

# Display Technologies, Products and Market in Russia

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## ABSTRACT

Capacity of different segments of Russian display market, Production of display products and components at Russian regions, Prospects of display development and production in Russia and CIS are reviewed in the paper.

**Keywords:** TV sets, market, display production, national programs.

## 1. INTRODUCTION

In [1-6] there is a review of top display technologies in Russia, Byelorussia and Ukraine from 1993 to 2000. The goal of the present paper is to give outlook of the structure of the Russian market of display products, its trends and future opportunities.

### 1. Capacity of different segments of Russian display market

In Table 1 there are listed main segments of the Russian market of display products. A rough estimation of their capacity and revenues is given according to publications in Russian magazines and newspapers, internet, data of distributing companies, and investigations of consulting companies.

Table 1. Structure of the Russian market of display products

Segment	Components	Capacity (units)	Revenue
Consumer	CRT, LCD, PDP CRT, LCD	8 mln. TV sets 6 mln. monitors	\$2400M \$900M
Office and trade	LED, LCD	~3 mln.	\$90M
Transport	LED, LCD, CRT	~0.5 mln.	\$50M
Movies	DLP, LCD, Projection	~500	\$25M
Advertisement	LED	5,000	\$100M
Device engineering	LED, LCD	~1 mln.	\$100M
Industry	LCD, VFD	~0.5 mln.	\$50M
Military, avionics	LCD, LED, CRT, Projection, VFD, OLED	~10,000	\$50M
Cars	LED, LCD, VFD	~0.7 mln.	\$70M
TOTAL			\$3745M

Fig.1 is an illustration of a production of some Russian organizations.



Fig.1. Display products of different Russian organizations presented at Exhibition Display-06 (Moscow, 14-16 June 2006). a) Incotex Co. (tiled plasma and LED panels); b) AR Technology (rear projection modules and big tiled screens); c) Araneus Ltd., Yoshkar-Ola (out-door and in-door LED screens); d) Design Bureau Display, Vitebsk, Byelorussia (rugged displays); e) Volga RDI, Saratov (LCD, VFD, FED, electrochrome displays); f) Technical Solutions, Moscow (rugged displays for extreme ambient conditions); g) Avro Co., S-Petersburg (rugged displays for ships); h) (car cockpits)

Dynamics and structure of the largest segment (TV sets) is shown in Fig.2. The trend of the share of CRT TV sets reduces like world-wide. In the end 2005 the CRT TV sets fell to the share 58% of the total market, LCD – 28%, PDP - 13% (RATEC data).

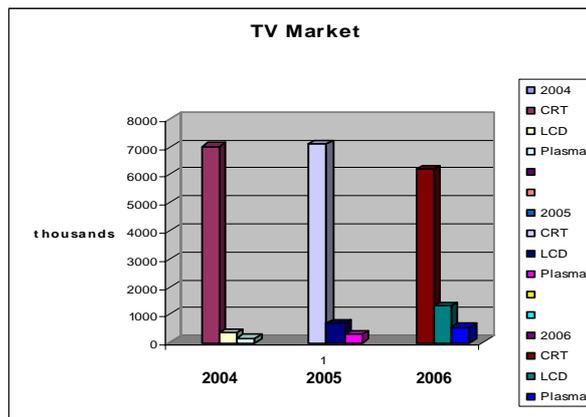


Fig.2. Structure of the market of TV sets from 2004 to 2006.

### 1.1. Structure of LCD TV market

The segment of LCD TV sets and panels is the most dynamic, its capacity reduced by almost 3.5 times for a year from 2004 to 2005, while its revenue grew by 3 times (Fig.3). Average price in 2005 was as high as \$1080 that is ~70% of the price in 2004. The share of different sizes of LCD TV sets is shown in Fig.4. Leader of sales is Philips (~60% sold LCD TV sets), followed by LG and Sony. Among Russian TV sets manufacturers there are Rolsen, Polar, Sitronics; in 2006-2007 Novex, Erisson, and Vestel intend to open their production.

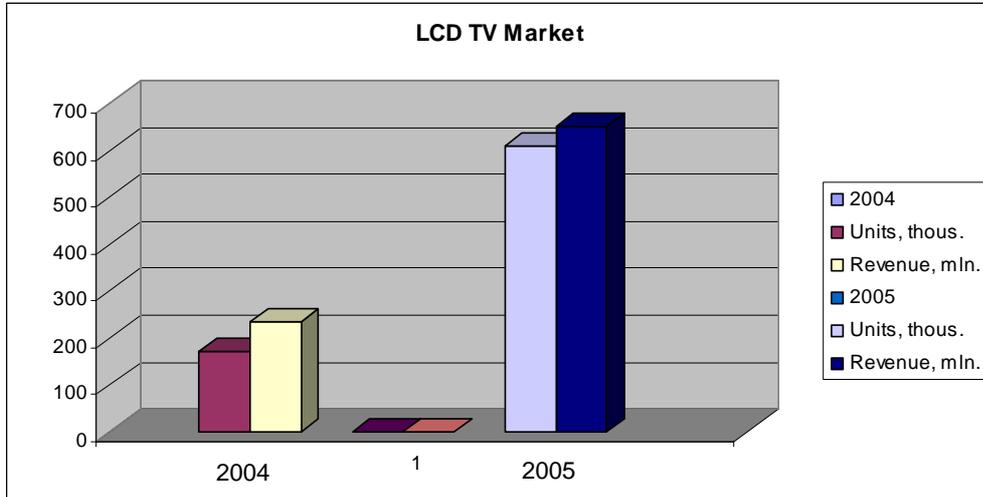


Fig.3. Market of LCD TV sets in 2004-2005.

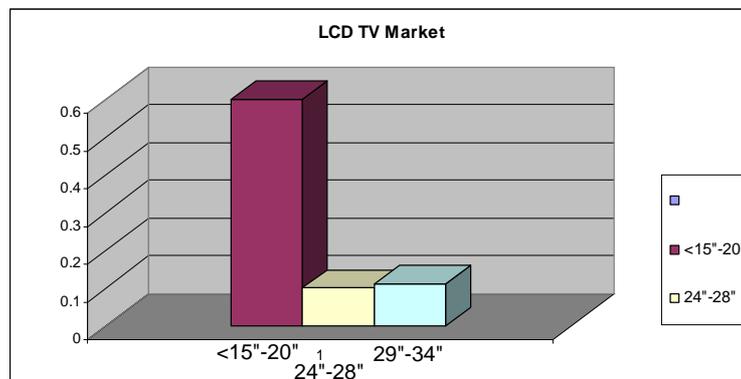


Fig.4. Share of different sizes of LCD TV sets in the Russian market

### 2. Production of display products and components at Russian regions

Structure of the market of the components for the TV sets is determined by the changed consumption of the customers. At present Kaliningrad region became the leader of the TV sets production owing its tax and custom benefits. The license production of different modern TV brands by the main factories located in Kaliningrad region is illustrated in Fig.5. It is to note that a Samsung delegation discussed in May 2006 an opportunity of the building of a TV factory with the regional administration.

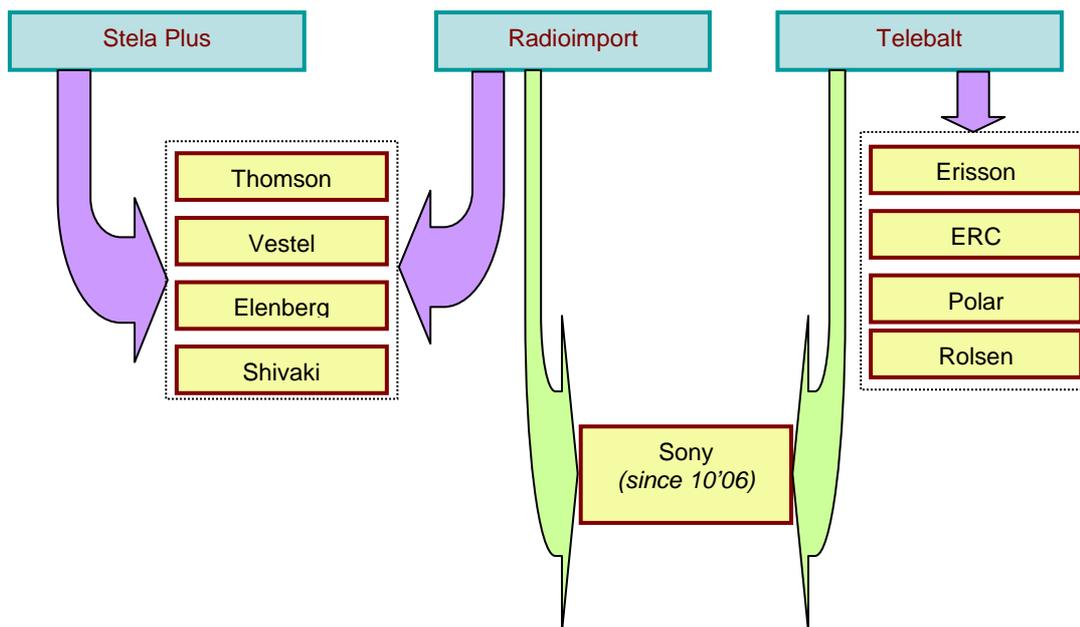


Fig.5. Production of different modern TV brands by the main factories located in Kaliningrad region

At present Moscow region becomes another big center of the production of both TV sets and LCD panels in Russia. A multi-product factory is opened in Dorokhovo (Ruza district) LG in spite of conflicts with Ministry of Natural Resources. Among Russian manufactures it is note about JSC Concern Scientific Center (a subsidiary of AFK "System") which in September 2005 started production of LC panels and LC displays for TV and monitors in Zelenograd. An industrial area comprises four factories: Quant, Elax, Elion, Micron (LC panels). The monitors will be sold under Sitronics brand. JSC Concern Scientific Center is a strategic partner of AFK "System" to create the first in Russia vertically integrated company for consumer electronics under united trade mark Sitronics.

Since April 2006 Fujitsu Siemens Computers (FSC) opened a production line for LC monitors at Quant factory in Zelenograd. FSC suggests increasing its share at the Russian monitors market from 0.3% to 35%. FSC and JSC Concern Scientific Center are not competitors because the first company produces devices for b2b segment and the second for the consumer segment.

There is only one example of the moving TV sets production from Moscow region. Rolsen factory was located in Fryazino, from 2007 its production will be situated in Voronezh and Kaliningrad.

According to DTC WorldWide evaluation the Projection devices market in Russia is in 2006 as high as 72,000 units (Fig.6). After 3 years it will grow by 2.5 times (180,000 units). Main vendors are BenQ – 16%, Sanyo – 12%, Epson – 9%, Panasonic – 7%, Toshiba – 6%, Mitsubishi – 5% (Fig.7). The corporative segment share is more than one half. It comprises the installation market with big conference halls, control centers et al. Rooms of organizations' leaders are equipped with audio and video facilities, managing systems and commutation tools. In Russia companies like AR Technology and Polymedia are known players in this segment.

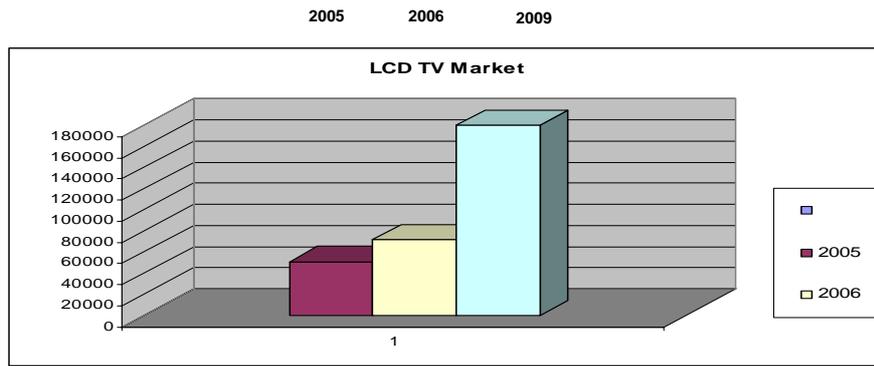


Fig.6. Projection devices market in Russia in 2005, 2006 and 2009

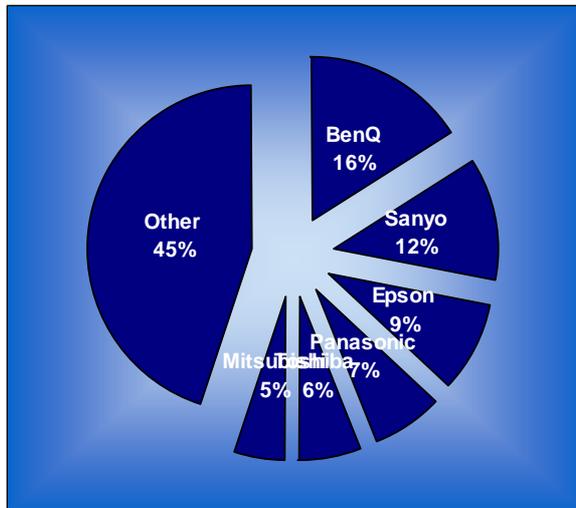


Fig.7. Main vendors of projection devices market.

Digital Cinema is another perspective direction of development of this segment. 10% of movies in the world are issued in digital format (typically DCI – Digital Cinema Initiatives). Merits of digital projection are absence of the film, no logistics, no store are needed too. Main disadvantage is high price digital projector (120,000-150,000 euro), while for a typical movie projector the price is as high as 30,000-35,000 euro. This direction is actively developed in Moscow. Since 2007 two digital movie theaters will function in Moscow – “Formula of Movie” with 9-hall multiplex in Trade Center “European” and “Cinema Park” – in “Global City” complex.

## 1.2. Outdoor advertisement

Another important segment of display market is outdoor advertisement. Revenues in 2005 were as high as \$910M with annual growth – 28%. Share of LED panels can be estimated as high as ~10% that corresponds to \$90M revenue. There is a lot of Russian suppliers of LED panels: INCOTEX Holding Company ([www.incotex.com](http://www.incotex.com)), Araneus Ltd., Yoshkar-Ola ([www.araneus.ru](http://www.araneus.ru)), ATV Outdoor Systems, Moscow ([www.aatv.ru](http://www.aatv.ru)), Forma Rent, Moscow ([www.formarent.ru](http://www.formarent.ru)), Consulting & Engineering Center of Microelectronics, Moscow ([www.cec-mc.ru](http://www.cec-mc.ru)), Vidikon Co., Moscow ([www.vidikon-group.ru](http://www.vidikon-group.ru)), NPF Traditsiya (Tradition), Moscow ([www.tradition.ru](http://www.tradition.ru)), Rubin Plant, Penza, D’Light Co., Volgograd ([www.dlight-ru.com](http://www.dlight-ru.com)) et al. (Fig.8).



Fig.8. Suppliers of LED panels for outdoor application at Exhibition Display-06 in Moscow (June 14-16, 2006).

### 3. Prospects of display development and production in Russia and CIS

In 2000-s display business in Russia is supported in frames of governmental programs, and organization of technoparks and special economic zones.

As to Governmental support it is note two programs. “Otobrazheniye-XXI” (Displaying-XXI) is started in 2006 in favor of Ministry of Defense of RF. Its target is development of unified sets of videomodules and organization of their production. Prof. V.P. Kuklev is Program coordinator (Fig.9a). Another program “Videomodule” is a part of scientific cooperation in frames of Union State Russia & Byelorussia in 2007 – 2010 (coordinators B.N. Levonovich, Russia, and A.S. Voitenkov, Byelorussia, see Fig. Fig.9b and 9c, respectively). Both programs are targeted to FPD including both LCD, PDP and autoemissive, OLED and flexible displays.

Russian government proposed also to start a new national project “Development of domestic element base for electronics”. Proposed budget of the entire project is 40B rubles (~\$1.5B). Possible share of display products in this program can be as high as 5-10%.

It is to mention also Byelorussian State Programs “Nanotechnologies” (Scientific Leader Academician V.A. Labunov, Fig.9d) and “Electronics” including display technologies and components such as FED, organic and inorganic phosphors, nanoporous silicon etc. [7].



Fig.9. a) Prof. V.P. Kuklev – “Otobrazheniye-XXI” Program coordinator; b) and c) B.N. Levonovich and A.S. Voitenkov – coordinators of program “Videomodule”, respectively; d) Academician V.A. Labunov – Scientific Leader of Byelorussian State Programs “Nanotechnologies”.

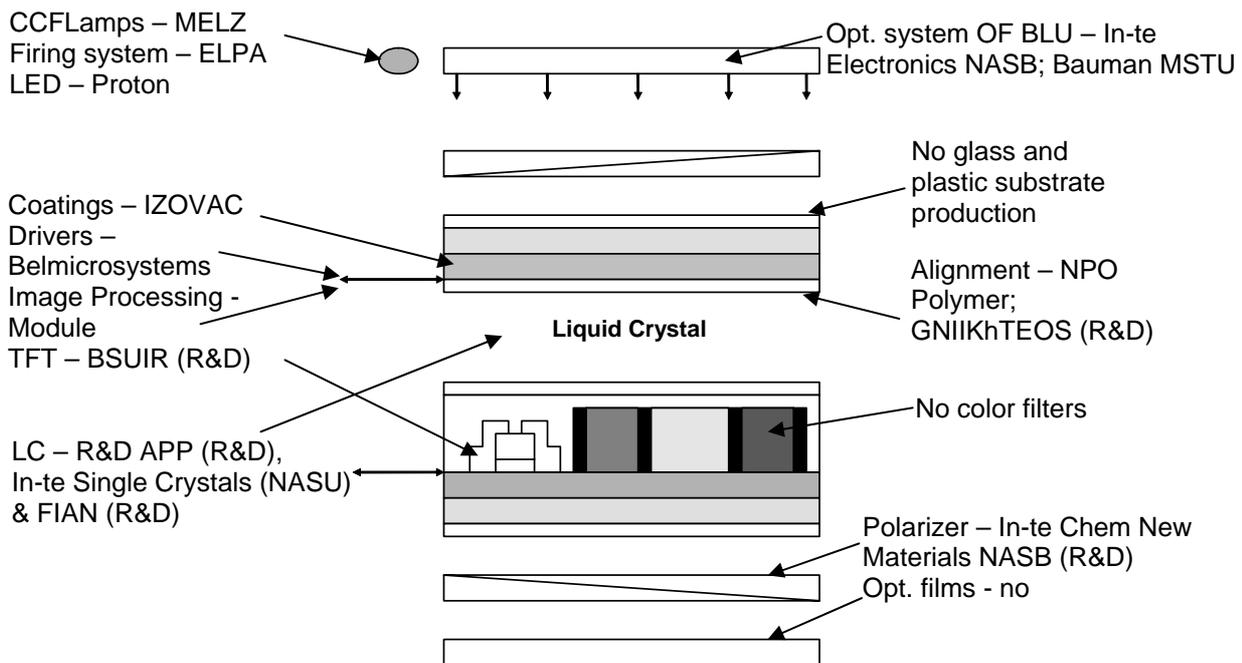
TV production in a Special Economic Zone “Kaliningrad Region” was discussed above. At present Russian government proposed a realization of a National Project “Special Economic Zones” in different Russian regions. An important part of

the project is an industrial zone Alabushevo in Zelenograd. Some residents suggested have experience in display technologies – JSC Angstroem, JSC ELMA, Moscow Institute for Electronic Engineering (Technical University) et al.

Technoparks is another form of development of high-techs by a small business. Technopark-Zelenograd functions in Moscow region since 2000. In 2006 total number of projects implemented there was as high as 124 including 8 projects relating display topics.

## CONCLUSION

Fig.10 illustrates opportunities of Russian & Byelorussian Manufacturers to produce the LCD and their components. At every part of the LCD pixel it is an indication of the potential of the organization to produce the component or to implement an R&D.



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