

DISPLAY'2000 - 2 CONFERENCE IN MOSCOW (EUROMONITOR'98)

Despite of the cold weather and necessity of coats even in Conference hall the event's atmosphere was warm and grateful. Both Exhibition "EuroMonitor'98" and Conference "Display'2000 - 2" (i.e., 1998. Next Conference will be entitled "Display'2000 - 1") were organized by the "Concept Engineering Co." which specializes in business development in Russia, and Russian Association of Display Manufacturers and Consumers "DisplaySoyuz" at information support of the SID. Russian SID Liaison and Coordination Council on Display Devices (CCDD) of Ministry of Economics of the Russian Federation took very active participation too.

Results of researches and developments of 30 institutions from four European countries (Russia, Belarus, Ukraine, Poland) were presented as well as production of some Japanese firms.

Exhibitions "EuroMonitor'98" and "Information Market'98" were opened by Deputy Director of the Information Agency ITAR-TASS and President of the Association "DisplaySoyuz" Edward Goushchin. The Secretary of the CCDD Sergei Darevsky explained goals and activities of the reconstructed Council to make Russian displays competitive with international ones. Director of the Russian SID M.G.Tomilin told about the first year activity of the youngest SID Chapter : attraction of new members, bylaws development, publication policy.

The scientific program of the Conference "Displays on the Threshold of the Third Millennium" ("Display'2000 - 2") was opened with the report by Victor Belyaev (Central R&D Cometa, Moscow) "Review of the world display market trends. New developments of light emission and modulation displays in the CIS countries and in the world". The reporter introduced listeners with up-to-date status and trends in display market and industry. The technological level of Russian, Belarussian, Ukrainian developments was compared with the level in other world in a view of a lot of tables with big data files. Russia has good positions in VFD, PDP. Interesting researches were made in FED and LCD technologies.

Then head figures of display industry have presented best achievements of their firms. Anatoly Mikhal'chenkov, Director of R&D Institute Platan, Fryazino, Moscow Region, told that indicator and projection CRTs kept main Platan's products. The first ones are used in avionics as HMD and in conditions of high ambient luminance. Quantoscopes (laser CRTs) are the most famous Platan's development in the second direction. They offer creation of bright picture as large as 100 square meters. New home-vision laser CRT with 2 m image was designed together with a Moscow firm AR "Technology". A.Mikhal'chenkov remembered also about former researches of FED with continuous diamond film.

Nickolai Zhukov, Director of the R&D Institute of Character Synthesizing Devices "Volga", Saratov, Russia has presented all the display researches and developments in the city of Saratov. Saratov is a world center in production and development of VFD and relative devices. Problems of phosphors and their aging are studied in the Saratov State University. Plant "Reflector" kept a high-volume production of various VFD. R&D "Volga" has proposed jumbo multimoduli VFD screens with brightness up to 5,000 cd/sq.m and as large as 50-100 sq.m, prototypes of monochrome and multicolor 8" and 14" VFD TV sets, and QVGA and VGA monitors with 35 V operation voltage. A few FED types are developed, and a prototype with wedge emitter was patented. R&D "Volga" kept also a Russian leader in STN LCD and cheap fast switching light shutters.

Alexander Voitenkov, Director of the Design Bureau "Display", Vitebsk, Belarus, presented production of his firm. "Display". There are monitors on the base of 84 cm diagonal "Philips" CRT with improved readability owing to new developed vibrations compensator, electroluminescent displays on the base of 10" "Planar" panels, liquid crystal monitors with "Philips" panels.

Belarussian State Program "Liquid Crystals" was presented by Director of Belarussian SID Alexander Smirnov. Main goal of the Program is to provide Belarus with own LCD. Basic researches and industrial developments were conducted by 27 Program contributors including 6 plants with LCD manufacture.

Prospects of development and market of projection devices in Russia were discussed by Alexander Sadchikhin, President of AR Technology Co., Moscow. He is the leader in Russia in this field. The country has now market of professional video and an industrial base to provide this consumption. Laser CRT is a great achievement of Russian technology. It can produce light flux up to 7,000 lumen and 3,000 TV lines resolution. Now a process of integration of Russian firms dealing with projection devices is under way.

Victor Sorokin, Director of the Ukrainian SID and Deputy Director of Institute of Semiconductor Physics, Kiev, Ukraine presented new reflective displays on the base of cholesteric-nematic transition in LC. Improved materials, orientation methods as well as new addressing have provided reduction of operating voltage from 100 V to 20 V, increase of view angles up to 140 deg. at 15:1 contrast ratio. Samples of running-line displays with an image storage time as long as one year were demonstrated. A complex for measurement of display parameters was also presented.

The hit of the Exhibition was a big screen made up AC PDP 20x20 cm modules (MicS Co., Moscow, Alexander Rakhimov Science Leader, Nikolai Roi, Director). A bright picture (400 cd/sq.m with 3 mm pixel or 1,000 cd/sq.m with 6 mm pixel in peak regime) with big diagonal size (meters) and high spatial resolution can be composed. Screen thickness is 10 cm only. A correction optics can eliminate a network of modules edges. The development is alternative to PDP units with 1 m diagonal.

Specialists in philosophy, art, ergonomics and medicine discussed problems of human visual perception in the context of displays and their applications.

Vadim Rubin, Head of Laboratory of Science Philosophy, Institute of Philosophy, Moscow took an introductory to the topic "Up-to-date human visual perception". During life of our generation a few semiotic systems of human psychology have been changed. There are oral word, scripts and writing tools, computer operation with symbols. Very often a human brain comes into collisions with visual events which are outside of its understanding. This results in "invisibility" of the events or things. The vision scheme should be changed with using of semiotics (system of symbols and operations with them) which became now inhomogeneous due to last decades variations.

A report by Alexandra Danilova from the Poushkin Fine Arts Museum, Moscow "From three dimensions to the fourth one : resolution size, speed of response + imagination" was illustrated with numerous modern pictures and compositions. She told about new iconography and change in visual perception originated from human interaction with media tools. Plays with virtual space and context around things result in art medialization. As art uses now new technical possibilities as engineering construction and devices are now matter of the art. Slides with televioloncello, TV boxes etc. were demonstrated.

Igor Litvak, Vice-President of the Russian Association of Applied Ergonomics told about display certification in Russia. New display standards are valid from 1998. They include items of user comfort, electromagnetic compatibility, different visual factors, and fire security of course. All the requirements in new documents are correlated to international ones.

Grant Demirchoglyan from the Institute of Sight Physiology, Moscow told in his report "Optimization of display systems taking into account human visual perception" about some effects resulting in fatigue and methods to avoid them. E.g., excess contrast ratio of a picture details and background can be compensated by a backlight or optical display framing. Eye training systems and programs have to be used to reduce an operator fatigue.

Next session was entitled "Various display applications". It was opened by the report of Maxim Tomilin, State Optical Vavilov Institute, Sanct-Petersburg, "LC visualization of defects on surfaces of crystal and amorphous materials". A simple and cheap method offers to receive an information about invisible physical fields inside a material which cannot be visualized by other microscopy methods.

New method of volume television was described by Albert Logutko, General Designer of Rakura-3D, Fryazino, Moscow region. Stereo image drawbacks are overcome by using of the method. A technique of information compression is main feature of the method. The volume vision

system is compatible with existing TV standards. It provides up to 100 000 of reproducible foreshortenings with number of distance grades from 16 to 64.

Janusz Parka from the Military Technical University in Warsaw, Poland illustrated applications of displays in civil and military aircrafts produced in Russia, U.S., France.

The Sub-Session "Emissive (active) displays" contained reports by Eugene Givargizov, Institute of Crystallography, Moscow about application of diamond films and microtips in FED, Anatoly Ishkarin, Institute of Integrated Circuits, Moscow on high reliability and low operation voltage of FED with silicon microtips and application of these structures as broad-band (up to 120 MHz) digital receivers of radioelectronic signals.

Igor Pastukh, President of ECTA Co., Zhitomir, Ukraine presented activity of his firm on production and distribution of big screen on the base of DC PDP modules. In cooperation with Plasma, Ryazan, Russia the ergonomic and technological parameters are achieved which are as high as possible for this devices type. ECTA has won Barco in three Ukrainian tenders for big screens.

The next Sub-Session "Liquid crystal displays" was opened with the report by Vladimir Chigrinov, R&D Institute of Advanced Radioelectronic Systems, Moscow who has presented nursery teaching note-books with STN panels manufactured in Saratov's "Volga". Alexander Smirnov from Minsk followed Chigrinov with his reflective TFT and MIM active matrix LCDs. High aperture ratio (>90%) is achieved in his displays and high resolution spatial light modulators.

Some reports were devoted to application of polymeric materials in different LCD. Vladimir Kozenkov from , R&D Institute of Advanced Radioelectronic Systems, Moscow was the first who proposed to use photorefractive materials for LC alignment. These materials can used also for high density optical information writing.

Alexei Bobrovsky, Chemical Department of the Moscow State Lomonosov University told about new photoinduced effects in chiral polymeric liquid crystals. Contamination of different effects : photorefracton, selective reflection, photochromism offer to use the materials for data displaying, writing and keeping.

The last Conference report "Study of morphology of lyotropic liquid crystalline orienting films by the atomic force microscopy" was presented by Yuri Bobrov, R&D Institute of Applied Physical Problems, Zelenograd, Moscow region, Russia. The films are used simultaneously as aligning medium, color filters and polarizers.

A set of distributing firms were presented in the Exhibition. Activision is trade partner of the Sharp. It supplies projection equipment, takes services of different events. E.g., the presentation of the last visit of Microsoft President Bill Gates was supported by the Activision's. The other company DeLight 2000 is official distributor of CTX, DNP, Draper, Hitachi, Medium, Plus, Seico Epson, Synelec, Telex, Toshiba et al. It supplies projection and presentation equipment to 25 cities of Russia and CIS countries.

When the Exhibition and Conference have been finished finish the snow was melt and nothing did not remembered about the frozen state. The results of both events are inhomogeneity of development of different Russian and CIS institutions during the post-soviet period, keeping of high technology level in some display developments, namely PDP, VFD, laser CRT, LC photoalignment, and some other directions, creation of the network of distributors for display providing in the Russian and CIS market.

The Exhibition organizers are waiting new visitors in June 1999 when next annual event will take place.

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