electricity payment share sank to 50%.

So, the tasks for the reform at that time were both to way out crisis and non-payment problems solving. The reform seemed to be a single solution to the problem indeed. For example: in Great Britain a main unofficial aim for the reform was to eliminate electric power supply industry donation to coal-mining sector.

Since 2000 electric power industry got stabilized. It was resulting from general economic stabilization in the country as well as anti-crisis plan implementation. In 2000-2001 JSC RAO "UES Russia" almost got non-payments back.

The reform itself began in 2003. By that year Russian electric power supply industry almost overcame the crisis and nowadays the reform has some other aim. That's why reform effectiveness evaluation is rather difficult. It was to be aimed at solving other problems initially.

Today the first task is reducing power capacities deficiency through attracting third-party investments in major construction work and development. Therewith not a single country reformed its electric-power supply industry with an aim to eliminate power capacity deficiency. On the contrary, the most countries started their reforms having an excessive power capacity reserve, which was a result of rate-setting in accordance with a rate of return. And the experience showed that a risk of insufficient investment is most dangerous for the liberalization process in the sector.

Results of Russian electric-power supply industry reform

Now, a reforming process in Russian electric power supply industry enters a final phase:

- Almost all Regional Generating Companies (Russian abbreviation "TGC") and Whole Generating Companies (WGC) are formed and most of them got new private strategic investors (including such foreign companies as: E.ON, Enel, Fortum);

- Federal Grid company, inter-regional grid companies and System Operator (SO) are established;

- Market infrastructure is built, system service, power capacity and derivative financing documents markets are at a pre-launch stage;

- JSC RAO "UES Russia" will have been

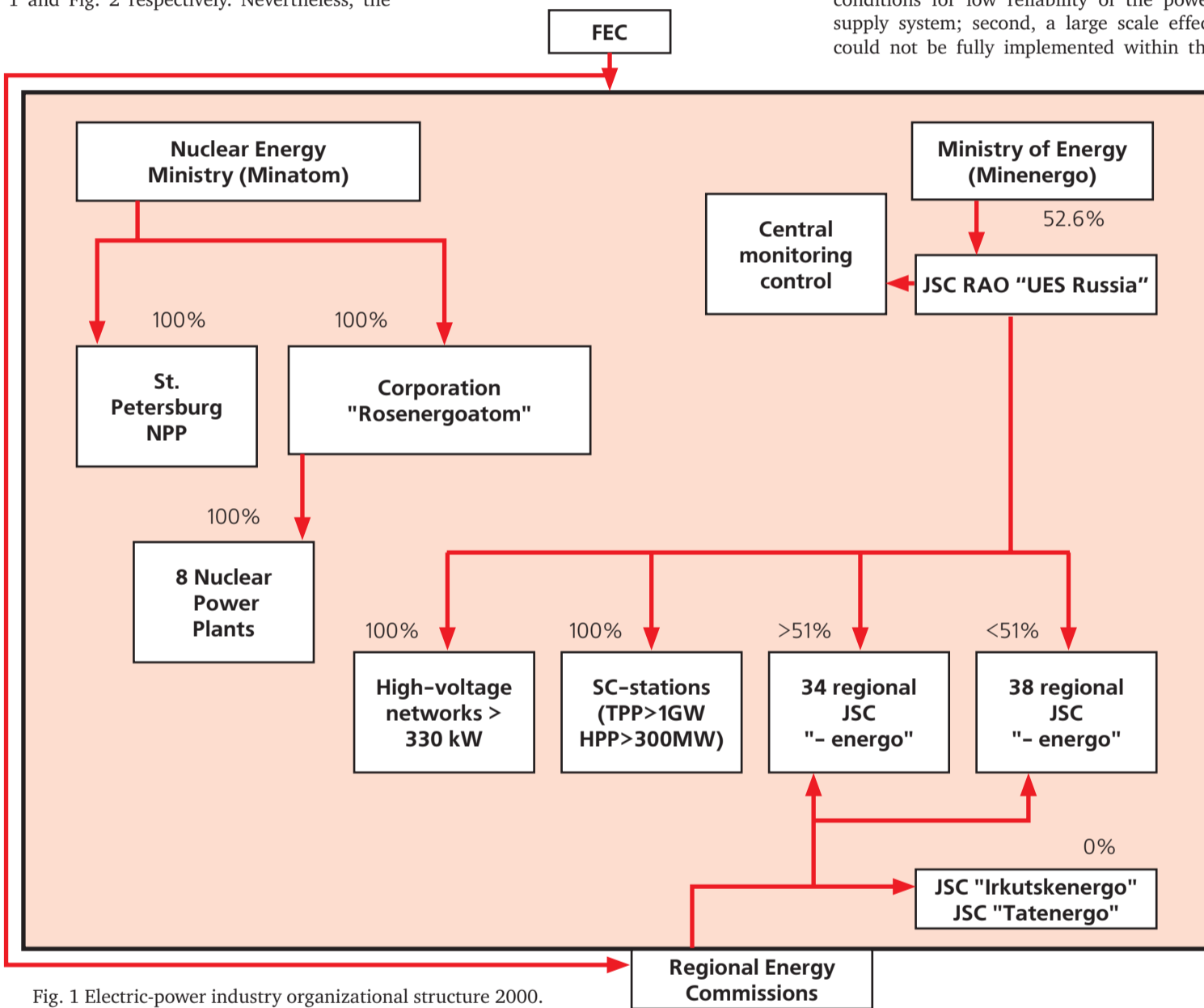
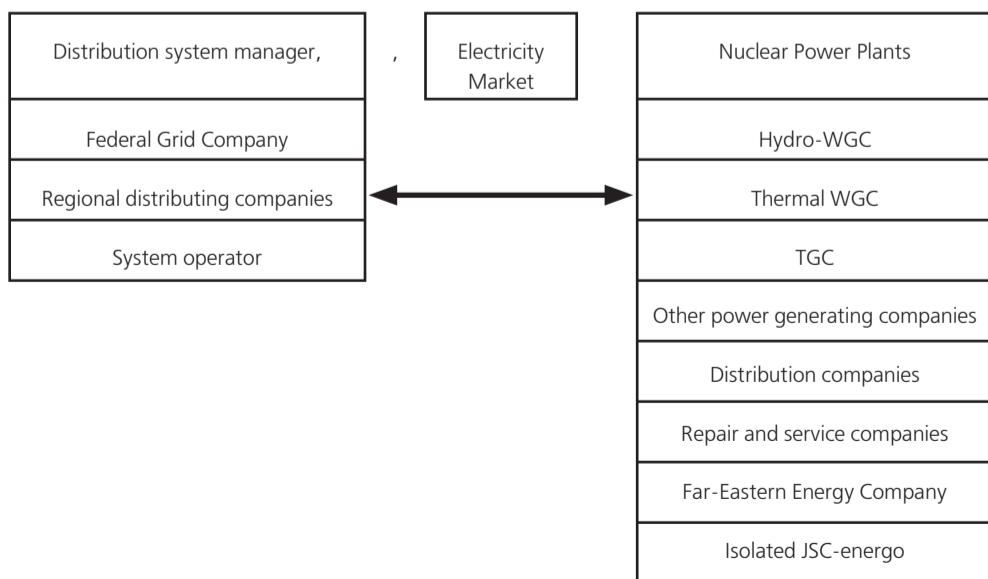


Fig. 1 Electric-power industry organizational structure 2000.



Доля участия государства в капитале компаний

<50%	>50%	>75%
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Fig. 2 Organizational target model of Russia electric-power industry.

frame of regional power supply systems.

That's why countries with local-monopoly shaped power supply industry set a goal to switch over to market relations in the sector by integrating local markets and increasing free power-flow between regional power supply systems. In case of reforming an integrated state monopoly system disintegration and loss of advantages, that a local monopoly did not possess, are unavoidable. In other words, a large scale effect increased can be seen when switching from a local monopoly over to an integrated market, and, otherwise, the effect is lost when reforming an integrated state company. A liberalization of the sector initially built as a local monopoly in most cases is of higher effectiveness in comparison with an integrated state monopoly reforming process. Therefore countries with an integrated state monopoly (e.g. France) oppose power supply industry liberalization. Russia is the first country in the world to experience whether market is able to recover losses regarding to the large-scale effect disappear.

The second feature of Russian power

November 11, 2007 – November 15, 2007

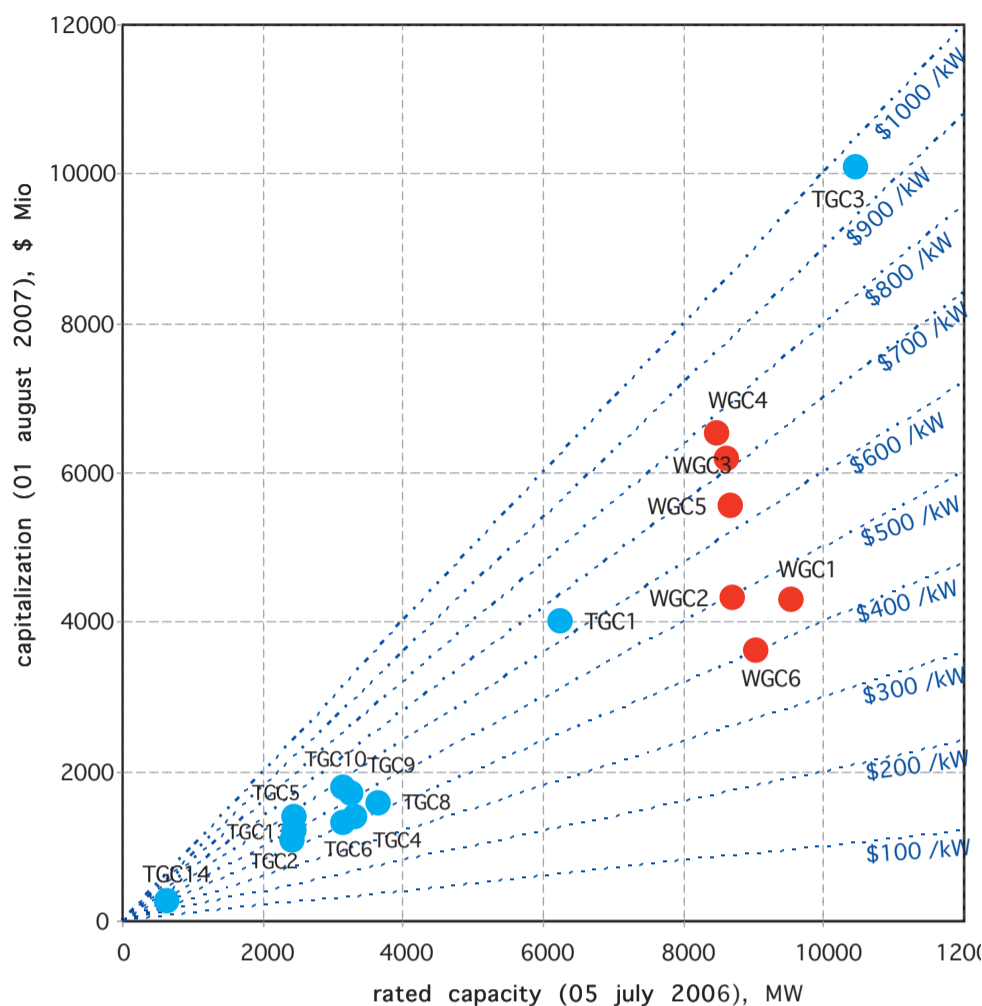


Fig. 3 Russian power supply companies specific capitalization.

reorganized on 01 July, 2008.

According to the target reform model a competitive relationship system in power generating sector, distribution and service segment will shape a pricing policy in electric power supply industry to mobilize all resources needed for renovating its fundamental assets, effective sector performance and making the sector a cost-effective business to force its future development through private investing.

One of the mid-term results of the reform is the increase in investment attractiveness of the sector. It caused the rise of generating companies' capitalization and even profile investment funds appeared on the market (Fig. 3). 7 of 20 designated IPO's were held. These attracted approximately \$11 bln to implement large-scale investment programs. Including share sales it makes more than \$19 bln.

Additional considerable investment in Russian electrical power supply sector gave an impetus to related branches of industry development processes. Particularly long-term investment programs for generating and grid companies are set including requirements for equipment which enable power supply engineering companies to schedule their development activities and attract credits due to long-term contracts they have.

Despite of these positive trends in power supply system reforming process, it is necessary to point out some risks.

Russian power supply system reforming risks

Though the reform hasn't reached its target station, it is possible to pick out a number of risks. The most dangerous among them are insufficient investing and monopolization risks.

As mentioned above, insufficient investment risk is one of the unsolved sector

liberalization problems. For example, Spain experienced power supply deficiency when implementing market relations in the sector.

In Russia this risk is enhanced by power shortage. There were significant limitations for Russian consumers in "cold" winter of 2005-2006, but they were also in summer 2006 and even in "warm" winter of 2006-2007. Simultaneously, Minpromenergo evaluates "concealed" power shortage – a pent-up demand – at the level of 10GW.

That's why JSC RAO "UES Russia" and Minpromenergo took steps to develop some expansion plans for medium- and long-range term – Holding company investment programs until 2010 and Power supply facilities placement master plan until 2020 respectively. With all this going on, according to JSC RAO "UES Russia" Investment program in the year of 2010 Russia is to reach a historic maximum of annual "putting into operation" volumes – 16GW.

Investment process forcing is a step in right direction, because otherwise the country can face decrease in power supply reliability and a long investment cycle for facilities construction is also a reason why the problem must be solved today. But such centralized investment planning contradicts the reform ideology. Investors taking part in allocation of additional shares first of all take an interest in receiving profit, but not in large-scale investment according to JSC RAO "UES Russia" plans. To solve the problem JSC RAO "UES Russia" developed an obligatory act for all the investors taking part in a process of privatizing thermal generation system. This act must be signed both by an investor and Market Trade Administrator (NP 'ATS') and it includes a

Tab. 1 JSC "Gazprom" and JSC "SUEK" merger company share in power plants fuel balance

ОГК/ТГК	Principal shareholder (shareholders)	Core owner share, %	Gas supply share JSC "Gazprom", %	Coal supply share JSC "SUEK", %	Merger company share in fuel balance, %
ОГК-1	JSC RAO "UES Russia"	91,7	55	0	50
ОГК-2	JSC "Gazprom"	55*	30	0	22
ОГК-3	MMC Norilsk Nickel	78,9*	82	35	60
ОГК-4	E.ON	70	13	100	30
ОГК-5	JSC RAO "UES Russia" Enel	50 30	62	0	32
ОГК-6	JSC "Gazprom"	52*	71	44	49
ТГК-1	JSC "Gazprom" Fortum	52,2* 25,5	83	0	76
ТГК-2	JSC RAO "UES Russia"	51	96	45	64
ТГК-3	JSC "Gazprom" JSC RAO "UES Russia"	52 36,2	97	0	90
ТГК-4	JSC RAO "UES Russia"	47,3	96	41	98
ТГК-5	IES Holding JSC RAO "UES Russia"	46,1 25,1	72	0	64
ТГК-6	JSC RAO "UES Russia" IES Holding	50 20	75	43	67
ТГК-7	JSC RAO "UES Russia"	54,5	76	0	71
ТГК-8	JSC Lukoil	57	73	0	70
ТГК-9	JSC RAO "UES Russia" IES Holding	50 30	42	0	32
ТГК-10**	JSC RAO "UES Russia"	81,6	85	0	81
ТГК-11***	-	-	93	0	49
ТГК-12	JSC "SUEK"	53,7*	50	40	74
ТГК-13**	JSC "SUEK"	51,1*	0	100	100
ТГК-14	JSC RAO "UES Russia" MMC Norilsk Nickel	49,5 27,8	0	59	58

\* - including a share after JSC RAO "UES Russia" reorganization and assets swap transaction closing

\*\* - target structure is not formed (first phase of reorganization is finished)

\*\*\* - target structure is not formed

clause according to which a certain amount of power capacity must be put on the market on schedule under terms of an approved program. But this method allows investment programs to be controlled only for a midterm.

Market and economic demand control mechanisms stimulating investors balance their power capacity reproduction haven't yet been formed at that. There are some measure taken with regards to the first problem (e.g. auctions started in accordance with an Investments guarantee mechanism and in the year of 2008 the Power Capacity Market should be launched) and too little is done to solve the second problem in respect that the second direction is more important now than the first one. The reason is that voluntary energy saving and free-will energy load decrease in peak periods are the only solutions nowadays that can help solve power capacity problem in the short view.

Market monopolization risk is the second important issue. For Russia vertical monopolization is more dangerous than a horizontal one. Horizontal integration processes are under Russian Federal Antimonopoly Service control. Particularly it is forbidden to change TGC and WGC structure until the end of the reform in 2008. Now amendments to the law are being made. They will provide market for antimonopoly control within free power-flow zones (from 16 to 20 of them rough instead of two former price zones). It ensures Federal Anti-monopoly Service (FAS) for total control over mergers and possible market manipulation.

Vertical integration risks in Russia are connected with a fuel-energy balance skew to gas using. Gas generation share in electricity production is 44%, and in thermal power plants' fuel balance the share is 66% (80% in the European part of Russia). JSC "Gazprom" share in gas deliveries is 70% (117 BCM of 170 BCM in 2006). An absence of synchronized structural transformation process for natural monopolies (power supply system and gas sector) forces JSC "Gazprom" to buy other kind of energy assets. The problem is aggravated by the absence of competitiveness in fuel production. Gas-coal price ratio is 1:1, and to obtain competitiveness the ratio must be 2:1. JSC "Gazprom" and JSC "SUEK" are planning to establish a merger company to solve the problem. The company will become

a leader of fuel-delivery market for the power supply system (Tab. 1).

Russian power industry is unique in its structure and has no analogues in the world. That's why the reforming process and risks are also unique and require a non-traditional approach. Russian power supply sector reforming process hasn't yet been finished and there is the numerous problems to be solved, including issue related to risks.

#### Institute of Natural Monopolies Research (INMR)

Institute of Natural Monopolies Research (INMR) analyzes current status of Russian economy natural monopoly sectors, interaction and mutual dependencies of natural monopolies activity (JSC "Gazprom", JSC RAO "UES of Russia", JSC "Russian Railways") and also related branches of industry. INMR performs independent profile researches, periodic analysis reports for monopolies' parties, business entities' representatives, scientific organizations and other interested parties.

The mission of the Institute is helping for natural monopolies to act in a balanced way and supporting for governmental and corporate control gain its effectiveness in principal industries.

One of the main INMR research issue is JSC "Gazprom" and JSC RAO "UES of Russia" structural reform and strategic development concepts analysis. These companies build up a base of Russian fuel and energy industry, and influence the whole process of Russian economy development greatly.

INMR experts study a number of issues in macroeconomics regularly, specifically concerning such questions as:

- Complex analysis of natural monopolies activities,
- State policy analysis with regard to natural monopolies,
- Analysis of reform processes done in Russian economy natural monopoly sectors,
- Natural monopolies competitiveness evaluation in foresight of Russia integrating in world economy.

The Institute studies both natural monopolies and related industries' parties (railway and power engineering industry), and related economic trends in Russia, former USSR and other countries.



# Aeroflot is Russia's national carrier and largest airline

FEBRUARY 9, 1923 IS CONSIDERED THE OFFICIAL BIRTH DATE OF RUSSIA'S CIVIL AVIATION WHEN THE LABOR AND DEFENSE COUNCIL ISSUED A RESOLUTION «ON EMPOWERING THE CENTRAL AIR FLEET ADMINISTRATION TO HANDLE TECHNICAL SUPERVISION OVER AIRLINES AND ON FOUNDING THE CIVIL AVIATION COUNCIL».

Aeroflot is Russia's national carrier and largest airline. Founded by the Russian government on 9th February, 1923, Aeroflot is among the world's oldest airlines and one of Russia's most recognised brands. Through its hub at Sheremetyevo Airport in Moscow, Aeroflot operates 302 flights per day to 93 destinations in 47 countries in Africa, Asia, Europe and North America.

Aeroflot is Russia's largest air carrier; in 2006, it accounted for 51 per cent of international scheduled and 12 per cent of domestic traffic in Russia. Aeroflot serves one of the world's most rapidly growing aviation markets. In 2006, the Russian aviation market increased by more than nine per cent in terms of passenger-kilometres performed, and by 2010, Aeroflot expects to serve 25 per cent of Russia's domestic passenger market.

Today, Aeroflot is an airline with an excellent safety record, operational reliability and a reputation for industry leading customer service.

In 2006, Aeroflot flew more than seven million passengers, and with its subsidiaries, Aeroflot-Don (Rostov-on-Don) and Aeroflot-Nord (Arkhangelsk), a total of nine million passengers. Its passenger load factor ran at 70.1 per cent and its revenue load factor was 57.7 per cent.

Aeroflot operates the highest aircraft utilization rate in the industry. In partnership with both Russian and international carriers, Aeroflot accounts for 51 per cent of Russia's international scheduled flight traffic. Aeroflot operates code-sharing agreements with 34 foreign and Russian airline companies.

To meet the needs of its passengers, Aeroflot is increasing its fleet and building its own hub in Moscow. As part of its commitment to international expansion, Aeroflot is constructing Terminal 3 at Sheremetyevo Airport in Moscow, scheduled to open in early 2008, to serve its flights as well as those of its SkyTeam partners.

In addition to its existing subsidiaries, Aeroflot is planning to acquire additional airlines with international routes in the eastern region of Russia.

Aeroflot was the first Russian airline to be included in the International Air Transport

Association's International Operational Safety Audit (IOSA) Registry and is one of the few airlines to be fully ISO 9000 safety credited.

As part of its commitment to safety, Aeroflot operates the largest Centre of Flight Control (CFC) and Centre of Flight Staff Training in Eastern Europe, with nine facilities in Russia and abroad.

Aeroflot is committed to deploying the most effective information technologies to increase service quality and economic efficiency and relies on the Sabre booking system to power its Internet bookings.

In April 2006, Aeroflot became the tenth member of SkyTeam, the second-largest airline alliance in the world. Named "The Best Air Alliance" in 2005 and 2006 by readers of Global Traveler Magazine, SkyTeam now provides service to 791 destinations in 162 countries through its code-sharing agreements.

Aeroflot Cargo, Aeroflot's wholly owned subsidiary based at Sheremetyevo Airport in Moscow, provides regular service to destinations in Europe and Asia. In 2006, Aeroflot transported more than 145 thousand tonnes of cargo.

Aeroflot's fleet, which is among one of Europe's most modern, youngest and fastest growing, consists of 81 aircraft, confirming the airline's commitment to the highest ecological and noise standards.

In 2007, Aeroflot signed multi-billion US dollar deals to buy 22 Airbus A350 jets and 22 Boeing B787 Dreamliners, with deliveries in both cases to start since 2014.

In 2008, Aeroflot is scheduled to receive the new Airbus A330 and the new-generation Sukhoi SuperJet-100.

The Russian government own 51 per cent of Aeroflot. Legal entities and individuals own the remaining 49 per cent stake.

In 1993 Aeroflot was registered as an open joint-stock company. JSC Aeroflot – Russian Airlines shares are traded on the Moscow Stock Exchange (MICEX) under the symbol AFLT. According to the financial indices, Aeroflot is among the top 25 airlines globally. In 2006 net profits rose by around 36 per cent to US\$258.1 million and revenues were up 18 per cent to US\$ 3 billion.

Mailing Address:  
Leningradskiy pr-t. 37, korp. 9  
125167 Moscow,  
www.aeroflot.com

Contact Information:  
Aeroflot Corporate Media Relations  
an be reached at:  
e-mail: [presscentr@aeroflot.ru](mailto:presscentr@aeroflot.ru)



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**Igor Lobovskiy,**  
CEO of the Global Energy International Prize



**- What main trends do you think will dominate the world energy industry in the future?**

- First, the world is now at the turn of two energy eras. The era of hydrocarbons will soon be over and for the first time a set of energy sources will meet energy requirements instead of a sole one. Perhaps, such a set will be differential. For example, biofuel will be designed for motor cars and nuclear, water and air energy – for power generation. Moreover, such a set will be matrix-like, e.g. in one region hydropower industry will play the main role and in another – solar energy.

At the same time, it is obvious that hydrocarbons will remain the chief energy source in the short and medium run. At present, despite the wide promotion in global and national mass media, the scope of using each of renewable energy sources is just several percents.

**- What role do you think will Russian energy industry is playing in the world now and will play in the future?**

Let us remember a well-known energy joke: if oil costs \$10 a barrel, Russia is a raw

appendix of the West and if \$100 a barrel – the West is a good-manufacturing appendix of Russia. There is a lot of truth in this joke. And it also explains energy conflicts between Russia and the EU, Ukraine and Belarus. I would like to stress another thing. High oil prices allowed Russian authorities and its most clearheaded people look at themselves and Russia's great historical role seriously and thoughtfully.

Perhaps, the awakened consciousness, emerging pride and responsibility are signs of the Russian national idea that has been looked for so long and in vain, aren't they?

**- Which potentials of the Russian power industry are used insufficiently and can become one of the backbones of its development in the future?**

The first thing I think about are geothermal energy sources in the Russian Far East. In 2007, Russian President Vladimir Putin awarded Professor T.Sigfusson from Iceland for the project called Icelandic Hydrogen Energy. The point is that the 50-year programme for replacing hydrocarbon fuel on Icelandic land and water transport was worked out under the leadership of Professor Sigfusson. The achievement of this goal requires some 81,000 t of hydrogen which will be converted into 4 TW of power. Iceland has already equipped all of its buses with hydrogen engines and will have done the same with all its motor vehicles and fishing fleet by 2010. So, Iceland will be the first country to stop CO<sub>2</sub> emissions, refuse from oil and natural gas thus becoming a kind of Ecoland – the country of hydrogen economy.

November 11, 2007 – November 15, 2007



Yuri Peternya,  
General Director for Technical Policy, Power  
Machines Group, Russia

IN TERMS OF ENERGY SOURCES, IT IS OBVIOUS THAT WITHIN THE NEXT 50 YEARS THE MAIN SOURCES OF ENERGY WILL BE HYDROCARBONS IN ONE FORM OR ANOTHER, SOLID FUEL AND NUCLEAR ENERGY. IN THESE CASES THE MAIN ISSUE WILL BE THE OPPORTUNITY TO DEVELOP EFFICIENT USES OF FUEL WHILE OBSERVING ADDITIONAL ENVIRONMENTAL STANDARDS.

Any sort of renewable resources, such as solar, wind and tidal power stations will develop; however, as it relates to the total volume of electric power development they will not be the primary ones. In fact, each of these individual cases have their own complexities; for example, the problem for tidal hydroelectric power stations stems from the fact that these machines demand very high metal consumption and are very large in size.

Today there is a demand for traditional energy technology. However, more attention is being paid to more modern methods related to the steam gas cycle because gas is actively used as fuel. Additionally, it is very clear that high quality equipment is necessary in order to burn gas efficiently. Currently there are power plants that use steam gas technologies. And in the future, they will develop and will certainly be in demand.

Even now we can already see the emergence of new developments in all types of essential equipment which is a part of these facilities.

However, this type of development, given direction in our country, is constrained, even though the use of solid fuel is a very forward-looking theme. There are two possible options for the development of the situation. Previously mentioned is the steam-gas facilities and combined formulation using coal gasification when with a help of special coal gas generators the fuel gas is generated and then burn it.

But, it is quite complex and expensive technology; therefore, one of the areas related to the use of such steam-power cycle, but in blocks with other parameters. Similar projects are held in the USA, Japan and some European countries. Using this given process, it is possible improve efficiency by more than 50%. That is practically the efficiency performed at the level of standard steam gas facilities and is operated with solid fuel. This is very promising direction.

In my opinion, a national program for the development of future equipment for the long-term should be created. The European program covers the period up to 2015 and the USA program until 2030. And in this case we should be in line with other countries.

The next and very important promising field for development is nuclear energy equipment. It is clear that without the replacement of those

facilities that have already served out their life term, without the launching of new blocks, it will not be possible to close out the existing electric power deficiency. Currently there are two directions. First, since the beginning of this year the project of new generation of the nuclear power station-2006 is being realized on the basis of a modernized VVER reactor (pressurized water reactor) which provides the capacity of 1100-1200 megawatt. The initiator of the project was made by Rosatom, and this project should proceed.

The next area is with the power reactors and energy facilities with fast neutrons reactors. Now such program has begun in the United States, and in Russia this topic will continue to be developed: Rosatom finishes the construction of block BN-800 at Beloyarsk nuclear power plant within the framework of the development and construction of "Future Power Plants" state program.

With regards to hydro-power engineering, first of all, it is necessary to enhance the overall performance of hydro-units through the use improved hydrodynamic solutions, as well as through the use of all types of condensing materials, which, except for high economic performance, will also conform to environmental standards.

The commodity market of the power-plant industry in Russia is estimated at approximately \$120 billion. Therefore, there is enormous investment interest in this sector for that many foreign companies. There is great potential related to both the equipment replacement that served out its life term physically and morally, and to the economy and overall rise in energy consumption. The given situation relates to the commodity sector, mining, transportation and processing. In this case it is necessary to stipulate conditions for foreign companies to participate in this process.

But the fact is that power plant industry, power and the defensive industry were the only sectors in the country that were fully equipped with the domestic equipment. This has provided decreased costs for stations maintenance and reduced dependence on external suppliers.

Looking at one experience when imported production units were used, it was determined that, despite of all conveniences including: fast delivery, installation and service performance, in the end it turns out to be more expensive than cooperation with local companies. The equipment replacement, coordination and unit support in its life cycle in this case for gas turbines can be 50-80 % of the initial price.

There are favorable conditions in the nuclear energy field which I believe will emerge by early next year. The government-supported national program financed from the budget should help this process. At this point, there is active cooperation with foreign countries and there is export of nuclear technologies to China and India.

But, it is necessary to realize that this is a strategic national issue, in fact, as a result of similar cooperation, the government receives a partner for several years that is very closely connected with the national economy. Therefore, we need to create our own coalitions, it is necessary to strive for independence of external supplier, since in this case we are talking about energy security.

In terms of hydro-power it is again necessary to solve financial issues. Although, already there activity present in this given field. Suffice it to mention the joint project Bogucharsk station where RAO Unified Energy System of Russia and Base Element "BasEl" participate.

## Russian utility stocks hold potential to fill in foreign investors' investment portfolios

(See Editorial from Page 1)

Company	RTS label	Current, \$	Target, \$	Upside, %
Omskenergo	OMNG	35.0000	62.5395	79%
Ivenergo	IVENP	0.0532	0.0950	78%
Kolenergo	KOLEP	0.2260	0.3917	73%
Omskenergo	OMNGP	33.0500	56.2855	70%
Volgogradenergo	VGENP	0.6545	1.1078	69%
Sverdlovenegero	SVERP	0.7860	1.2465	59%
Tverenergo	TVREP	0.2668	0.4218	58%
Mordovenergo	MREN	0.0523	0.0805	54%
Arkhenergo	ARHE	0.0595	0.0912	53%
Krasnoyarskenergo	KRNGP	0.6103	0.9350	53%
Arkhenergo	ARHEP	0.0539	0.0820	52%
Krasnoyarskenergo	KRNG	0.6877	1.0389	51%
Chitaenergo	CHIEP	0.0550	0.0826	50%
Penzaenergo	PNZEP	0.7074	1.0620	50%
Kurskenergo	KUENP	0.1000	0.1492	49%
Voronezhenergo	VZENP	2.3526	3.5086	49%
Dagenergo	DGEN	0.0243	0.0361	49%
Tomsk distribution company (DC)	TORS	0.0209	0.0310	48%
Lipetskenergo	LIEN	1.2931	1.9039	47%
Sverdlovenegero	SVER	0.9439	1.3850	47%
Buryatenergo	buen	0.4150	0.6004	45%
Kirovenergo	KIRE	0.0580	0.0831	43%
Chelyabenergo	CHNGP	0.0679	0.0956	41%
Tambovenergo (priv.)	TAENP	0.0544	0.0760	40%
Vologdaenergo	VOLE	12.7623	17.6901	39%
Udmurtenergo (priv.)	UDMEP	0.7443	1.0282	38%
Oryolenergo (priv.)	ORENP	0.3008	0.4119	37%
Yarenergo (priv.)	YAREP	6.6423	9.0815	37%
Tomsk DC	TORS	0.0254	0.0345	36%
Volgogradenergo	VGEN	0.9065	1.2309	36%
Permenergo (priv.)	PMNGP	8.2777	11.1930	35%
Penzaenergo	PNZE	0.8752	1.1800	35%
Kirovenergo (priv.)	KIREP	0.0556	0.0748	35%
Chelyabenergo	CHNG	0.0794	0.1062	34%
Kalugaenergo	KLEN	1.8953	2.4793	31%
Smolenskenergo	SMOE	0.6072	0.7918	30%
Kurskenergo	KUEN	0.1274	0.1658	30%
Tverenergo	TVRE	0.3615	0.4687	30%
Tulenergo	TLEN	0.1249	0.1614	29%
Nizhnovenegero	NNGEP	71.7305	90.9410	27%
Smolenskenergo	SMOEP	0.5633	0.7126	27%
Ryazanenergo	RZEN	0.7171	0.9036	26%
Rostovenergo	RTSEP	0.0904	0.1122	24%
Voronezhenergo	VZEN	3.1504	3.8984	24%
Astrakhanenergo	ASRE	0.1323	0.1631	23%
Udmurtenergo	UDME	0.9342	1.1424	22%
Stavropolenergo	STRG	0.1849	0.2256	22%
Stavropolenergo	STRGP	0.1666	0.2031	22%
Bryanskenergo	BREN	10.2516	12.4802	22%
Bryanskenergo	BRENP	9.4042	11.2322	19%
Novgorodenergo	NGNRP	0.4640	0.5508	19%
Nizhnovenegero	NNGE	85.5881	101.0455	18%
Vladimirenergo	VLEN	5.9201	6.8395	16%
Kolenergo	KOLE	0.3772	0.4352	15%
Kostromaenergo	KOSG	0.2073	0.2389	15%
Chitaenergo	CHIE	0.0800	0.0918	15%
Kostromaenergo	KOSGP	0.1878	0.2150	14%
Tambovenergo	TAEN	0.0739	0.0845	14%
Yarenergo	YARE	8.8734	10.0905	14%
Marienergo	MIEN	0.6250	0.7044	13%
Lenenergo	LSNGP	1.0913	1.2182	12%
Rostovenergo	RTSE	0.1138	0.1246	10%
Novgorodenergo	NGNR	0.5627	0.6120	9%
Permenergo	PMNG	11.4869	12.4367	8%
Pskovenergo	PSEN	1.2178	1.3151	8%
Kubanenergo	KUBE	29.0259	30.2443	4%
Komienergo	KOEN	0.0581	0.0578	-1%
MOESK	MSRS	0.0811	0.0758	-6%
Lenenergo	LSNG	1.4686	1.3535	-8%
Belgorodenergo	BLRSP	340.6983	310.9714	-9%
Ivenergo	IVEN	0.1203	0.1055	-12%
Marienergo	MIENP	0.7325	0.6340	-13%
Belgorodenergo	BLRS	402.0853	345.5238	-14%
Oryolenergo	OREN	0.5340	0.4576	-14%
Kuzbassenergo - regional electric grid company	kzrs	0.6400	0.4800	-25%

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Address: 123104 Moscow, P.O. Box 29  
Tel.: +7 (495) 7293977, 7781447  
Fax: 7 (495) 9401956

E-mail: editor@promweekly.ru,  
promweekly@mail.ru



# Energoauditkontrol in Russian power economy

Silvian Seu: "Our advantages are integrated decisions and wide spectrum of services"



PECULIARITIES OF RUSSIA'S UNIFIED ENERGY SYSTEM – GEOGRAPHIC, HISTORICAL AND TECHNICAL – IN THE TRANSITION PERIOD OF MARKET QUOTATION PLACE NEW DEMANDS ON AUTOMATED SYSTEMS IN ELECTRIC POWER INDUSTRY, SUCH AS INFORMATION AND CALCULATION, DISPATCHER CONTROL, TECHNOLOGICAL CONTROL, ETC. SILVIAN SEU, GENERAL DIRECTOR OF THE ENGINEERING CENTRE "ENERGOAUDITKONTROL" – INSTITUTION WHICH IS A NATIONAL LEADER IN AUTOMATED SYSTEMS MAINTENANCE – EXPLAINS IN DETAIL THE QUESTIONS ASSOCIATED WITH HIS BUSINESS.

**- Mr. Seu, what are the principles of your company's business in Russia?**

- These principles are the same worldwide. We start from the point that automated systems used in the power economy are complicated and include various kinds of calculation and communication equipment; each of them has its own control software. Such systems are aimed at different targets. For example, systems of commercial electric power calculation are to optimize the expenditures on energy and power used; besides, only with the help of the Automated Information and Measurement System of Electric Power Commercial Calculation (AIMS EPCC) consumers have their way to the market of wholesale electric power.

**- What are the services offered by "Energoauditkontrol" in this field? - I'd rather use the Active Voice - What services do EAC have on offer in this field?**

- We offer whole range of services starting from creation, putting into operation and up to further maintenance of automated calculation and control systems. Integrated solutions and wide spectrum of services are among our company's greatest competitive advantages.

In order to maintain modern information systems there is a need in exclusive professional knowledge. This is a key feature of our company – a team of high-skilled engineers, designers and financial experts who apply comprehensive approach and understanding of the peculiarities of work in the period of reforming. It is rather??? difficult to find 'universal specialists' able to guarantee quality maintenance of each and every element of the system. On the other hand, hiring numerous maintenance employees is extremely unprofitable for an industrial corporation. As a rule, in case of necessity people hire specialized institutions.

"ENERGOAUDITKONTROL" has considerable experience in offering services

to companies scattered on our territory, such as energy suppliers, oil and gas enterprises, transport companies. With such geographic scale you need qualified specialists as well as modern technologies of remote equipment control in every region in order to control energy consumption.

**- Could you please tell us a few words about your clients.**

- Our clients are most significant Russian companies, known all over the world. Among them Gazprom, Russian Railways, Sibur, Gazpromneft, and Mosenergo. By the way, these companies are major power consumers; for example, Russian Railways' share on national level is 6 per cent, Gazprom has about 2.5 per cent. Vast geography of their business makes it difficult to control energy consumption. For instance, Russian Railways owns thousands of facilities from Kaliningrad to Vladivostok. We have created calculation and control system which enables us to have centralized access to the information and process it on-line via modern software.

**- Is your company running more large-scale projects at present?**

- At present we are simultaneously running a lot of projects. It is suffice to say about the systems of commercial electric power calculation for Gazprom and Sibur. They are, of course, not so extended as the AIMS EPCC for Russian Railways but technically sophisticated anyway. It is a real challenge to create a system of the kind in places – I mean gas extraction enterprises – where even elementary analog communication is a problem. Imagine how difficult it is to maintain a steady real time signal. Now you witness the upshot of this work – the monitor shows how the amount of power this or that drill rig or oil pumping station – by the way,

situated beyond the polar circle – consume.

**- What equipment do you use?**

- We are geared to exercise world leaders' products, such as Landys & Gyr who are number one in the world in instrument and system manufacturing for electric power calculation. We also use Echelon-, Elster- and Metronica-equipment. As for transformers, we work exclusively with Russian manufacturers – the Ekaterinburg Plant, Elektroapparat from St. Petersburg, Ramenskoe Plant, and other. We have many suppliers, since the number of equipment items we need for work is about 1,500.

Please keep in mind that to system upgrading is endless.. There are always new products that our specialists have to learn how to work with. No manufacturer offers turnkey technical solutions, ready to use. You always need some debugging in order to unite separate elements into a failure-free and smooth-working system. This is our know how.

**- We know very well "Energoauditkontrol" strong point in Russia is its extensive network. How do your filial branches work?**

- It is wrong to create a functioning system and leave it to the cares of your customer – making him to sort out all the problems he faces. We make monitoring and maintenance of the formed systems by our own means. For this purpose we have organized a filial branch network through all the Russian Federation – in St. Petersburg, Yaroslavl, Novosibirsk, Vladivostok, Krasnoyarsk, and Ekaterinburg.

The systems function with the help of our IT specialists and programmers who provide high-level maintenance, e.g. quality work in central posts of data gathering (Russian Railways, Gazprom, Sibur). The branches

have also got mobile teams who – in case of necessity – come directly to objects. To meet the existing requirements, an AIMS EPCC should be restored in 24 hours.

**- A company who offers outstanding decisions needs outstanding staff, doesn't it?**

- We always develop. It is not a secret that today money is not a problem. The problem is professionals. There are very few specialists in some fields, and everyone hunts for them. First of all these people are designers, the most hard-to-find individuals. Besides, everyone needs professionals in automatics, power economy and programming. Today the company numbers about 500 skilled specialists. The main part of staff works in Moscow, and what about the rest – they are in our filial branches. Everywhere we need only quality specialists.

**- What are the new orientations of the company? What projects do you intend to run?**

- Today we run a number of new projects – many of them are still being worked out. We want to diversify our activity. To my mind, calculation in domestic household is very promising. Earlier, in the times of tariff rates for population, it made no sense to study this question. But as the rates are growing up, the problem of precise calculation in this sector will certainly occur – and the activity will seriously develop. We have already started working on retail market AIMS EPCC – such a project is being realized for Russian Railways. It has no analog not only in Russia but in Europe as well. Russian Railways has got the most branched electric chain in our country. Due to that fact the company gives electricity to each and every consumer who has something in common with it. This function is socially important, especially in regions with no other energy supplier. Those who take advantage of Russian Railways business are schools, hospitals, households, small enterprises. Our company's calculation system for retail clients allows keeping on-line check. This 3-year project is very important for Russia.

**- In short, what is your company's mission?**

- Our main mission is to create perfect calculation systems helping our clients to become more efficient and competitive.

#### In Brief

The Engineering Centre "Energoauditkontrol" is the leading Russian company in creation and maintenance of electric power commercial calculation systems and automated dispatcher and technological control systems.

