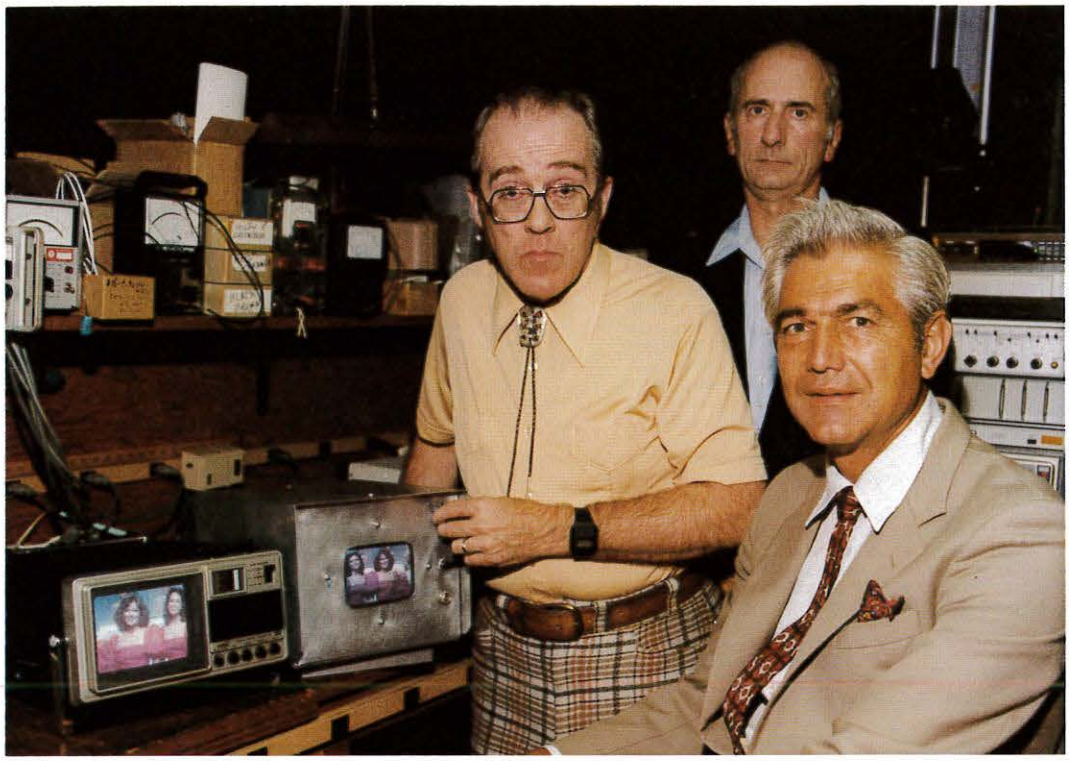
Information Display

The Official Journal of the Society For Information Display

OCTOBER 1982



SID Members Waldo R. Robinson, David M. Goodman, and Parviz Soltan are shown here with a prototype color display using a single-gun beam-index CRT. This display system is being evaluated at the laboratory illustrated above in the Naval Ocean Systems Center, San Diego, where Soltan is acting head of Manned Systems Information Division and Robinson is a display systems project engineer. Goodman is president of Davex Engineering Company, San Diego, responsible for constructing working models of 5-inch and 18-inch beam-index color CRTs with associated electronics.

We are indebted to SID Northeast Director William Mulley, Project Director, Aircraft and Crew Systems Technology Directorate, Naval Air Development Center, Warminster, PA, for calling attention to the significant work being done to produce a color CRT system that is more efficient than shadow mask designs. Bill Mulley's Directorate is funding development work on the beam-index tube and electronic circuitry at NOSC and Davex. Following are quotations from Mulley, with additional material from him plus detailed technical data from Robinson and Goodman appearing on pages 4 and 5:

"The beam-index CRT is a single-gun tube with the color phosphors arranged in parallel thin vertical stripes on the tube face. These stripes are arranged in groups of three primary colors, with each group separated by an indexing stripe. As the beam is scanned across the color groups and hits the indexing stripes, it radiates short bursts of UV backward into the neck of the tube. These bursts are detected and used to synchronize the color demodulation so as to modulate the beam at the appropriate time to excite the correct color phosphor.

"The basic simplicity of this tube should make it rugged and economical to produce. It is limited to raster scan and requires complex external electronic control to modulate the beam with appropriate time delays."

Fortunately, modern ICs make possible much smaller and more economical control circuits for the beam-index CRT than were possible with earlier versions of this display system. This development is expected to be useful because of improved color performance, compact circuitry, and lower power consumption than shadow-mask CRT systems, both in military airborne and ship applications and in future industrial/commercial displays.

FRONT COVER MATERIAL WELCOMED: Every month **Information Display** usually features one or more active members of SID and the products with which they are most closely associated. Please send a glossy print and appropriate captions so that you, too, can be on our front cover. Send your material to Ted Lucas, Editor, P.O. Box 852, Cedar Glen, CA 92321, or to our National Office Manager, Bettye Burdett, for Information Display, 654 North Sepulveda Blvd., Los Angeles, CA 90049. Next deadline for material from you is November 10 for the December issue. If you miss it, try for the January issue. NOTE: We also welcome feature articles on interesting projects.

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CONTRIBUTORS WANTED

This month's *Information Display* contains more editorial pages and more advertising than any issue in the past 5 years, an encouraging sign for our SID Journal. Also we're continuing to get new feature articles such as that on the beam-index color CRT display system, thanks to cooperation from such contributors as Bill Mulley.

We're hoping for more previously unpublished technical stories. One source is in the papers presented at SID Chapter meetings. We urge Chapter Chairmen to submit technical papers, with illustrations, for publication in the Journal.

To encourage this effort, Lynn Maldoon, Publications Chairman, Tom Curran, Publicity Chairman, and Ted Lucas, Journal Editor, will judge all such technical papers submitted by SID Chapters and award a prize for the best paper at the SID International Symposium in Philadelphia in May 1983.

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ADVERTISERS' INDEX

Beam-Index CRT Display Technology

1. Summary by William Mulley (NDAC)

The 5-inch beam-index color CRT shown on the front cover has 8-mil-wide vertical color stripes forming a 24-mil triad pitch. The index strip is approximately 2 mils wide and is repeated for each triad.

Currently work by Davex with this 5-inch prototype includes use of P-22 phosphors deposited to optimize for 12kV operation. Peak white brightness is estimated at 50 foot-lamberts. Each color is bright and appears to be pure in content. Investigations are continuing to determine if further improvements can be made by raising the acceleration voltage to 18kV, replacing the electrostatic focus with magnetic focus, and incorporating narrow-band filters to enhance contrast.

Both Dave Goodman and Parviz Soltan are optimistic about the future of the beam-index tube, which they believe will ultimately have a highlight brightness of 1200 foot-lamberts, using high-emission cathodes and higher operating voltages. Efforts are being planned for work on both the CRT and its associated electronics. Work on the CRT will be on the electron gun, the face plate, and the phosphors. Electronic development will concentrate on the index signal detectors, the signal processing, video amplifiers, and digital image and raster control.

2. Applications Note by Parviz Soltan (NOSC)

Work conducted during FY '82 and planned for FY '83 by NOSC and Davex is being funded by Bill Mulley's organization at NADC because this beam-index CRT display system appears to offer marked advantages for airborne visual presentations in color. This is particularly true where shock, vibration, magnetic fields, and temperature present severe environmental problems. Other gains are achieved in reduced weight of the assembly and lower power consumption.

Similar considerations make the beam-index color display technology of interest for ocean-going vessels, including submarines. Navigational and tactical displays are typical shipboard applications, as well as cockpit displays in aircraft.

3. Some Basic Considerations by David Goodman, Davex Engineering

A beam-index system is a complicated control system. It is deceptive in its simplicity. It looks simple but it is not a simple system. The control system is a mixture of an open loop system, a closed loop system, a feedback system, and a feed-forward system. It is also nonlinear, and it operates over an extremely large dynamic range.

The basic block diagram is shown in Figure 1 wherein the CRT itself, in terms of its construction, is very similar to a monochrome CRT in that it has a single electron gun with a single electron beam. The light-emitting screen structure is deposited directly against the faceplate so that there are no vibrating elements at the faceplate. The target screen itself is comprised of vertical stripes of phosphors which emit the different colors of light coupled with an indexing material which determines or signals the position of the scanning beam. If the stripes are all vertical and the scanning of the electron beam is essentially horizontal, one has a string of pulses that have a sequence governed by the number of stripes and the scanning rate.

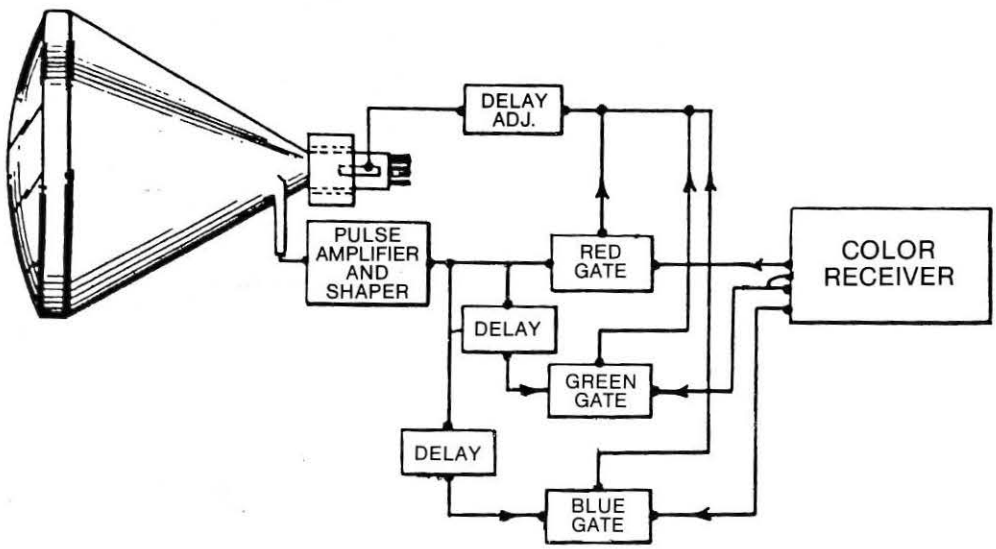
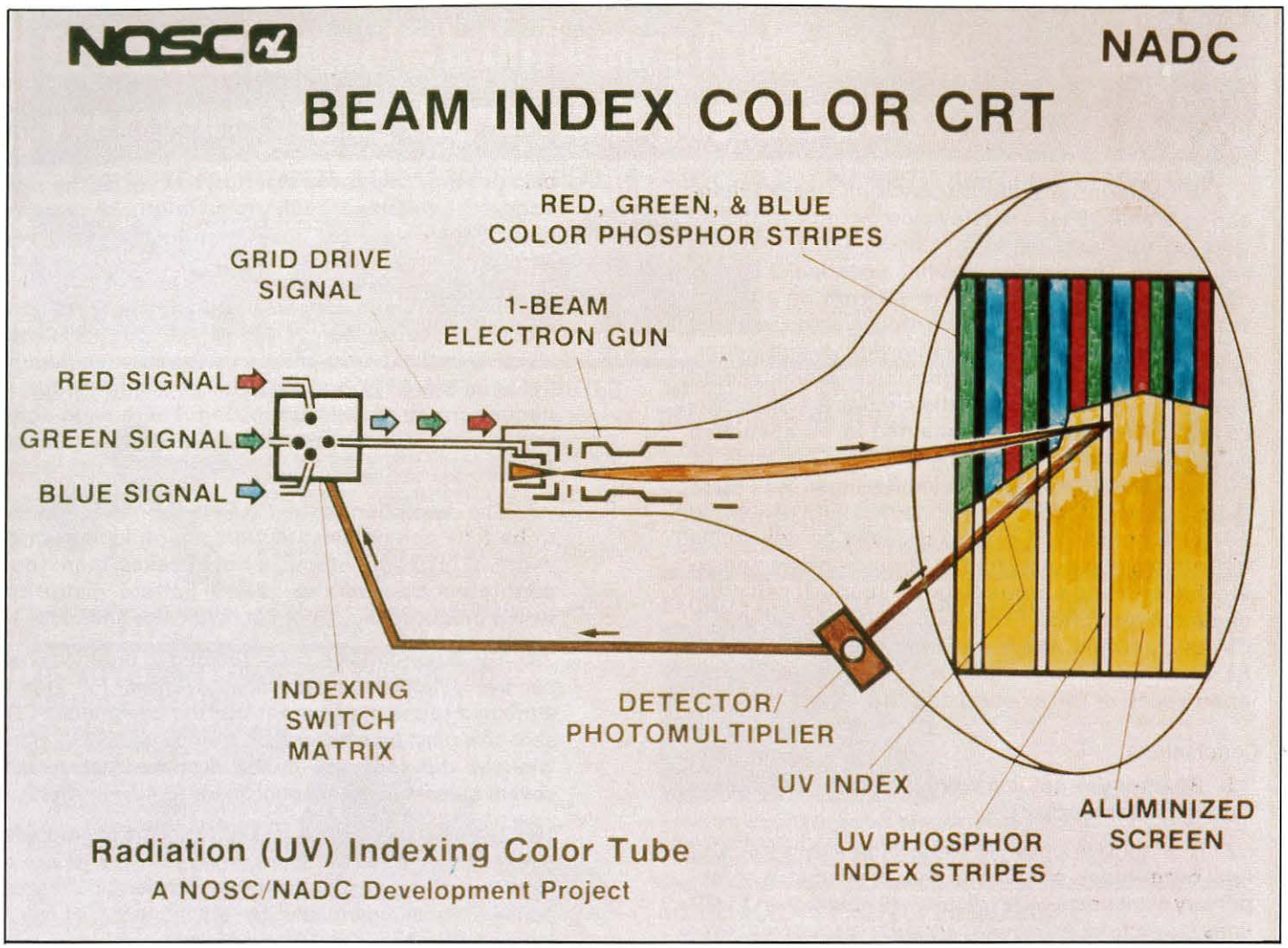


Figure 1. Block Diagram of Beam-Index Color Display System



It is essential to detect the position of the beam, and the index signal is used for that purpose. In the block diagram is shown a pulse amplifier which picks up the index signal, shown at the CRT gun region, from which there are derived three separate signals. The first signal goes into a red gate. After a suitable delay it is at a green gate, and with a second or third delay it feeds into the blue gate. The effect of these pulses into the gates is to sample the video red, green, and blue information coming out of the color receiver. These color signals can be either RGB or color difference signals. In any event, they are sampled sequentially very rapidly, and they come back to control the excitation of the electron gun and then the target screen.

Now in addition to taking into account the scanning rate and the number of stripes on the screen, there is also a matter of registering the development of the image. For that purpose there is a little delay adjustment shown in the series loop that is used to slide the energizing impulses with respect to the screen itself. Using a digital control system and modern high-speed ICs, it has been possible to demonstrate numerous advantages of the beam-index color CRT and associated electronics. These advantages include:

1. Exceptional picture quality that approaches photographic standards.
2. Small (5-inch diagonal) and medium (18-inch) sizes now; large (projection) screens appear feasible.
3. Lower operating voltages, operating at monochrome voltages.
4. Lower power consumption, saving energy.
5. Fewer parts, lower weight, environmentally robust.
6. Simplified adjustments, easier maintenance.
7. Less complex software for a variety of applications.
8. Production costs for various sizes would appear to be less than for shadow-mask tubes.

Continued on page 6

Continued from page 5

4. Excerpts from Evaluation Report by Waldo R. Robinson (NOSC)

A. Equipment

The beam-index color display from Davex Engineering is an RGB type of television monitor with controls on the front panel for power and brightness adjustment. The viewing area has a nominal diagonal measurement of 12 cm and is flat with no contrast enhancement of any kind. The input signals required are the red, green, and blue color signals and a combination luminance/sync signal, all of which should be referenced to ground as the circuits are all direct-coupled. The display is contained in an aluminum cabinet measuring 21 cm high by 25.4 cm wide by 30.5 cm deep (8 x 10 x 12 in.) and weighs 3.17 kg (7 lb.). However, it is not self-contained with respect to power supplies. The display requires an adjustable high voltage dc supply for the phoromultiplier indexing detector and a low voltage dc supply for all other circuits. Were these items included in the cabinet, it obviously would weigh more but would not have to be any larger dimensionally as there is considerable open space in the existing cabinet.

B. Conclusions

1. Beam-index color is worthy of further investigation and development.

2. It should be possible to develop very soon 525 line beam-index color. It is not clear that a three-primary color beam-index display with more than 1,000 lines is practical. A two-primary color display with over 1,000 lines has a good chance for success.

3. The beam-index display made by Davex Engineering performs impressively for continuous tone live TV as long as the received signal does not contain any electronically injected signals. The colors do not match those seen on the commercial shadow-mask TV (used for reference and comparison) nor can they be made to match! But if there were no other picture for reference, the beam-index picture would generally be judged acceptable.

4. The poor deflection linearity of the oem TV chassis severely limited the quality of the delivered display, the most noticeable degraded feature being the flat field color purity, particularly the red.

5. The VII signal generator output used in evaluation tests is limited to one volt of video, which produced about 10 fL of dynamic brightness. This was enough to overload the photomultiplier circuitry (indexing detection circuitry) as the pmt anode voltage had to be changed (inversely) as the brightness was changed. This area will require sophisticated circuit techniques to have good display performance over a wide dynamic range of brightness or to have high contrast.

6. The indexing signal detection (optical) does not appear to be sufficiently uniform as the displayed picture would break up at the right edge, which is the opposite side from the pmt, if the pmt voltage or the background brightness was too low, or at the right edge if the voltage or background brightness was too high. The margin for good performance was very narrow.

7. The CRT itself appears to function very well, the most noticeable defect being the doughnut-like shading in the center portion of the screen when no dynamic signal is present. This is probably due to nonuniformity of the aluminizing. There were some pellet-size blemishes that were due to weak indexing pulses.

8. The resolution of the CRT electron gun appears to be fully commensurate with the phosphor stripe width. (This parameter was not checked more thoroughly because of the severe pattern distortion, which produced very poor flat field color uniformity.)

9. The beam-index display seemed to produce sharper live pictures than the shadow-mask TV. This is attributed to the requirement that the beam-index CRT spot size must be smaller than a stripe width (0.2 mm), whereas the spot size in the shadow-mask usually covers at least two phosphor triads (0.43 mm/triad).

10. The video multiplexing circuit appears to have adequate speed for much higher resolution (~3 ns rise or fall time), but the video driver would need better response to meet high resolution requirements (its rise or fall time was between 10 and 15 ns).

11. There should be very little difference between developing a beam-index display and a monochrome CRT display to work within Mil-Spec magnetic field requirements. There are no residual effects after a magnetic field is removed, while there are such degrading effects with shadow mask CRTs.

12. Beam-indexing color should be a very stable color technique. Even though the Davex beam-index display has no exotic stabilization techniques incorporated, it exhibited no noticeable changes in color no matter how long it was on after an initial warmup of about 60 seconds for the deflection circuits and cathode.

(Editor's Note: Because of space limitations, much useful data on this program had to be omitted. Readers wanting more information may obtain a copy of "Beam-Index Display Technology: Background and Current Status," an address delivered by David M. Goodman at a joint meeting of SID, IEEE, NCGA, and the Optical Society of San Diego on 3/16/82 from Davex Engineering Company, 11568 Sorrento Valley Road, San Diego, CA 92121. Also the NOSC Evaluation Report, "Beam-Index Display Performance" by Waldo R. Robinson, is available from the office of Parviz Soltan, Code 823, Naval Ocean Systems Center, San Diego, CA 92152.)

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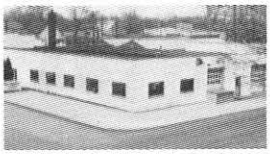

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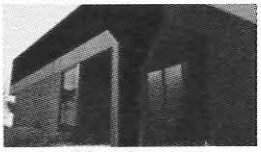

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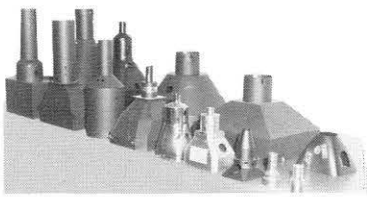

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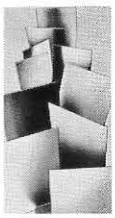

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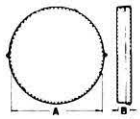

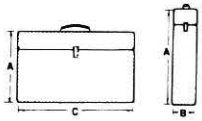

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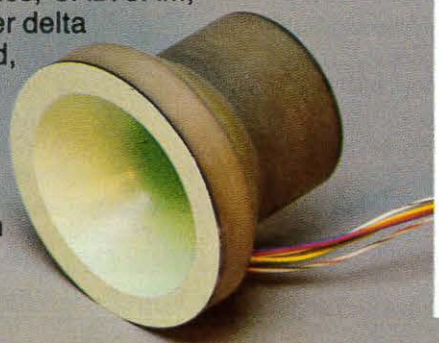
High resolution, color purity and convergence, combined with faster speed for more display information all combine to make deflection yoke design a most challenging task. Syntronic now offers the yoke design capability and technical assistance needed for today's and tomorrow's top quality full color display.

Now let us team up with you to create the color display you need for avionics, color graphics, CAD/CAM, medical instruments, etc. Wherever delta or in-line color displays are needed, Syntronic stands ready to offer our skill, experience and production capability to turn concept into reality.

If you're thinking of color . . . team up with Syntronic, the leader in yoke design.



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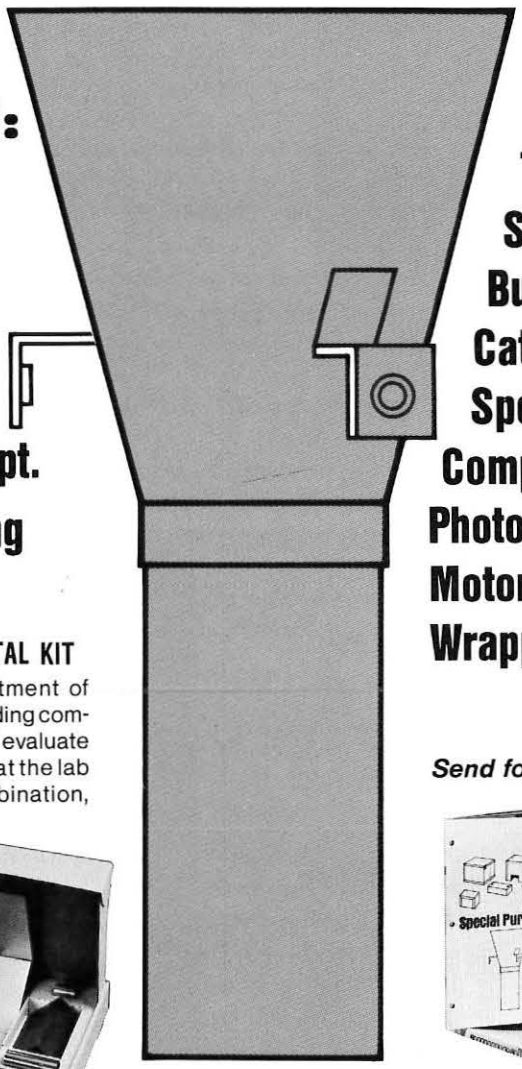

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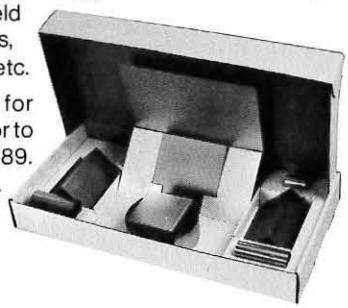
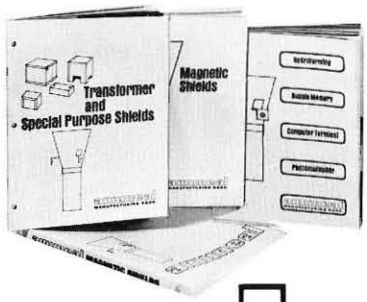


Send for complete Facilities Catalog



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THE SOCIETY FOR INFORMATION DISPLAY INTERNATIONAL SYMPOSIUM, the only annual global forum devoted to all aspects of information display, will be held in Philadelphia, Pennsylvania, in 1983.

Original papers, not previously presented, covering applications, research, development and currently available materials and techniques in the subject areas listed below, and closely related fields, are invited.

The Areas of Interest Include, But Are Not Restricted To:

Display Devices
Flat Panel Displays
CRT Displays
Projection Displays
Military Display/Systems
Hardcopy/Printers
Videodisc/Tape
Display Materials/Phosphors
Display Packaging
Electronics for Displays
Optics/Electron Optics
Human Factors/Perception
Standards/Measurements
Informations Systems
Display Product Development
Consumer Displays
Computer Graphics
Command/Control
Intelligent Terminals
Interactive Displays
Image Processing/Analysis
Storage/Retrieval/Facsimile

Submission Deadline: Monday, Dec. 6, 1982

POST-DEADLINE PAPERS: A limited number of 10-minute post-deadline papers, reflecting important new developments, will also be considered if a 500-word summary, with pertinent illustrations, suitable for publication, is received by March 4, 1983.

Supplementary SID 83 Features

SEMINAR: Tutorial lectures on display technology, presented by experts in the field of information display will also be held during SID 83 — Monday, May 9 and Friday, May 13. Featured will be in-depth talks on devices, techniques and systems.

AUTHOR INTERVIEWS: These sessions, pioneered by SID, which follow the conclusion of daytime presentations, provide a forum for extended discussions between author and audience. Demonstrations of devices and equipment are encouraged.

EXHIBITS: Highlighted, too, will be a three-day operational display of the latest equipment, components and accessories by industry from U.S. and overseas.

Mailing: All authors should send their abstract and technical summary to: Leonard Klein, Palisades Institute, 201 Varrick Street, New York, NY 10014. Overseas authors should also send one copy of their abstract and technical summary to one of the following appropriate overseas program advisors: Europe — C.J. Gerritsma, Philips Research Laboratories, Eindhoven, Netherlands, W. Proebster, IBM Germany, 7030 Boeblingen, Federal Republic of Germany, or A. Martin, Thomson-CSF, BP 55, 38120 St. Egreve, France, Asia — K. Miyaji, Shibaura Institute of Technology, 3-9-14 Shibaurer, Minatoku, Tokyo 108, Japan, or S. Kobayashi, Tokyo Univ. of Agri. of Tech., Nakamachi, Koganei, Tokyo 184, Japan.

For further information contact:

Lewis Winner, Symposium Consultant, 301 Almeria Avenue, Coral Gables, FL 33134. Tel.: 305-446-8193

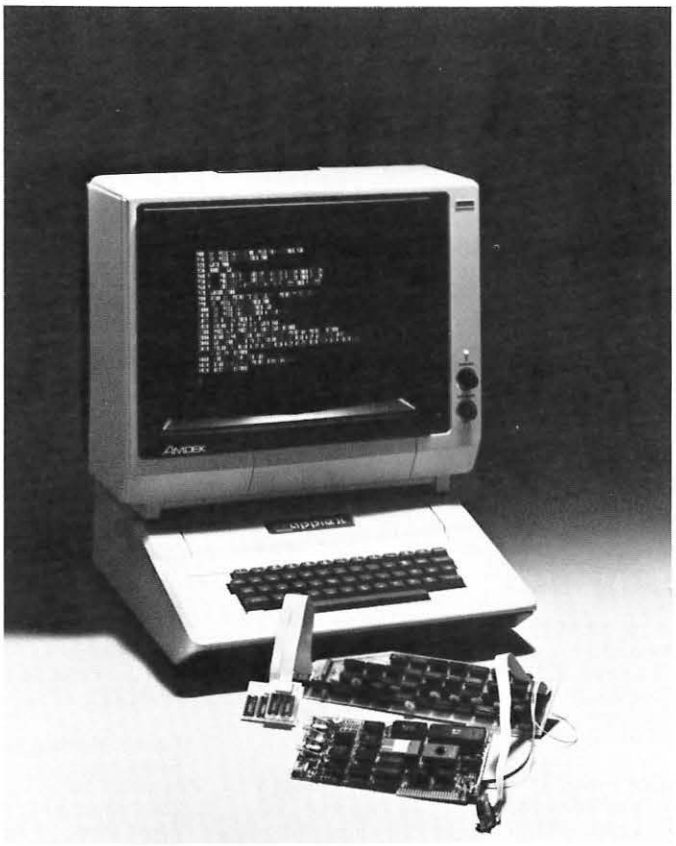
Andras Lakatos, Symposium Chairman, Xerox Webster Research Ctr., 800 Phillips Rd., Webster, NY 14580. Tel.: 716-422-9700

James Price, Symposium Program Chairman, Naval Ocean Systems Center, Code 711, San Diego, CA 92152. Tel.: 714-225-2665

New, Combination Digital-Video-Multiplexer Interfaces Apple II Computer To RGB Monitor

A new, low cost digital video multiplexer for interfacing the Apple II computer to an RGB color monitor for high resolution graphics **and** 80 x 24 text display has just been introduced by Amdek Corp., Elk Grove Village, IL. The Combo-DVM is software color-channel programmable, permitting computer control of the RGB inputs.

Four computer-controlled, multiplexed video channels include: Apple-II 40 character-line text, Apple-II low resolution color graphics, Apple-II high resolution color graphics, 80 character-line text from a vendor board such as the Videx "Video-term," or the Advance Logic's "Smart-term." The new Combo-DVM board may occupy any slot in the Apple II computer. Low power consumption is assured with the use of low power Schottky logic.



GREETINGS TO NEW SID MEMBERS!

Each month you'll find a roster of new SID Members, listed by chapters with the Chapters in alphabetical order. If your name — or a friend's — should have been listed and was inadvertently omitted, please let Bettye B.Burdett or your Editor know immediately. We'll make amends in the next issue. Additional new SID Members are listed on subsequent pages and others will appear in the November issue.

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SID CALENDAR

OCTOBER 1982 TO OCTOBER 1983

October	17	Executive Committee Meeting, Cherry Hill. NJ
	18	National Board Meeting, Cherry Hill, NJ
	19 – 21	1982 International Display Research Conference, Cherry Hill, NJ
November	1	Proceedings, Volume 23, No. 2, 1982, Mailed
December	1	Honors and Awards Nominations Deadline (Submit to Gene H. Slottow, 101 Meadows, Urbana, IL 61801)
	6	Abstract Deadline for SID 1983 International Symposium (Submit to Leonard Klein, Palisades Institute, 201 Varick St., New York, NY 10014)
	15	Nominations for National Officers and Regional Directors Due, (Submit to T. DuPuis, Nominations Committee Chairman)
	15	Bylaws Recommendations Due

1983		
January	11, 12	SID 1983 International Symposium Program Committee Meeting, Hilton Hotel, San Francisco
	11	Executive Committee Meeting, Hilton Hotel, San Francisco
	20	Quarterly Chapter Rebates Mailed
February	15	National Ballot Mailed
March	4	Post-Deadline Papers for SID 1983 International Symposium
April	12	National Ballot Return Deadline
	20	Quarterly Chapter Rebates Mailed
May	8	Executive Committee Meeting
	9	National Board Meeting, Philadelphia, PA
	9 – 13	SID 1983 International Symposium, Mariott Hotel, Philadelphia, PA
July	20	Quarterly Chapter Rebates Mailed
October	3 – 5	Japan Display '83, 3rd International Display Research Conference, Kobe, Japan

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Color Character Generator Model 801C

The Quantum Model 801C is a programmable RGB video test generator for use in development and manufacture of color monitors and terminals. The unit can be programmed to duplicate the video signals of a given CRT terminal or specific video application. Formats for many CRT applications may be stored in the Model 801C's EPROM, making it an excellent production test generator for companies who manufacture color display monitors for use in terminals. The 801C has all the features of the Model 801A plus color capabilities with sixteen selectable color patterns. These patterns allow testing for purity, convergence, gun tracking, geometry, bandwidth, focus, and brightness. Video amplifier characteristics may be accurately determined as color is switched on a dot basis.

FEATURES

- Sixteen selectable color patterns
- Two level grey scale for color tracking measurement
- Auto-sequencing-color-pattern changes character and background colors to assure equal phosphor usage for life test applications.
- Four selectable monochrome patterns (including crosshatch).
- Lockout switch inhibits unauthorized format tampering.
- Character set containing 68 characters.
- Up to 256 characters/row by 128 character row/frame (includes blanking).
- Custom characters programmable from the keypad.
- Interlace and non-interlace modes.
- Negative video capability.
- Non-volatile CMOS memory stores and recalls four color or monochrome formats.
- EPROM Storage of up to 141 user formats.
- Internal frequency synthesizer for variable dot clocks with crystal accuracy.
- Programmable dot clock range of 1.024-32.768 MHz color. 1.024-65.520 MHz Monochrome.
- Both video and sync timing are entirely programmable by the user.
- Automatic frequency calculation from entered parameters.
- Coded error messages to help identify invalid formats.
- Resident performance check formats.

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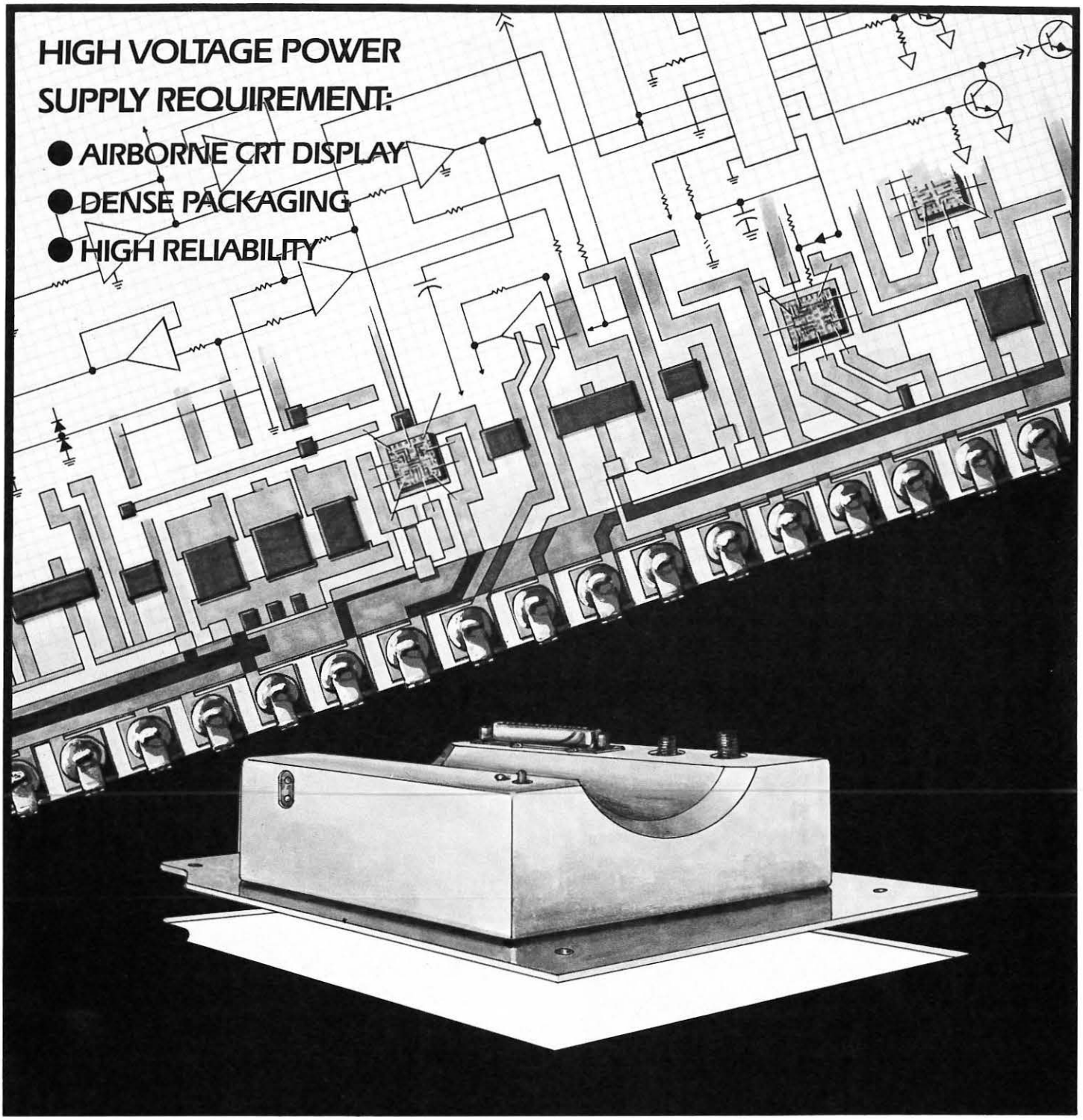

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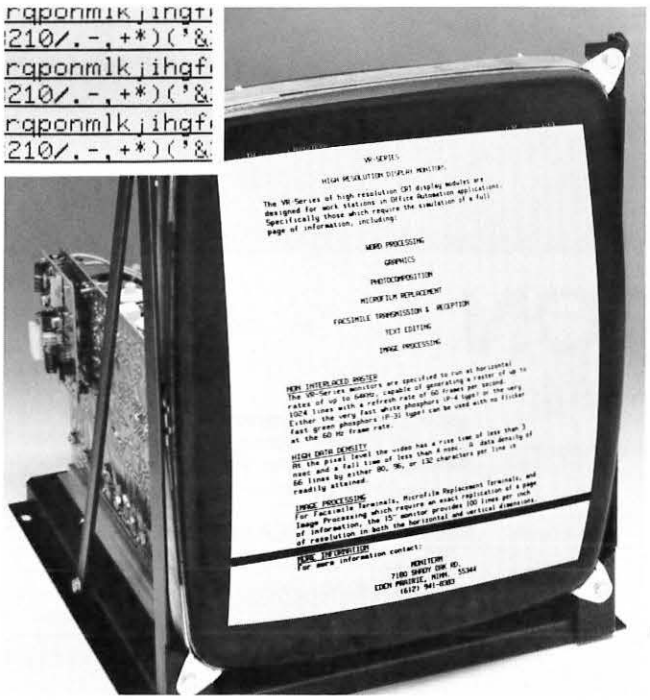


3 Bit ECL Interface For High Resolution Display Added By Moniterm

A new 3-bit ECL interface for the VR-Series high resolution monitor is now available in oem quantities from Moniterm, Eden Prairie, MN. With the interface the VR-800 and VR-1000 monitors can display 2, 4, or 8 discrete levels of intensity while running at horizontal frequencies up to 64 kHz, generating a non-interlaced raster of 1024 lines with a refresh rate of 60 Hz, considered ideal for graphic applications.

For word processing, photocomposition, micrographics, and other applications requiring an exact replication of a page of information, the VR-1000 provides 100 lines per inch of resolution in both the vertical and horizontal dimensions with up to eight levels of intensity. A display of 66 lines by 80 characters per line is readily attained.

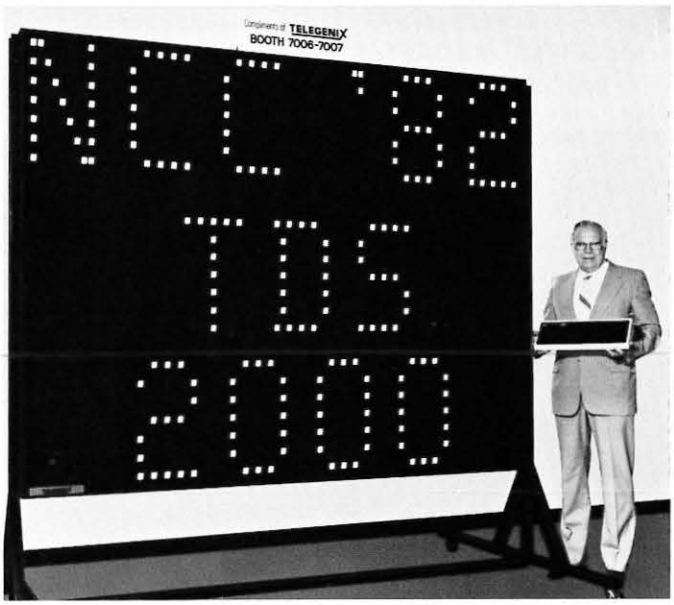
At the pixel level the video has a rise/fall time of 5 ns. Either the very fast white phosphors (P-4 type) or the very fast green phosphors (P-31 type) can be used at the 60 Hz frame rate.

New Genesis™ Digital Semi-Custom Brochure

A new six-page brochure describing the Cherry Genesis™ line of digital integrated injection logic semi-custom integrated circuits is now available from Cherry Semiconductor Corporation, East Greenwich, CT.

Describing the features and advantages of I^2L technology, the brochure includes numerous charts and diagrams illustrating the basic I^2L gates, input-output interfaces, components available and basic layout rules for the three digital chip types, the 1200, 1300 and 1400.

The Genesis 1200 and 1300 contain 192 and 288 I^2L gates respectively. The 1400 is a combination digital/analog type containig 256 I^2L logic gates and up to 69 NPN/PNP transistors and 200 resistors. A detailed chart of all Cherry Genesis circuits gives condensed data for seven linear circuits as well as the three digital types.



Telegenix' president, John W. Taylor, recently introduced this new TDS2000 Series flat-panel video display terminal. Shown here operating in its Bannerline Mode, a 20½ inch font, this huge 1920-character VDT was installed in the Astrohall in Houston at the National Computer Conference as a public service of AFIPS. The latest Associated Press news and sports were flashed to thousands of conferees continuously throughout the four day event. Telegenix Inc., Cherry Hill, N.J. manufactures basic flat-panel planar gas discharge displays in units of two lines with 16 characters/line. They can be packaged as modules in displays as large as the 1920-character VDT.

This new Xerox 2020 engineering copier offers size-for-size printing, half-size reproductions and 63 percent reduction that will provide 14-by 22-inch prints from 22-by 34-inch originals. The 2020 provides a full range of reproduction capabilities for the low-to medium-volume engineering reproduction environment.

A new device driver software package from Precision Visuals, Inc., Boulder, CO, permits users of PVI's DI-3000 graphics software tools to take full advantage of the many features of the Tektronix 4114 graphics terminal.

British Multipurpose Information System

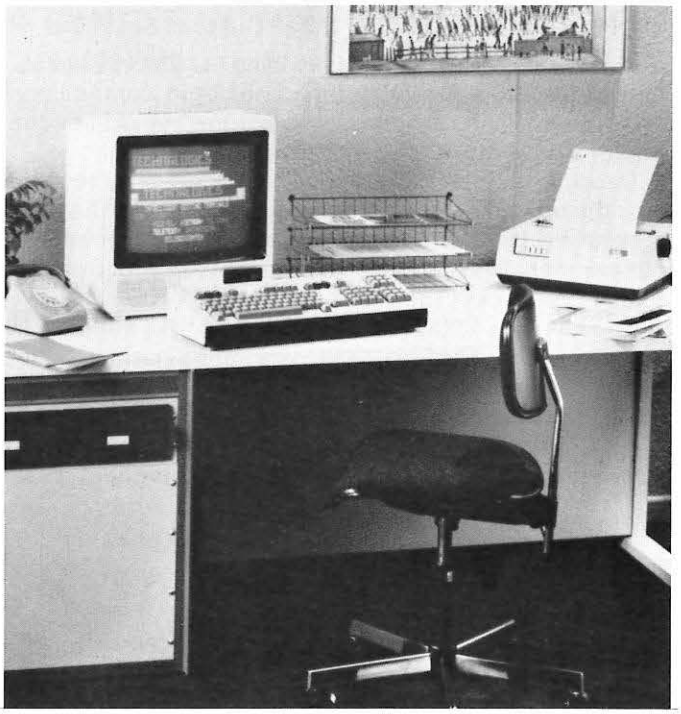
The TECS T5 Carousel made by Technologies Computing Ltd., Liverpool, is an information system that can control and distribute teletext, videotex, television, video, and cable TV. It can also handle captioning of broadcast TV and local text generation.

The information is presented on a normal TV screen with 7 colors and graphics. Text can be updated immediately in real time or at any required interval during operation.

Already in use with information technology companies and by conference centers, entertainment complexes, shopping facilities and sporting events, the system sends information from the source to a series of slave TV sets, including unmodified receivers and large screen systems. The T5 can cope with up to 500 slaves, and the signal is directed from the system's computers via standard UHF or video cabling or RGB.

Information is available instantly and can be updated immediately to provide news, sports results, timetables, weather, or buyers' guides. The system is said to allow an exact and pinpointed market to be reached.

The illustration shows the T5 Videotex Editing Computer at the top.



Hazeltine Terminals

Hazeltine Corporation, Commack, NY, recently introduced three new computer terminals, its EXECUTIVE 10™, ESPRIT II™, and ESPRIT III.

The new EXECUTIVE 10™ is an addition to the Executive 80 series of smart computer terminals and is a high performance terminal offering a wide variety of configurations. Its design is said to offer a high degree of flexibility to meet various applications such as data entry, data inquiry and software development. It provides eight programmable function keys, a programmable 25th status line, a full set of editing features, a 7 x 10 dot matrix display, split screen display, and a business graphics character set.

Hazeltine emphasizes continuing concern for ergonomic considerations in the flexible architecture of the terminal. It features a low profile detached keyboard, and a tilt and swivel display. The EXECUTIVE 10™ has a non-glare finish with green display to minimize eye strain.

The ESPRIT II™ is an economy terminal also said to provide improved ergonomic features. The terminal offers standard features such as a detached keyboard and a non-glare CRT with green characters.

This unit features editing capabilities including character insert/delete, line insert/delete, and local print. It is buffered and capable of displaying the complete 128 ASCII character set. The detached keyboard has a two-key rollover and a fourteen-key numeric pad. The ESPRIT II™ is compatible with the Hazeltine 1500 and emulates the Regent 25 or ADM-3A.

The ESPRIT III has been designed to meet various applications such as data entry, data inquiry, systems control and software development. It incorporates a 6502 microprocessor and state-of-the-art technology resulting in a cost effective design with built-in performance and flexibility usually found only in much higher priced terminals.

A primary design criterion of the ESPRIT III is ease in terminal customization utililzing a PROM set with a remote access command for user designed functions. The ESPRIT III also offers standard features such as a wide selection of field attributes, line drawing, high performance editing, a detached keyboard and a non-glare CRT using green phosphor. It also incorporates a switch-selectable foreign power option, a printer buffer and a bi-directional auxiliary port with independent baud rate selection. These features are said to provide for greater efficiencies in operator usage resulting in overall system cost savings beyond an already economical price, according to John A. Sasso, vice president, Computer Terminal Equipment.

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Envision Introduces Color Terminals, Printer

A family of color terminals and a color printer, both aimed at the general-purpose use of color in computer applications, were recently introduced by Envision Corporation, San Jose, CA.

"People always prefer to use color, although past use of color in computer applications has been limited to products with either highly specialized or low-performance capabilities," says George Von Gehr, president of Envision. "The Envision family of products will, for the first time, make color available for use in general-purpose applications in business and engineering. We've been able to make this possible because of advanced integration of software and electronics that yields extremely cost-effective products."

Envision's new products are a color printer with letter-quality alphanumerics and high-resolution graphics capability, and a series of color terminals said to incorporate the latest state-of-the-art electronics. The printer and terminals are available as a system or separately. Together, they form a system providing high resolution hard copy of the color display without host intervention. The products are designed to be integrated into systems by computer manufacturers, system houses and other OEMs.

Broad Range of Applications for Color in Business, Engineering

Applications for the Envision family of products are expected to include management information systems, financial analysis, manufacturing systems, generation of charts and graphs for business presentations, medical applications, seismic data analysis, CAD/CAM, automatic test and process control.

"Even everyday applications such as report generation can benefit from the use of color," says Von Gehr. "For example, different types of reports might be printed in different colors, or a series of color graphs might be used to summarize the data in a lengthy report."

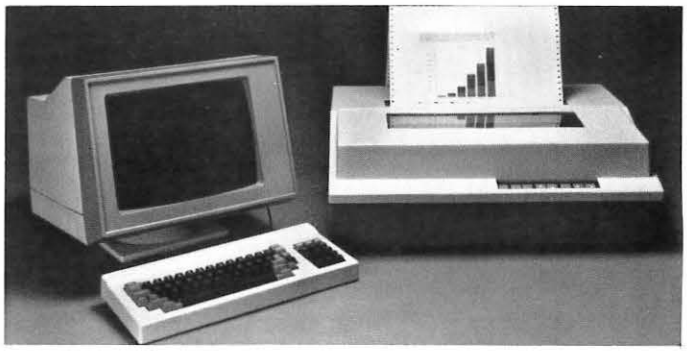
Color Terminals Offer Full Range of Alphanumeric and Graphics Features

"This is the first color terminal to combine the latest in VLSI technology with a high software content to produce a color terminal that is truly usable in general-purpose applications," Von Gehr claims. The Envision terminals incorporate a new VSLI graphics processor chip, and are the first products to use such a chip in color applications. In addition to the graphic processor, the termnals are controlled by a 16-bit microcomputer that will support up to 128K bytes of program memory.

The Envision terminal product line consists of three terminals with increasing degrees of color and graphics capabilities.

All Envision terminals offer a pallette of 4,096 colors, of which any 16 can be displayed simultaneously. An interactive color set-up mode allows the user to select and preview the colors from the full pallette. Full-function alphanumeric capabilities, including scrolling, windowing, double-height and double-width characters, blinking, and underlining are also standard.

The Envision 210 Color Terminal offers these full-featured alphanumeric capabilities as well as a standard graphics character set. The Envision 220 Color Graphics Terminal adds high-speed drawing of vectors as well as hardware zooming and panning features that allows the user to view portions of the screen in greater detail.



The Envision 230 Advanced Color Graphics terminal incorporates high-level graphics features useful for advanced business and engineering applications. In addition to a full range of scaling, rotating, and area fill features, the model 230 offers a powerful display list capability that allows local storage and manipulation of graphics objects. Objects can be any combination of vectors, arcs, rectangles, circles, polygons and text.

Color Printer Offers Letter-Quality Text and High-Resolution Graphics

"This is the first hard-copy device to combine letter-quality printing and high-resolution color graphics into a single, cost-effective package," says William Elmore, Envision's marketing manager.

The printer's unique color capability comes from the use of a patented multicartridge ribbon and carriage control system. Up to four separate ribbon cartridges can be utilized, allowing for flexibility in selecting ribbon color or type. "The multicartridge system allows the printer to function economically in single color mode or multicolor mode," says Elmore.

Letter-quality printing is achieved through the use of high-speed, 18 wired dot-matrix printhead. Letter-quality print speed is 100 characters per second, while high-speed draft print speed is 300 cps. The printer can easily switch between multiple fonts that are either stored in firmware or downloaded from the host computer. Fonts available from Envision include a 10-pitch courier font, 12-pitch elite font, italic, and boldface. All fonts feature support for seven languages.

Two 16-bit microprocessors control the operation of the printer, with a memory buffer expandable to 128K bytes for buffering of graphic images. Graphics resolution for the Envision 420 is 288 dots per inch horizontally and 144 dots per inch vertically.

Panasonic Dual-Mode Color Computer Display

The Panasonic Industrial Company Custom Products Department, Industrial Sales Division, Secaucus, NJ, recently introduced a dual-mode 10 inch color computer display designed for small business and home computer applications. This model CT-160 features a front panel switch that changes the display from a full-color unit for color graphics or video games to a sharp black-and-white data display for business use.

Model CT-160 accepts a composite video input signal and incorporates a built-in audio system for use with games or speech synthesizers. It easily reproduces a 40 x 25 character display.

Equipped with video input/output connectors with 75 ohm/Hi Z termination switch, the new Panasonic computer display is UL listed and carries a FCC Class B computing device certification.

Call For Nominations Of Candidates For The 1983 SID Honors and Awards

The SID Honors and Awards Committee is soliciting your help in nominating qualified candidates for Fellow, for the Frances Rice Darne Memorial Award, and for Special Recognition Awards. General qualifications based on the SID Bylaw requirements for honors and awards are given below.

(1) FELLOW

The grade of Fellow is one of unusual professional distinction conferred by the Board of Directors, acting on the recommendation of the Honors and Awards Committee, upon a *SID member* of outstanding qualifications and experience as a scientist or engineer in the field of Information Display. The candidate shall have made a widely recognized and significant contribution to the advancement of the field. The nomination must be supported and signed by at least five members in good standing.

(2) FRANCES RICE DARNE MEMORIAL AWARD

The Frances Rice Darne Memorial Award is awarded periodically, but not more than once each year, to a *Society member* for an outstanding technical achievement (as opposed to teaching, publication, or service) in, or contribution to, the display field. The award is made by the Board of Directors acting on the recommendation of the Honors and Awards Committee.

(3) BEATRICE WINNER AWARD

The Beatrice Winner Award for Distinguished Service to SID is awarded periodically, but not more than once each year, to a *Society member* for exceptional and sustained service to SID. The award is made by the Board of Directors acting on the recommendation of the Honors and Awards Committee.

(4) SPECIAL RECOGNITION AWARDS

Special citation awards are given to members of the technical and scientific community, not necessarily SID members, for distinguished and valued contributions to the Information Display field. These awards may be made for contributions in one or more of the following categories:

a. Outstanding technical accomplishments.
b. Outstanding contributions to the literature.
c. Outstanding service to the Society.

Nominations should comply with the 1983 Guidelines for SID Honors and Awards Nominations, and they should be submitted to the Honors and Awards Committee Chairman at any time during the year, but no later than December 1, 1982.

1983 Guidelines For SID Honors And Awards Nominations

Nominations for SID Honors and Awards should be concise, but they *must* include the following information, preferably in the order given below.

(1) Name, Present Occupation, Business and Home Address, and SID Membership Grade (Member or Fellow) of Nominee.

(2) Award being recommended: (a) Fellow*. (b) Frances Rice Darne Memorial Award, (c) Beatrice Winner Award, (d) Special Recognition.
*Fellow nominations must be supported and signed by at least five SID members.

(3) Proposed Citation — this should not exceed thirty words.

(4) Name, Address, Telephone Number, and SID Membership Grade of Nominator.

(5) Education and Professional History of Candidate — Include college and/or university degrees, positions and responsibilities of each professional employment.

(6) Professional Awards and Other Professional Society Affiliations and Grades of Membership.

(7) Specific statement by the nominator concerning the most significant achievement or achievements or outstanding technical leadership which qualifies the candidate for the award. This is the most important consideration for the awards committee, and it should be specific (citing references when necessary) and concise.

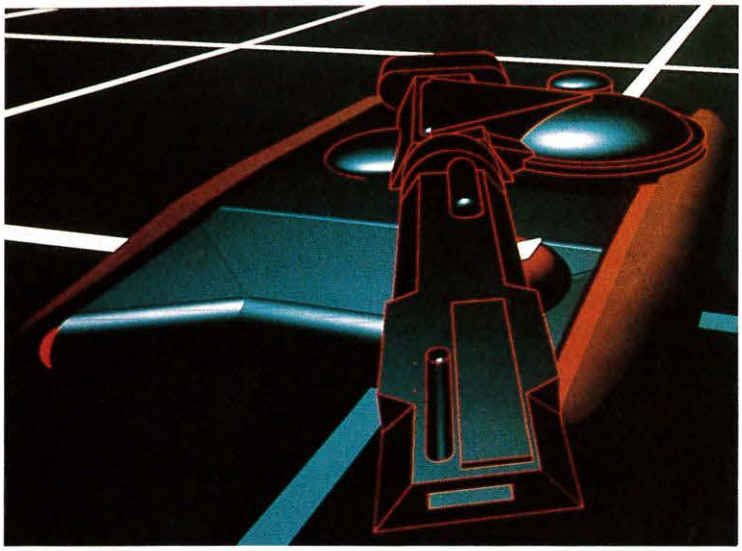
(8) Supportive material: Cite specific evidence such as patents, publications, SID activities, other technical and/or professional society activities, evidence of outstanding leadership, etc. *Please be specific and concise.* Cite material that directly supports the citation and statement in (7) above. Limit the evidence to the most important patents, publications, or service — do not generalize.

(9) References: Fellow nominations *must* be supported by the references indicated in (2) above. Supportive letters of reference will strengthen the nomination for any award.

Send the complete nomination — including all the above material — to the Honors and Awards Chairman by December 1, 1982.

G.H. Slottow, Chairman
SID Honors and Awards Committee
Computer-based Education Research Laboratory
University of Illinois
252 Engineering Research Laboratory
103 South Mathews
Urbana, IL 61801
Phone: (217) 333-6500

NOTE: SID Awards through 1980 are listed on page 85 of your SID Directory for 1980.



Movie Industry State-Of-The-Art Computer Generated Animation Film Produced on Celco High-Speed High-Resolution CRT Color Film Recorder

TRON* Video Game Tank produced on CELCO CFR4000 Color Film Recorder by Magi Synthavision. Courtesy of Walt Disney Productions.

FAST RECORDING SPEED

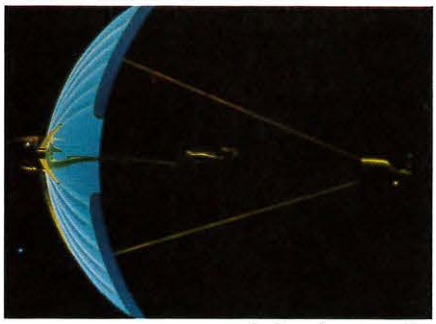
At 400 ns/pixel recording speed, the CELCO Machine is the only high goal CRT color film recorder FAST ENOUGH for state-

of-the-art applications in high volume service bureaus and computer generated animation systems.

The CELCO Machine produces the film at the fastest-speed and highest-resolution for business graphics. For computer generated modeling of extraterrestrial terrain and local earthly weather stations, or any other complex model creation.

HIGHEST RESOLUTION

Resolution is crisp and noise-free with 4000 lines and 7500 resolvable pixels over the useful diameter. The final images are precise communications of state-of-the-art technology. Built-in exposure calibration and flexible control of contrast and bright-



ness ensure consistent results footage after footage.

VARIABLE FILM FORMATS

The CELCO Machine provides the highest speed and resolution, as well as the versatility of 16mm to 8" x 10" film formats.

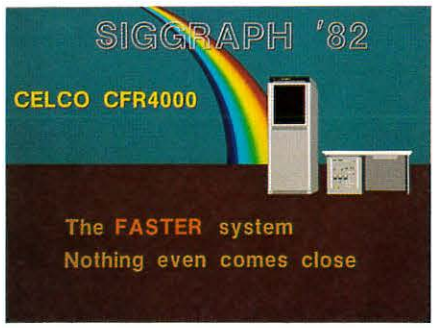
THE CELCO MACHINE IS CELCO

The inherent quality of the CELCO CFR4000 Color Film Recorder is the result of development of CELCO precision engineered components for two generations.

The CELCO Machine includes CELCO electron beam lenses, astigmatism correctors, high resolution deflection yokes, highly stable deflection amplifiers and high voltage power supplies, analogue and digital circuits, and precision electro-mechanical assemblies. All CELCO components are designed and manufactured at CELCO factories.

State-of-the-art performance with exceptional reliability in the field is achieved by in-house inspection and long-term burn-in times prior to shipping. Built-in Self Test and Go/No Go features provide high degree of user confidence by eliminating false runs.

Write or call Dr. Sam Christaldi at 201-327-1123 in Mahwah, New Jersey, or Michael Constantine at 714-985-9868 in Upland, California. Your plant is only hours away by CELCO Air Fleet.



* M80-3241C A computer-generated video game tank prowls the simulated game grid in the electronic fantasy world of "TRON" from Walt Disney Productions. Starring in the film are Jeff Bridges, David Warner, Bruce Boxleitner, Cindy Morgan and Barnard Hughes. In color by Technicolor, the film was written and directed by Steven Lisberger for producer Donald Kushner and executive producer Ron Miller. Filmed in Super Panavision® 70. Buena Vista releases. © MCMLXXXII Walt Disney Productions.

M 80-2841C: High-tech artist Syd Mead and French comics artist Jean "Moebius" Girard conceived the design for this solar sailer, a futuristic spacecraft brought to life through sophisticated computer simulation in "TRON," from Walt Disney Productions.

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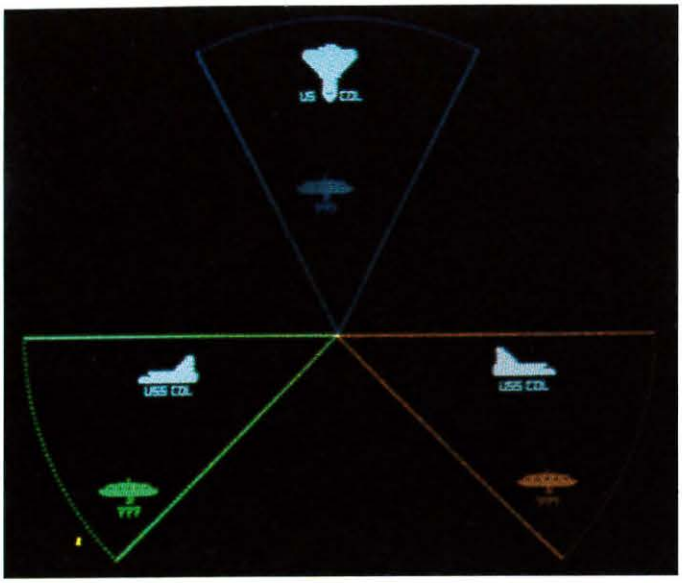
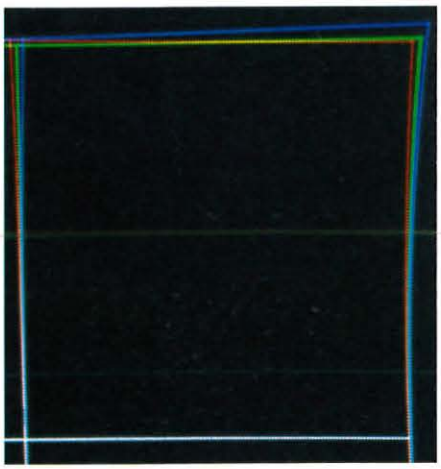


Celco's in-line color Yoke for perfect black & white.

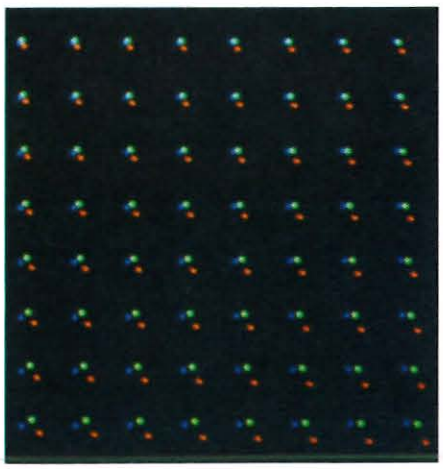
The CELCO Color Yoke Produces Perfect B&W

Engineers who design color displays requiring low inductance look for **perfect black and white** on their test patterns for best convergence. They do not want to see the beautiful colors illustrated in the error patterns — just black & white.



Typical Convergence Error Problem

CELCO color yokes provide complex magnetic fields to be compatible with your color CRT. The Yoke-CRT combination is optimized to achieve color purity and best convergence for your display applications. A precision color yoke is required to deflect the beam to the correct apertures in the shadow mask. These impinge on the proper phophors to produce the blue, green, and red patterns.



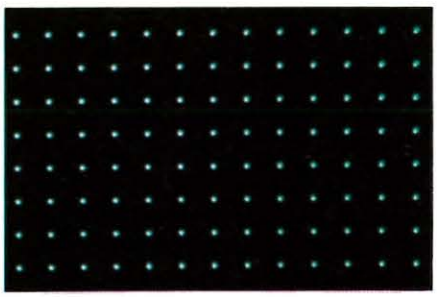
Typical Dot Pattern Error Problem

Over twenty years ago CELCO designed and built low-inductance color *Deflectrons® for delta gun CRTs for military color information displays. Today's new generation of cockpit, air traffic control, flight simulation, ground and ship based radar and graphic displays, require precision deflection of the three in-line electron beams to produce the required colors **anywhere** on the CRT face!

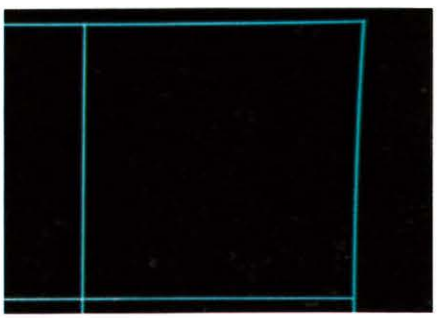
CELCO supplies color yokes with a wide range of inductances and specializes in **low**-inductance color yokes for high-speed, random positioning and vector displays.

*CELCO Low-Inductance Color Yokes may be used with your own amplifier designs. They are also compatible with CELCO High Speed X-Y Deflection Amplifiers for wide bandwidth, ultra-linearity, and high stability. CELCO Deflection Amplifiers are available in ranges from 20 to 75 volts with a change of 4 to 40 amps.

For every CRT face size and neck diameter for In-Line, Delta, or Color Penetration Yoke requirements call John Constantine, Jr. Yoke Designer or Dr. Sam Christaldi, Engineering Sales Manager, Mahwah, New Jersey at (201) 327-1123. (Or call Michael Constantine, President or Bus Reese, Manager, in Upland, California at (714) 985-9868.)



Typical CELCO Color Yoke Solution



*Deflectron® is our registered trademark for Delta-Gun Deflection Yokes in the 1950's.

Celco

Your plant is only hours away by CELCO Air Fleet piloted by CELCO design engineers.

Chapter News (continued)

MINNEAPOLIS/ST. PAUL CHAPTER, thanks to Al Taylor, Chapter Chairman, Will Haller, and Russell Ingvaldsen, provided information on several technical meetings. On February 19 Gary White of Dicomed provided 35 mm slides from an Apple computer. On April 16, the topic was the Mertle Library discussed by Carl Miller of the 3M Company. (These notes were so brief and cryptic that we assume our correspondents had a hard time thawing their pens.)

Information about this Chapter's May 21 meeting was evidently aided by a thaw. This SID meeting featured what is described as "the leading university automated publishing system" at the University of Minnesota. Les Metz, director of the university's printing and graphic arts department, provided a tour and discussion. Dennis Coleman described photocomposition, platemaking, and printing techniques.

LOS ANGELES CHAPTER on May 19 sponsored a joint meeting with IEEE Reliability Chapter S-7 on the subject of "Controlling Display Component Reliability." Two different types of information display technology were discussed. The presentations described two display components, methods of fabrication and screening, environmental limitations, failure mechanisms, and methods for assuring procurement of reliable products.

Keith Ross of Hewlett-Packard presented data on light emitting diodes. His discussion included recent life test data, methods of controlling LED degradation, environmental test data, and cost-efficient screening methods.

Kevin Kilcoyne of Rockwell International Micorelectronics R&D Center discussed reliability and process control as applied to recently developed thin film, high contrast electroluminescent devices. These components were developed under contract to the U.S. Army Electronics R&D Command. The 7-segment EL devices were designed to operate in a military environment with 5 Vdc logic and BCD input data.

BAY AREA CHAPTER on April 20 enjoyed a presentation by Chapter Chairman Mike Rehmus on the Datacopy multi-purpose digitizer and display system. Mike, director of marketing for Datacopy, described applications of the high resolution camera and display system that offers 200 dots per inch resolution of 8½ x 11 inch objects. This includes the digitizing camera, display system, and hard copy unit (Versatec V-80).

(EDITOR'S NOTE: Program Chairmen of all SID Chapters will earn recognition and undying gratitude if they will send Technical Meeting information, with some details and photographs **promptly**)

Mike Rehmus with Alan Holmberg and Eric Schneider (l. to r.) who demonstrated the Datacopy digitizing and display system.

R. Lyon of Versatec with his company's V-80 hard copy unit at SID Bay Area meeting in April.

Views of the SID82 exhibit halls where the largest array of operational equipment, accessories, components and complete systems from US and overseas were shown. Included were color monitors, graphic terminals, color correcting coatings, sealing glasses, flat ac plasma panels, spatial scanners, pol-edge lcds, fiber-optic faceplates, anti-reflective filters, contrast enhancement filters, signal sources, high resolution CRTs, display driver ICs, faceplates for implosion protection.

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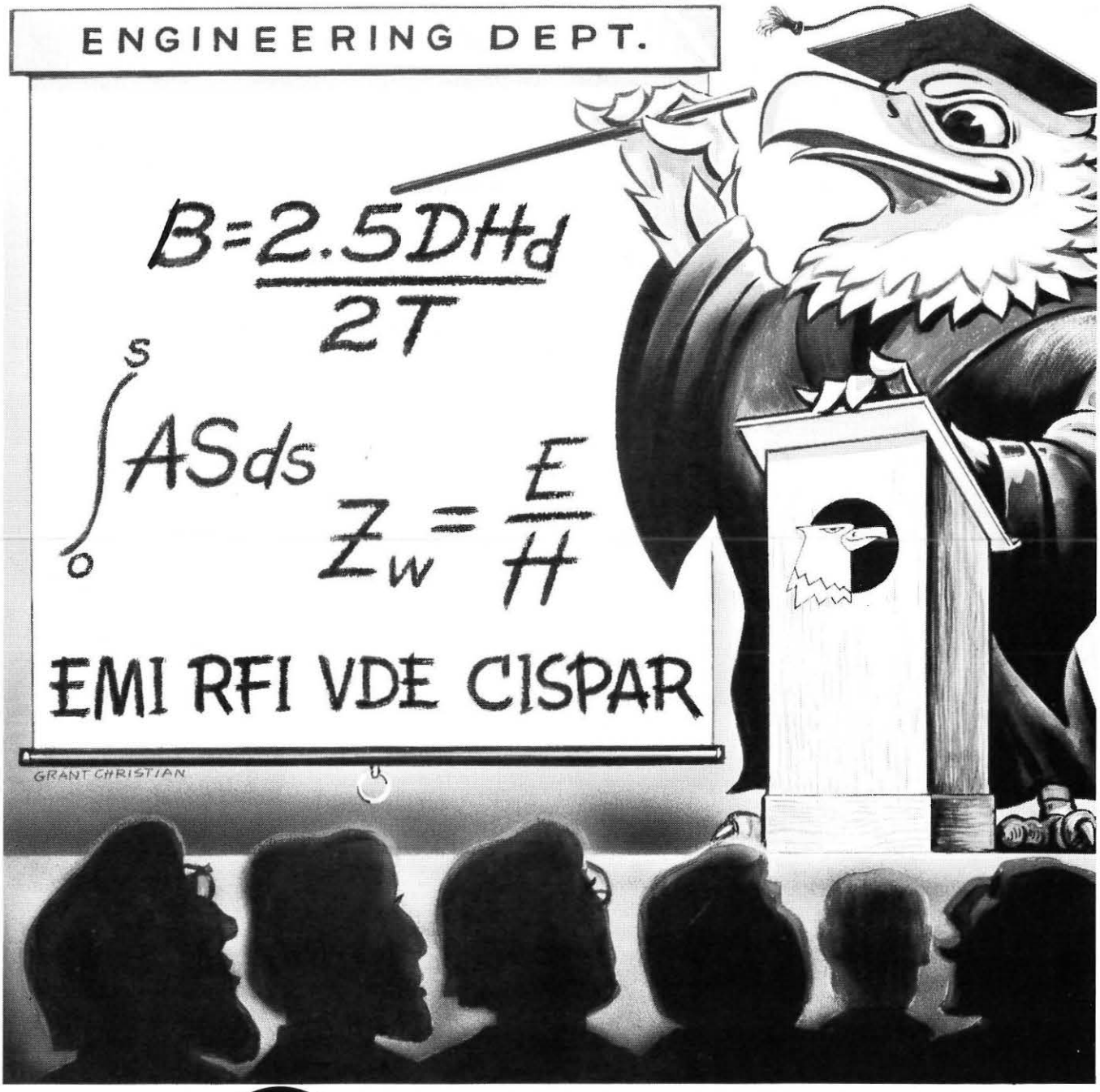

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Chapter News

MID-ATLANTIC CHAPTER on June 5 had its SID Annual Awards Dinner. Captions with the three photographs tell about the awards winners. The best technical presentation was made on December 1, 1981, by Thomas C. Maloney, manager of development engineering, Burroughs OEM Corporation, on the evolution of plasma displays at his company from the relatively simple discrete NIXIE numeric indicator to sophisticated multi-axis addressed gas dischage displays. At this June meeting, Dr. Allen Kruetz of Bell Laboratories also provided a review of SID 1982 technical papers — no small feat, since there were 118 papers presented in San Diego. Thanks to Samuel Goldfarb for these pictures and information.

Sam Goldfarb, Chairman SID-MAC presenting "Chairman 1979–1981" plaque to John Stapleton, presented for his leadership and dedication to the society and the Mid-Altantic Chapter. Tom Maloney is at the far right. Wives and friends of the chapter are in the foreground.

Bill McLaughlin, Vice Chairman, SID-MAC, presenting "Best Presentation – 1981 – 1982" plaque to Tom Maloney for his presentation "Evolution of Plasma Displays" during the Dec. 1981 meeting. Sam Goldfarb is at the right, with other members and guests in the foreground.

Al Loshin, SID Fellow and long time member, and past Chairman of SID-MAC, presenting the "Distinguished Service" plaque to Tom Maloney for his many years of devotion to SID and SID-MAC.

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