

Electronics Manufacturing in Russia

**IVAN
POKROVSKY,**
*General Manager,
Electronica
Publishing House*

Some common descriptions of the Russian electronic components market* and tools-making industry are considered in the review. The situation with new and traditional Russian electronics manufacturers is described in basic market segments. The forecast of the Russian electronics industry further development and factors influencing on it are given.

The development of the Russian electronics manufacturing is characterized at best by consumption of electronic components. Average annual growth of electronics components have shown a 25% increase for the last 5 years that is significantly higher compared with the world market rates. In 2007 consumption of the Russian electronics manufacturing grown by 30% and reached \$2 billion.

Semiconductor market reached \$1.2 billion in 2007. Thus, the Russian market share is less than 0.5% of the world market. The total amount of the Russian electronics manufacturing (equipment, components and units) exceeded \$8 billion in 2007. Capacity of the Russian market and its rates are shown at the Figure 1. The Figure 2 shows sales of Russian electronics by market segments.

Comparing the share of the Russian GDP in the global economics (more than 3%) and the Russian share in the world market of electronic components (0.5%) one can estimate how much disproportion is between raw material and high-tech industries in Russia now.

We believe that under existing economic conditions and government industry policy the Russian electronic components market

and electronics manufacturing growth rate will be 20% for 2008—2010. Thus, we may say capacity of the electronic components market will make up about \$3.5 billion in 2010 and amount of electronics manufacturing will make up \$14 billion. The growth can be much greater under some of additional conditions depicted at the end of the review.

There are three following groups of electronics manufacturers in Russia:

- **ENTERPRISES ESTABLISHED IN THE SOVIET UNION** they have been keeping their profile activities up to the moment. As a rule, these organizations are controlled fully (Federal public enterprises) or partly (Joint-stock companies with government participation) by the state. Since state departments and mass media judge achievements of the Russian electronics by the enterprises we call them “traditional” ones.
- **NEW RUSSIAN COMPANIES** founded in market environment. As a rule, engineers and managers which left traditional enterprises after dissolution of the Soviet Union had become founders and heads of the new companies. Not having more or less significant material resources, they founded

* Detailed information of the Russian electronic components market, supply chains, the biggest consumers over the market segments and the biggest vendors and distributors is given in marketing research by Electronica Publishing House.



companies relying on their own strengths and market needs. We call these companies "new" ones.

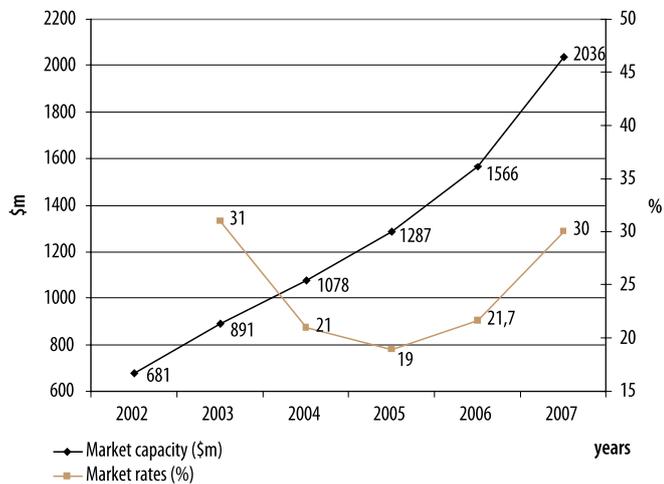
• **ENTERPRISES FOUNDED IN RUSSIA BY FOREIGN COMPANIES.**

In most cases traditional enterprises have big real estate properties but lag behind state-of-the-art technological level severely, have excess staff of poorly-paid employees and differ by a low manufacturing cooperation. In total there are more than 350 000 employees working at the traditional enterprises. Average annual production per man is 500 000 rub., and average salary is 13 000 rub. a month. Many of the enterprises have powerful research workers but mean age of developers is over 50. On average, nondefense production of the traditional enterprises is about 40% in total sales volume. Government support from Federal Industry Agency (Rosprom) till April 2008 had its impact mostly on this type of enterprises.

The government supports and develops technologies essential for military-industrial complex. The government places orders at the traditional enterprises through Ministries and state corporations and provides financing for modernization projects. State financing is defined by man-hours rather than end result. It gives no reasons to increase working efficiency and innovative activity. The enterprises are only staying up without development.

The new manufacturing companies have caught up with traditional enterprises by the total sales volume. According to our estimations, the total sales volume of more than 2 000 private electronics manufacturers had made up approximately 100 billion rub. in 2007. Average yearly output per man is more than 1.5 million rub. and quite often exceeds 3 million rub. at the capital enterprises. Regardless of lack of government financial support, technological level of new Russian manufacturers approaches the one of European electronics manufacturers. Founders of new Russian electronics seek after self-realization and creation. The private companies develop cooperation both with state organizations and foreign companies.

FIGURE 1.
Capacity of the Russian market and its rates



Foreign subsidiaries were founded, as a rule, to reduce salary costs by moving manufactures from Europe and/or to optimize logistics at the expense of placing manufacture beside market. Political reasons had a big meaning in the number of cases: foreign companies investing to Russian assembly departments demonstrated their loyalty to the Russian government that associated high-tech development with coming of foreign investors.

There is no distinct border between these three types of enterprises. Above we gave descriptions of typical representatives but many companies occupy intermediate or transition position, for example, when state enterprises try to find their "own place" in the market and behave as the new Russian electronics manufacturers, and vice versa, when private companies work for the state customer and get into dependence on state officials. The short review is given below on the three groups in the different market segments.

In industrial segment of electronics for railway transport which is dependent on the policy of JSC RZhD (Russian Railways) the traditional enterprises prevail including Electropryamitel', Elara, Izhevsky radiozavod etc.

The new companies work mainly as secondary vendors supplying their products through confident vendors of RZhD.

In industrial automation segment where deliveries are made through systems integrators the government has no impact on vendor's selection. Here products of such Russian private companies prevail as Tekon, Oven etc. which offer solutions competitive with products of foreign companies. Among foreign companies Siemens and ABB have the greatest weight at the industrial market.

Russian manufacturers succeeded in a number of product segments at the market of equipment for fuel and energy complex (FEC). Electon (Raduzhny, Vladimirskaya region) delivers 60% of all control systems for oil drowned pumps and is the biggest Russian power equipment manufacturer. However, as a whole, foreign companies win increasingly more share at the FEC market. It is explained by control centralization at FEC's enterprises and increase in decision making standards about purchasing. Customers need comprehensive solutions and high level of assurance. In many cases Russian manufacturers can't satisfy the needs through their monotronics and lack of resources.

- 1 Industrial
- 2 Military and Aerospace
- 3 Telecoms
- 4 Automotive
- 5 Security
- 6 Retail
- 7 Medical
- 8 Consumer

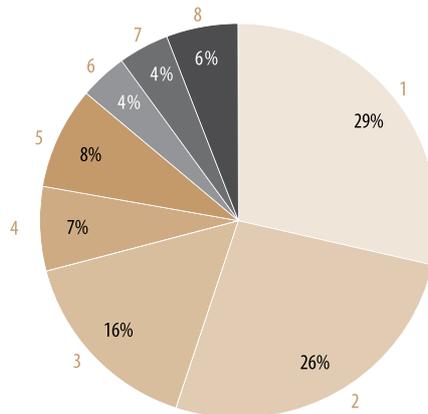


FIGURE 2.
Sales of Russian electronics by market segments

Significant redistribution has been taking place in meters segment for the last five years. Formerly this segment was distributed on the regional basis among enterprises of the 1st type. Now private companies perform greater amount of deliveries, and regional specialization is blurred. The concern Energomera (Stavropol') has much more advantages compared to other market players. Incotex (Moscow) is permanently increasing its share. Petersburg companies Vzlyot and Teplocom stand out at the market of utility meters. Private companies left far behind the traditional vendors in time-to-market and achieve cost saving at the expense of efficient organization and use of current automated production techniques.

As a whole, industrial market share of the Russian manufacturers amounts to 40%. In all industrial electronics segments considerable growth is expected in the nearest future related with increasing investments in industrial production and needs for rising power efficiency of industrial enterprises. Not only traditional companies will have a stable growth with government investments to railway transport and atomic energetics but the new Russian companies will experience it too thanks to

growth of private and state investments into industry modernization as a whole. Share of Russian manufacturers can rise with amalgamation of small Russian companies into holdings or alliances between Russian and foreign electronics manufacturers as well as between Russian manufacturers and big Russian integrators.

At the telecom segment the most important market for such equipment manufacturers as Sokol (Belgorod), Morion (Perm') and BETO (Ufa) was a market for traditional operators of the holding company Svyaz'invest. With yearly reduction of investments in communication equipment from Svyaz'invest the most part of traditional manufacturers found themselves in a heavy financial situation, some of them had been broken up and other switched over to the market of departmental corporative telecommunications (DCT), mainly to the segment of government companies — Gazprom, Transneft' and RZhD.

The new telecom equipment manufacturers are presented equally well at the telecom operators' (both new and traditional companies) and DCT markets. The new generation of telecom equipment manufacturers is focused

on development and sales that enables to follow telecom operators' activities on widening services and implementing them immediately in new equipment.

Now sales volume of new telecom equipment manufacturers is several times more than at the traditional manufacturers. The most successful companies such as MTA, Natex, Spetsstroy-Svyaz' etc. annually increase amount of products for 30—40%. The rate of working efficiency growth is high as well. Figure 3 shows change between production volume and number of persons employed by the example of Spetsstroy-Svyaz'.

Foreign companies have established about 10 enterprises on manufacturing telecom equipment. The most successful of them is IskraUralTel founded by Slovenian company Iskratel. Many others were founded by foreign companies to get status of the Russian manufacturer. They either performed primary assembly of foreign equipment or produced small amounts to confirm their localization.

Share of Russian telecom manufacturers at inner market is not higher than 20%. In large projects telecoms operators and their integrators use imported equipment. At present, con-

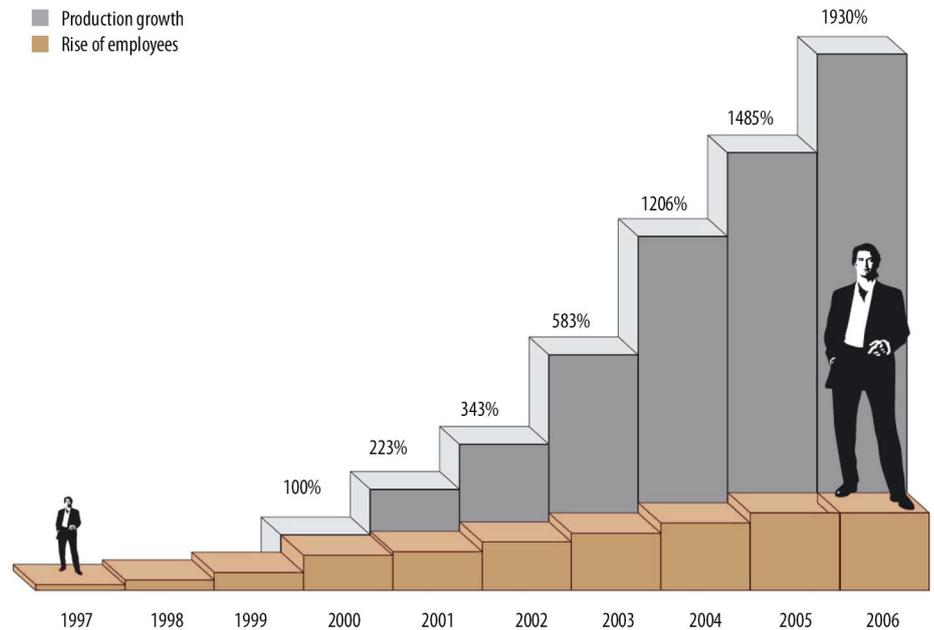


FIGURE 3. Change between production volume and number of employees at new electronics manufactures by the example of Spetsstroy-Svyaz'

struction of 2G cellular networks has finished but broadband networks are fast evolving. As a result, as we see it, annual rate will amount to 20% for the Russian manufacturers provided that government police remains the same. Share of the traditional Russian manufacturers at the telecom market will be reducing in future and foreign companies will be extending their presence.

At **security market** the new Russian companies such as ArgusSpectr, Bolid and EVS left behind the traditional enterprises owing to fast speed of implementing new designs and technologies. As in the telecom equipment market, foreign companies established assembly plants in Russia. For example, the known project MZEP-Okhrana enabled American company Ademco to enter list of equipment recommended by Extradepartmental Protection Directorate of the Russian Federation, receive powerful administrative support and become a market leader in the mid 90s. Meanwhile unlike telecom market the new Russian manufacturers of security systems succeeded both in becoming competitive with foreign companies and significantly pressing them. Domestic designs occupy, at our estimates, more than 60% of inner secu-

rity market and production increase makes up approximately 30% annually. System Sensor Fair Detectors company founded by System Sensor is the most successful among foreign manufacturers. Integration of security systems market into engineering services is its important trend. Further development of the Russian manufacturers will depend in many respects on how they will manage to find their place both in the engineering construction and extra-departmental guards markets.

Primary automotive market, which is the market of devices delivered to assembly lines until recently has been under control of the traditional enterprises. Till now they have its bigger part. In many respects it is explained by that developments were not too complicated and automakers produced only one item for a long time. The new companies showed their worth at the market through modern equipment facilities and efficient management. For example, LVS Electronics founded in 2001 by the Russian businessmen and Taiwan company Lite-On Automotive is a leader in the market.

Foreign companies show great interest in Russian automotive market following their

customers — carmakers and open production in Russia. Siemens set control over one of the leading Russian automotive manufacturers — Avtel company (Kaluga) and is about to develop a large automotive production for Volkswagen.

The market of additional electronic equipment for cars (car alarm systems, computers, parktronic systems, multimedia etc) has been formed by the new Russian companies such as Al'tonica, Magic System, AutoAudioCenter and others. Now Russian designs take dominating position at the markets of car alarm and antitheft systems. Share of the Russian designs grows in the segment of car multimedia systems as well. We forecast more than 35% annual growth of the Russian automotive manufacture in the nearest years. It will be caused by rise of number and complexity of electronic blocks in domestic brands, allocation of foreign assembly manufactures and growth of Russian market and car park as well.

There is parity between the new and traditional manufacturers in the market of retail equipment. Legislative and administrative barriers defend it from foreign companies. Just as for primary automotive market, pro-

to develop Russian consumer electronics manufacture of total cycle and valuable technological industry it is necessary to cancel import duties on electronic components. It is important to level conditions with Eastern European and South-East Asian manufacturers where there are no the duties

duction potentialities of enterprises have more importance than innovations. Last years the market has been stagnating and we think that softening of legislation for retail trade can reduce need in cash registers as early as this year causing big decline in production.

At the **inner consumer market** share of Russian products doesn't exceed 20% accounting for production made under Russian brands and it's more than 80% accounting for consumer electronics assembled in Kaliningradskaya region by request of foreign companies.

The traditional Russian manufacturers are presented in the consumer market in segment of white goods (SEPO, Birusa etc) where share of mechanical equipment and manual labor is large and proximity to markets is very important through big size and weight of final output. At the same time, technological development of the segment is going on much slower than in the markets of, for example, TV sets and cellular phones. Thus, big production areas and labor force of the traditional manufacturers are serious competitive advantage. The new companies work in the consumer market either in narrow segments of innovative production (multifunction phones Palikha, ultrasonic

washing devices Retona etc) or in mass production of economy class.

Modest success of the Russian brands is explained, firstly, by their much less marketing budgets compared with the world leaders. Russian companies can't achieve their customers through advertizing noise to inform of benefits from their products. Secondly, Russian consumer electronics has no essential features and advantages — as a rule, it is reduced modifications of the world products.

Foreign and the Russian consumer manufacturers transfer assembly to Kaliningradskaya region to reduce production cost at the expense of duty-free import parts and a number of tax remissions for residents of the economic area.

Development of the Russian consumer electronics manufacturers can be caused by forming new markets, for example, by market of set-top-boxes for digital TV where time-to-market and technical excellence is crucial. Market of gadget (wireless handheld devices) has a great potential. To achieve much success cooperation between Russian contract designers experienced in making gadgets on demand of foreign manufacturers, Russian electronics manufacturers and large trading networks is needed.

To develop Russian consumer electronics manufacture of a total cycle and valuable technological industry it is necessary to cancel import duties on electronic components. It is important to level conditions with manufacturers of Eastern Europe and South-East Asia where there are no components duties.

Depending on government decision concerning custom duties consumer electronics

manufacture as a large-unit assembly can grow along with a market for 15—20% annually or that growth can be multiple due to manufacture widening and foreign investments.

Military and aerospace markets are the most closed both for foreign companies and private Russian designers and electronics manufacturers. However, in many cases technological inferiority of enterprises controlled by government doesn't allow them to fulfill tasks of Defense Ministry and it makes them to get private companies as subcontractors of the second level to take part in most projects on designing and manufacturing military equipment of new generation. In this year the first precedent of direct interaction was set between private company and military customer. Amount of designs and military manufacturing by new companies will be well growing due to cooperation with traditional military manufacturers.

Redistribution of powers between Industry and Trade Ministry and State Corporation Rostekhnologii will exert big influence on the market. Rostekhnologii was established after breaking up Industry Agency (Rosprom) which was responsible for state programs on radio electronics and military-industrial complex. Further state policy concerning private business is especially important. While the Ministry gradually turns its face to private business and seeks ways for cooperation between traditional and private enterprises, Rostekhnologii strengthens administrative control over military enterprises that is hardly in interests of the private companies.

Amount of **electronic components manufacture** in Russia made up to 400 million in 2007, a quarter of which is due to export de-

liveries. Average annual growth for the last five years is about 10%. In 2008—2009 we expect much higher figures related with the beginning of IC manufacturing for smart cards at the new 0.18 EEPROM line at NIIME and Micron (Sitronix) company and extension of technological potential of a number of state enterprises financed according to the national target program.

Microelectronics manufacture, particularly semiconductor one, is most attractive for investors. While establishment of modern manufacture for electronic equipment costs several million or tens of million dollars, establishment of semiconductor manufacture needs several hundred of million or several billion dollars. Now only smart-cards market allows achieving amount of deliveries to justify investments to establishing semiconductor manufacture provided that the market will be monopolized by one vendor. It seems, powerful PR campaign organized by Sitronix to support 0.18 EEPROM project aimed at giving the market to Micron. While associated company AFK System controlling big telecoms operators provides a large part of sim-cards market to Micron, political and public support is of great importance at the market of government orders (electronic passports) and municipal market (transport cards).

Angstrem also claims to the market of smart cards. The company announced its plans of buying and moving AMD 0.13 production lines to Russia from Germany. Angstrem has been behind Micron for more than 18 months in implementing its investment plans and the lagging allows Micron to achieve its aim step by step. For example, in 2007 Micron had received a large market share of transport cards according to Moscow Metro project. It is clear that all these projects are out of interests of wide range of the Russian electronics manufactures since smart-card production is all-sufficient.

Manufacture of passive and electromechanical components is not so attractive for investors as semiconductor market. Development of connectors, inductors, capacitors and resistors in Russia is directly connected with

to turn high technologies and innovations into engine of the Russian economy new president and government have to solve a task of combining economic stability with providing business liberties and increase in prestigiousness and economic benefits of creative business activities

development of consumer and computer equipment at the components' level. Manufacturers of consumer electronics will create demand sufficient to attract Russian and foreign private investors to manufacture of passive components as well as printed boards. Presently the Russian manufacturers of passive components and the traditional enterprises of radio-electronic industry work on short-run demands of military-industrial complex that allows them to support old technologies and keep old specialists.

CONCLUSION

History of many countries shows that open economic system is more efficient than closed. Open system based on competition better discovers a main resource of innovation economy — inwardness and talents of a man. It is confirmed by development of the Russian electronics manufacturers. To turn high technologies and innovations into engine of the Russian economy new president and government have to solve a task of combining economic stability with providing business liberties and increase in prestigiousness and economic benefits from creative business activities.

The main principles of solving the task are following:

1) COMPETITION SUPPORTING: renunciation of direct participation of government in trade businesses (private and state companies), renunciation of administrative control through its change by economic regulation. For example, government target programs provided for direct state investments to some enterprises undermine interest of private investors and give re-

ipient no reasons. Increasing purchasing budget at the expense of cutting direct government investments and planning purchases will allow industrial enterprises to attract investments without assistance in most cases.

2) STIMULATING CREATIVE INNOVATION:

taxation of value added and salary make speculative business more profitable compared with creative activities. Accordingly, one should transfer tax burden from value added and salary to profit and/or turnover.

3) RISING EDUCATION STANDARD AND PROFESSIONAL QUALIFICATION:

important decisions have been made to stimulate investments to education — education costs have been freed of taxation. The next step can be made toward development of laws allowing protecting investments to education of employees. It is necessary to stimulate migration of highly skilled specialists into Russia.

4) INTEGRATING RUSSIAN COMPANIES INTO THE WORLD MARKET:

it is necessary to remove bureaucratic and custom barriers impeding external economic activities of Russian enterprises — to cancel components duties, automatize import and export procedures to maximum and cut powers of customs officials.

5) PROMOTING RUSSIAN HIGH-TECH BRANDS:

the respective program has been prepared by the Ministry of Economic Development. It is necessary to use all state resources in implementing the program and thus to switch attention of mass media, officials and community from raw materials and trade businesses to innovation high-tech companies. **HEP**