

Buyers Guide:
Test & Monitoring
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TV TECHNOLOGY™

International Edition

DVI Makes Inroads In the Video World

by Kathy Rooks-Denes

LOS ANGELES, California As computers infiltrate the editing suite, videographers accustomed to debating such issues as tape formats can begin to mull over another question more in tune with this decade of digital developments: Will one compression format emerge as the standard for PC-based off-line editing and beyond?

At least two major players, Intel and IBM, are working to make sure that standard will be Digital Video Interactive (DVI), a DOS-based hardware and software tool.

Attention getter

In its fairly short history, DVI has made plenty of headlines, first with its introduction in mid-1987 by GE and RCA, then with its purchase by Intel Corp., which mounted an intensive development effort that made DVI a major CD-ROM authoring and delivery platform by 1989.

IBM, seeing DVI's vast potential for improving the lot of the lowly PC on which the technology is based, enthusias-

tically joined forces with Intel to support and expand DVI's capabilities. But despite all the hoopla, the technology has been slow to work its way into the video production suite.

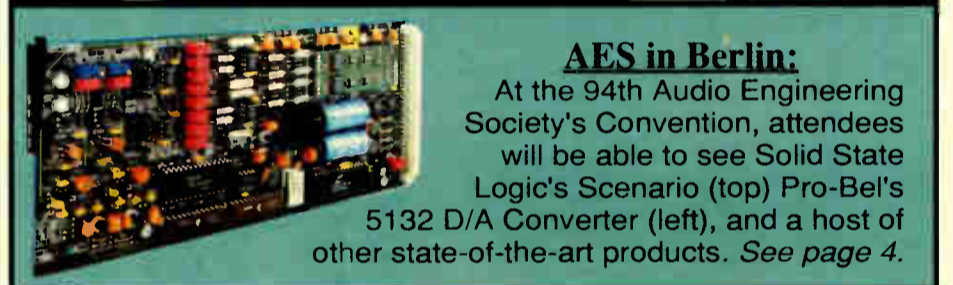
Last year, though, DVI got a foot in the editing room door when TouchVision Systems Inc., of Chicago, Illinois, developed its tape-based D/Vision non-linear editing software. This year, the firm has introduced a digital version of the package that it says offers compressed video resolution comparable to 3/4-inch tape, enabling desktop creation of industrial-quality masters.

A D/Vision system offers CD-quality audio channels, accepts input from a live video camera or recording equipment, and can be used with an optional rewritable optical disk drive.

IBM platform

To run, D/Vision requires a single-slot hardware add-on, IBM/Intel's Action-Media II delivery board, and "daughter" capture modules with Series "B" DVI chips. Other requirements include a

(continued on page 7)



AES in Berlin:

At the 94th Audio Engineering Society's Convention, attendees will be able to see Solid State Logic's Scenario (top) Pro-Bel's 5132 D/A Converter (left), and a host of other state-of-the-art products. See page 4.

Getting the Picture on Computers and Video

by Mario Orazio

SOMEWHERE OUT THERE You might not have noticed that computers don't have lenses. On the other hand, you probably have noticed that eyes don't have teeth.

I just threw in that part about anatomy so someone doesn't bite my head off (with eyeteeth) for being a computer hater. Every time I use a word like "don't," "can't," or "ain't," I seem to tick someone off. Believe it or not, it ain't the case that only negative people say ain't.

As for computers, them 'n me go way back. I used to "draw" pictures on a plotter back when my "brush" was a stack of punch cards heavy enough to give you a hernia (for those of you who think a punch card is a party animal who gets funny after imbibing from the bowl, it ain't—think of it as a non-magnetic, recyclable, write-once floppy disk with a capacity of 80 big bytes).

Anyway, back when computers were computers and TV was TV, everything was swell. These days, though, you can't move two inches without tripping over some digital video or other. That's "digital," as in computers, and "video," as in TV. And they both use picture tubes. And elephants are indigenous to two continents but they ain't been considered

for secretary-general of the U.N.

Looke: Computer pictures and TV pictures are different. I didn't say one was better than the other or that you can't convert one to the other, but they ain't the same thing. And now, gang, I'm going to tell you why.

I might as well start with that lens. Look at a TV camera; see a lens. Check. Look at a computer. See any lenses? If you do, it's time to visit either an eye doctor or a psychiatrist.

TV camera pixels and computer pixels are fundamentally different. It's a simple matter to have a "naked" pixel in computerland. Write an equation that says there's just one pixel on in the center of a picture. The end.

In TV land, first the lens, then the rest of the optical system, and then the imagers (tubes, CCDs or whatever) conspire to prevent a pixel from existing on its own. It *must* affect adjacent pixels. Even if the front end of a camera somehow magically didn't prevent a naked pixel, the filters that follow it would.

That ain't a bad thing; it's good. Suppose you had a camera that could capture a thin black horizontal line in just one scanning line, without affecting the lines above or below it. Now suppose you had a mess of such lines. If they appeared on alternate

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BUSINESS

Graphics Software Company Names Asian Distributors

BURBANK, California Digital Arts, maker of 3-D modeling, paint, animation and rendering software for the PC environment, named two Asian distributors: Sumisho Electronics Co. Ltd. in Japan and Samsung Co. Ltd. in Korea.

Sumisho is the largest distributor of computer graphics products in Japan, and is now the exclusive distributor of Digital Arts products designed for the Silicon Graphics Indigo computer series.

Samsung is a leading electronics manufacturer and Korea's largest distributor of software and hardware. It is establishing a nationwide reseller network.

For more information, contact Digital Arts at telephone: +1-818-972-2112, FAX: +1-818-972-2115, or circle Reader Service 82.

NEW TECHNOLOGY

Comark Premieres NICAM Transmitter

COLMAR, Pennsylvania Comark, a Thomson-CSF Company, has produced the world's first dual carrier common

amplification NICAM IOT transmitter. It was the first of several 25 kW Comark IOT television transmitters to be installed in Finland.

The transmitter, IOX 251, marks the beginning of a new generation of equipment. The single tube equipment is rated for 25 kW peak sync output with NICAM sound. The company's proprietary linearity pre-correction technology also permitted the transmitter to exceed all visual specification requirements by a wide margin, according to the company. Comark also reported that the transmitter was virtually transparent to the digital NICAM sound channel.

This is the first time that common amplification has been successfully applied to a NICAM (two carrier) sound system at high power UHF.

For more information, contact Ellen Rainey at Comark at telephone: +1-215-822-0777, FAX +1-215-822-9129, or circle Reader Service 58.

BUSINESS

Vinten Acquires GITZO Factory

SUFFOLK, U.K. The GITZO factory in Paris, France, which produces tripods, monopods, camera heads and accessories, was purchased by the Vinten Group in the U.K.

The Vinten Group had already purchased the Manfrotto factory of tripods, lightstands, rail systems, etc., in Bassano del Grappa, Italy, several years ago, without changing its management.

The Vinten Group now controls manufacturing, product range and development of three of the foremost international factories of camera support systems: Manfrotto, Italy; Vinten, U.K.; and GITZO, France.

For more information, contact Mike Martin at Vinten at telephone: +44-284-752121, FAX +44-284-750560, or circle Reader Service 104.

Eastman Kodak Appoints New General Manager

ROCHESTER, New York Eastman Kodak Company has appointed Henri-Dominique Petit general manager of its

Motion Picture and Television Imaging business unit.

He replaces Joerg D. Agin, who is retiring.

Before his recent appointment, Petit was business general manager and vice president of Motion Picture and Television Imaging in the Europe, Africa and Middle East Region since 1989. He will relocate from his office in London to Hollywood, California.



Henri-Dominique Petit

NEW TECHNOLOGY

Digital Compression Systems Companies Combine Forces

HAMPSHIRE, U.K. National Transcommunications Ltd. (NTL) of the U.K. and Scientific Atlanta of the U.S. recently announced a joint product development and marketing agreement for video compression systems based on the MPEG (Moving Picture Expert Group) standard.

MPEG is a generic standard that is flexible enough to be tailored to the requirements of differing video systems. MPEG distinguishes three ways of handling the motion aspects of successive frames of the signal: 1) intraframe (I); 2) predicted frames (P); and 3) bi-directionally predicted frames (B). The MPEG algorithm also reduces bit rate by DCT (Discrete

Cosine Transform) coding.

The use of MPEG allows several high-quality video signals to be carried in the space currently occupied by only one.

"The market for digital compression is about to explode. Solutions based on MPEG deliver the benefits of standardization, refinement and flexibility to network operators," said John Okas, NTL's director of business development. Okas said the companies have already jointly talked with a number of operators about digitally-compressed networks in both PAL and NTSC.

For more information, contact Bruce Randall at NTL at telephone: +44-962-822582.

BUSINESS

Zero Stantron Appoints Japanese Distributor

PACOIMA, California Zero Stantron, designer and manufacturer of equipment racks and consoles, has appointed Kondo Corporation as its Japanese distributor.

Kondo has already installed Stantron products in NHK's main broadcast center and several subsidiary stations.

Stantron manufactures pre-assembled, welded constructed video furniture at its plant in Pacoima, California. For more information on its products, contact Guy Tessier at telephone +1-818-890-3445, or circle Reader Service 119.

NEW TECHNOLOGY

Fujitsu Develops New 1.8-inch Optical Disk

TOKYO Fujitsu has developed a 1.8-inch optical disk that the company plans to release as a new standard by 1995.

The announcement of the Fujitsu disk comes on the heels of a 2.5-inch disk being developed by JVC, while Hitachi is currently developing the next generation of its 3.5-inch product.

Fujitsu's disk is stored in a 5 cm-square cartridge and has a memory capacity of about 60MB. However, the company plans to increase the memory to 128MB by the time the disk is commercialized.

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SHOW LISTING

Upcoming conventions, meetings and exhibitions:

19-22 April — IAB '93

Las Vegas, Nevada. The 23rd General Assembly of the International Association of Broadcasters will be held in conjunction with the 1993 National Association of Broadcasters Convention. Three days of meetings will be held at the Las Vegas Convention Center.

19-22 April — NAB 1993

Las Vegas, Nevada. The 1993 National Association of Broadcasters Convention, with exhibits and sessions, will be held at the Las Vegas Convention Center. For information write NAB at 1771 N. Street, N.W., Washington, D.C. 20036-2891 USA, or contact at telephone: +1-202-429-5409; FAX: +1-202-429-5343.

13-21 May — SVIAZ '93

Moscow, Russia. The 6th biannual Communication, Data Transfer and Processing Equipment Show held in the EXPOCENTR in Moscow. For information on SVIAZ '93 contact Ms. Susanne Hess, Exposition Manager at TNT Productions Inc. P.O. Box 717, Callao, Virginia, 22435, USA; telephone: +1-804-529-5510; FAX: +1-804-529-5057.

10-15 June — Montreux '93

Montreux, Switzerland. The 18th International Television Symposium and Technical Exhibition. For information contact: +41-21-963-3220; FAX: +41-21-963-8851.

3-7 June — Buenos Aires Exhibition

Buenos Aires, Argentina. The Second Biennial Broadcasting Exhibition will be held at the Municipal Center for Exhibitions in Buenos Aires. For more information, call at telephone: +54-1-322-9814; or FAX: +54-1-332-7572.

3-4 November — SBES/Techcon

Birmingham, U.K. 18th Sound Broadcasting Equipment Show and the Radio Academy Techcon '93 conference at the Metropole Hotel. For information contact Point Promotions, P.O. Box Wallingford, OX10 0XP; telephone/FAX: +44-491-38575.

Send announcements to

TV Technology International, P.O. Box 1214, Falls Church, Virginia 22041 USA, or FAX: +1-703-998-2966.

Berlin Hosts the 94th AES Show

The 94th Audio Engineering Society (AES) Convention and Exhibition will be held 16-19 March in Berlin at the International Congress Centre. About 7,000 experts from around the world and almost 300 exhibitors are expected to attend. The congress will offer various concurrent sessions and workshops, as well as the opportunity to visit local firms in the Berlin area and TV and broadcast centers in the Western and Eastern parts of town.

The following listing includes some of the highlights attendees can expect to see on the exhibit floor, based on information received from manufacturers. For more information on the show, contact the AES in Brussels, Belgium, at telephone: +32-2-345-7971, or FAX: +32-2-345-3419.

AKG

New Products: dbx, a division of AKG, will exhibit seven new products: 172 Supergate Expander/Gate with patented TCM filter to provide instant attack capture and voltage controlled filters with 24 dB per octave; 120XP Subharmonic Synthesizer that extends the bass downward one octave; 760X Dual Microphone Preamplifier; 1023 Dual Buffer Amplifier; and three other products to be announced at the show.

Amek Systems

On Display: Amek and TAC will show an extensive selection of consoles, including: MOZART, an advanced music console for music and broadcast production; EINSTEIN, for project and production studios; BIG by LANGLEY, a small recording console; GIG, sister console to BIG that will debut at AES;

ASC (German distributor for Clear-Com and Digital Intercom Systems)

On Display: Clear-Com Matrix Plus programmable digital matrix intercom system, featuring digital control combined with fully digitized audio, permitting full station operation over a single unshielded twisted pair wire.

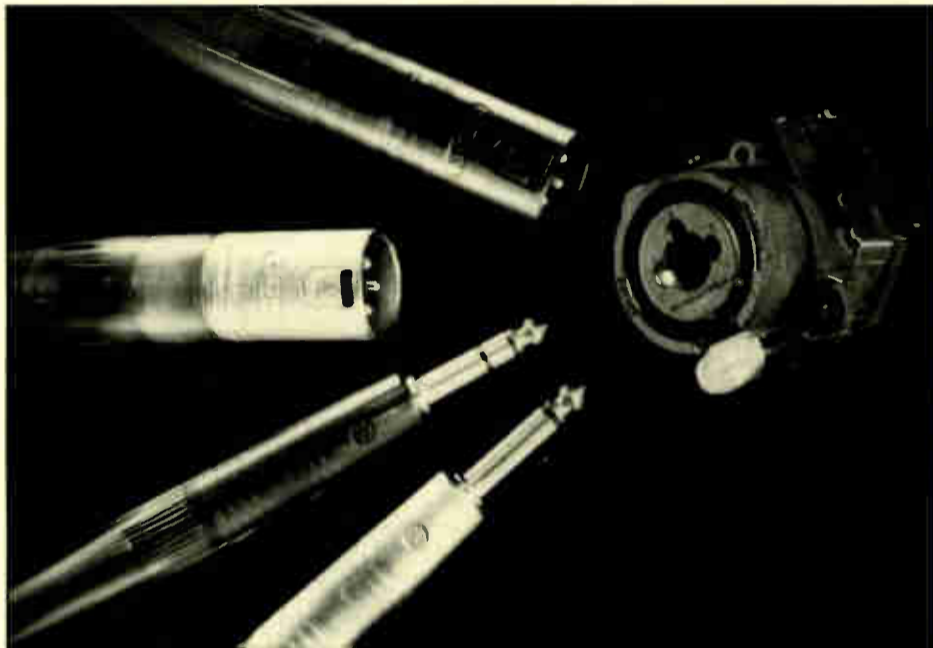
Audio Precision

New Products: The ATS-1 Audio Test System, available in bench and rack versions. Connector options include XLR, banana jack, BNC, Siemens, and WE310. Measurements and graphs are displayed on a high-contrast fluorescent backlit LCD display. Also, Audio Precision will announce the availability of a new optional computer port for the Portable One Plus.

On Display: System One with FASTTEST and FASTTRIG capabilities for testing broadcast systems with only one-quarter second interruption of programming.

audio-technica

On Display: A wide range of condenser and dynamic microphones, including the AT4033 Professional Studio microphone. Also, wireless, advanced shotgun, single point stereo, and ENG microphones. Other models include the AT890 Throat microphone; AT880 Aqua microphone for water or even ice; and AT863 boundary microphone.



The Neutrik "Combo" combined jack-XLR-receptacle

3M

New Products: Two versions of the 275 Digital Audio Mastering tape for Nagra "D" Magnetic Recorders. 3M 275 1/4" x 1200 ft. and 3M 275 1/4" x 2400 ft.

On Display: Enhanced 275 tape in two versions, 1/4" x 7200 ft. and 1/4" x 9600 ft.

Adams-Smith

Adtec

New Products: Splicing tape for Audio and Video Manufacturing and Studio Application. Both types are available in number-printed versions.

On Display: R-DAT Digital Audio Cassette Tapes and Video V-O Cassettes.

TAC SR6000 sound reinforcement console; AMEK BCIII compact broadcast mixing system; AMEK CLASSIC large-scale broadcast audio production console; TAC BULLET CUSTOM and B2 CUSTOM, suited for video post production, multitrack recording and sound reinforcement; HENDRIX by AMEK, a companion console to MOZART at a lower price; AMEK SUPERTRUE automation to control faders, mutes and up to 15 switches per channel on MOZART and eight on HENDRIX; AMEK VIRTUAL DYNAMICS and SUPERMOVE moving fader version of SUPERTRUE.

AMS



Studer's D730 CD player

The company will also show its mixers, including the AT4462 6-channel portable ENG mixer, the ATMX62 rack mountable 6-channel mixer and the ATMX52 portable 5-channel mixer. Other products on display will be the ATFS511 Feedback Suppressor, the ATMCA10 portable microphone amplifier and the ATTS102 talkback system.

Barco-EMT

beyerdynamic

Calrec Audio

New Products: T-Series digitally controlled audio console for production, post production and recording. It features full "snapshot" memory reset of all controls and settings, event driven memory recall or dynamic automation. It can be configured for up to 256 channels.

On Display: The Q-Series Broadcast Production Console, The Compact medium-size, general-purpose console, the Minimixer Mk II, the RQ range of FX units.

Canford Audio

New Products: The Sabine Feedback Exterminator, Phase Correlation Meter, the Canford Reporter Telephone, Wharton Timer, Sonifex Discart System and Gooseneck Microphones.

On Display: Professional audio equipment such as studio fittings and furnishings, interfacing and interconnection products.

Circuit Research Labs

Clear-Com—see ASC

Crown International

DDA

New Products: The PROFILE 24-track automated mixing console with VCA and switch automation, the new QMR project console, the Forum Composer entry-level 24-track console, new FORUM 8-bus consoles, and FORUM MATRIX.

Digital Audio Research

New Products: Enhanced SoundStation SIGMA multi-channel disk-based digital audio workstation, the SoundStation Delta four-channel entry level model, WordFit dialogue synchronization system for SoundStation systems and the DASS 100 multifunction digital audio interface and sampling frequency converter.

Digital Processing Systems

Dolby Laboratories

New Products: The Model 740 Spectral Processor, the SRP Series SR multitrack product, and the Dolby 430

Series single-ended background noise suppressor system.

On Display: The AC-2 Adaptive Transform Coding technology including the Model DP5000 Series Digital Studio to Transmitter Link.

Dorrugh Electronics

New Products: AES/EBU meter.

On Display: The Stereo Signal Test Set Model 1200, audio level meters and a video level meter.

Dwight Cavendish Developments

Electro-Voice

Fairlight

Fostex Corporation

Klark Teknik Research

New Products: A major new product to be announced.

On Display: DN728 Configurable Digital Delay Line and DN800 Configurable Active Crossover. The Series 300 Graphic Equalizers, Series 400 Parametric Equalizers, Series 500 Dynamic Processors, the DN60 Spectrum Analyzer, Series 700 Digital Delay Lines, DN760 Digital Reverb System, the DN735 Solid State Audio Recorder and the Midas XL88 Matrix Mixer and XL316B console for OB vehicles.

Lexicon

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On Display: Equipment for mastering.

(continued on page 6)

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JPEG Compression Use in Video

by Steve Levine

Image compression has become a necessity for handling digital images. There are many instances in which the more video images there are available to a producer, the fancier the piece can be. In the case of still frames, continuous tone scanned images are a nice touch to combine with text or graphics for a spot or for incorporation into a feature.

Typically 24 bits per pixel RGB or YUV 4:2:2, these images usually range in size from about 1/2 to 1MB of data. JPEG compression has become the de facto standard for performing this, using both hardware and software techniques.

Still frame images

Still frame image data bases are finding their way into all areas of pre-production and some broadcast environments. Many manufacturers of digital image-based video equipment have been looking into the use of image compression to speed up access times and reduce digital storage requirements. In recent times, the video world has seen a proliferation of desktop video workstations based on Macintosh and PC-AT based systems. For broadcast, skeptics will always be present, but do not be surprised if some very high quality images can be stored using JPEG image compression.

Quality and compression ratios

In JPEG, compression ratio and image quality are in opposition. The higher the compression ratio, the lower the quality. Since JPEG is a "lossy" technique, it achieves compression by removing some redundant information and when instructed to do so, removes some irreplaceable data that it determines to be of less visual

significance. For any image, the threshold of visual significance is directly related to the application and the viewer's preference.

For still frame image retrieval and display, there are definite quality issues that impact the decision to use or not to use JPEG compression. If images are being used to key over or blend onto other video, they should be compressed with very low ratios.

Our experience is that in the 15:1 and lower compression ratios, artifacts are not noticeable with most natural images. In



the case of artificial images such as 3-D rendered graphics and text, smaller compression ratios are necessary, in the range of 10:1 and lower.

Below 4:1, JPEG image compression is almost all data shuffling so there is only slight savings on storage. Retrieval times are not improved enough even to warrant it. Using a loss-less image compression program such as LZW (PKZIP) giving around 2.5:1 compression on a very fast machine will yield better results without any loss and only a nominal retrieval time penalty.

Motion video

In the case of motion video sequences, the storage problem multiplies by at least 30. Now you need 15-30MB of (uncompressed) data for one second of video to be stored. Compression is definitely needed.

JPEG has been expanded by several manufacturers of video and codec boards to handle motion video sequences. The term Motion JPEG has been coined to describe it in this way. By grabbing 30 frames per second with a VGA capture card, such as the Bravado from Truevision, and passing the digital YUV data directly to a Motion JPEG codec, such as the Visionary from Rapid Technology, full-motion, full-screen, real-time video compression may be achieved.

In the PC-AT world, a 486-33 can now be purchased for about the same price as a 286-12 two years ago. This 33 MHz PC can transfer JPEG data over its expansion bus at up to 1.5MB/second. By removing the raw video data from the PC bus and replacing it with the compressed stream, we are now capable of 30:1 compression producing only 500-1200 Kb/second. With this resultant stream, we are able to store the real-time compressed video onto a hard disk in the PC.

From a quality standpoint, motion video compression has less noticeable degradation than still images. This video actually turns out looking quite good.

Applications

How can this be used by the video producer? First, the functions of a digital disk recorder could be replaced to some extent by this digitally compressed JPEG video to facilitate 3-D video sequence buildup. Now the same computer which

renders the 3-D images can be used to store and play these videos prior to dubbing or final output.

Another use for digitally compressed video is off-line editing. Today, each non-linear editing workstation commercially available is either using or planning to use Motion JPEG coders as their core compression engine. Editing Machines Corp. and Avid have both been very successful using this approach. Now companies such as CMX, Amtel, Matrox, Noetics, Lightworks and others are employing Motion JPEG for off-line editing.

Other video cards

Matrox Studio employs a broadcast professional approach to the digital video solution. In its Illuminator Pro offering, Rapid Tech's MovieXpress™ Motion JPEG coder delivers slaved real-time compression and decompression on Matrox Movie™ equipped cards. Using the new Fiesta chip on the Matrox Studio and Illuminator Pro allows Rapid's coder to receive interpolation scaled images requiring less data to begin with.

For broadcast, skeptics will always be present, but do not be surprised if some very high quality images can be stored using JPEG image compression.

On decompression, the images may be scaled up in arbitrary degrees to fill the screen. Matrox Marvel is a low end 4:2:2 multimedia card employing the same chips which the Rapid Tech MovieXpress connects to in the Windows environment.

Disk storage

To record and play these images for longer than a few seconds, it is necessary to store them in real time on a fast disk drive. For high quality, the disk drive should have a very short access time as well as a high data transfer rate. The disk storage scheme must be contiguous in nature. For playback, random access is possible as long as the seeks to various parts of the disk are kept to a minimum. This allows non-linear playback, which is a requirement for video editing.

MPEG

In the future, Motion Photo Experts Group, or MPEG, will be used for some emerging markets in the video world. At the moment, MPEG techniques require that the video be compressed in non-real time and played back in real time. An important limitation of MPEG is that video is generated only from the frames which change; not from the individual frames themselves.

So in order to retrieve a single random frame, it is necessary to re-generate it from the last real key frame and capture it in a frame buffer temporarily. In addition, because MPEG gains its advantage by using interframe coding (looking for change between frames) it is not very

READERS FORUM

Have something to say about TV Technology? Send letters to Readers Forum, TV Technology, Box 1214, Falls Church, VA 22041 or MCI Mailbox #302-7776

Dear TV Technology:

I just saw Frank Beacham's article about camera movement in the November issue of TV Technology.

Please accept my congratulations on a very intelligent though concise report on what has become my life's passion; educating the video industry to what I consider the single most important technical aspect of production.

Our company was the first in the world to introduce inexpensive and truly portable jib arms, dollies and car mounts to an industry hungering for a breakthrough. Since our initial display at NAB '89, we are the world's largest producer of cameraman-operated grip equipment. Our goods are currently used in 33 countries.

Mr. Beacham's suggestion for making an inexpensive crane from a saw horse and plank left me smiling in wonderment, but I must admit, it will work. I'd hate to be the cameraman, though!

Thanks again for your thoroughly informative and entertaining article.

Mike Young, Managing Director
Cinekinetic
Thornlie, Western Australia

efficient when each frame is markedly different. This can be especially noticeable in sporting events or camera pans.

At the moment there are a lot of theoretical bugs to be worked out before it is commercially viable.

Synchronized audio

Audio has many coding schemes to choose from. The standard yet to be chosen by the MPEG committee should be a good standard to use for video systems, providing the quality is suitable to the end users. Right now in synchronized A/V it is preferable to use uncompressed audio since it is easier to sync with the compressed video and to flexibly edit into an existing clip. In the Rapid Tech system, straight 8- and 16-bit PCM digital audio is used with sample rates ranging from 11 to 44.1 KHz. At 32 KHz, the stereo audio synchronized with the JPEG compressed motion video is indiscernible from a CD.

For now it looks like JPEG will cover all the bases for still and motion video compression. With software JPEG codecs showing up in both the Mac and PC world and system speed going up, expect to see better quality video playing back on the desktop. By the end of 1993, we may see a better defined and perhaps affordable MPEG codec on the market. Don't forget HDTV and its competing coding schemes on the horizon. The future of digital video is looking sharper every day.

Steve Levine is president and CEO of Rapid Technology Corp. in Amherst, New York, and can be reached at +1-716-833-8533.

TV TECHNOLOGY

INTERNATIONAL EDITION

Vol 11, No. 3 MARCH 1993

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Marketing Consultant: Albert Leon

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TV Technology (ISSN: 0887-1701) is published monthly except for April and November which have two issues by Industrial Marketing Advisory Services, Inc., 5827 Columbia Pike, Suite 310, Falls Church VA 22041. Phone: 703-998-7600. FAX: 998-2966. Second-class postage paid at Falls Church VA 22046 and additional mailing offices.

POSTMASTER: Send 3579 forms and address changes to TV Technology, P.O. Box 1214, Falls Church VA 22041.

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Berlin Hosts AES Conference

(continued from page 4)

duplicating, loading and quality control; enhanced slaves and HX PRO electronics; the FRIDA 1/4" compact studio tape recorder, and the FRED editing tape deck for review and cut/splice editing of 1/4" tapes.

Neotek

Neumann

Neutrik

New Products: The A2 2-channel audio measurement system, and the NC3FX-Spec ("Digital") XLR connector for digital audio transmissions.

On Display: The NCJ3FK ("Combo"), a combined jack-XLR-receptacle and the NanoCon, a 3+1 pole subminiature connector. Audio connectors including XLRs, jacks and plugs.

Neve Electronics

Optical Disc Corporation

New Products: Model 530A Master Recording System.

On Display: Series 500 line of mastering products.

Orban

Philips Kommunikations Industrie AG

New Products: 7 kHz-ISDN Reporting Case and the MAGIC Series (15 KHz transmission). The 7 kHz-ISDN Reporting Case contains the Philips 7 kHz-ISDN Telephone with an audio bandwidth of 7 kHz and interfaces for a headset, a dynamic microphone and a recording medium. The MAGIC Series was developed for transmission of one or more mono (30)/stereo(15) audio signals in CD quality (15 kHz).

Pro-Bel

New Products: MADI products, including multiple AES Channels to MADI interface via optical fiber or coaxial cable, distribution amplifier, and MADI/AES Decoder; the 6510 Digital Audio Analyzer; Oversampling Stereo A/D and D/A Converters; and the Procion range of PC-based products for Control and Signal Monitoring.

On Display: 5012 Digital Audio Waveform Generator; Eurocard range of Switching and Distribution Modules including 5245 Reference Signal Generator; Delta-Com Type Z Flexible Studio-Intercom System, the Delta N-1 Compact Conference System, the Central Exchange Units 6N-1 to 24N-1, the Delta Audio Patch Panels and Delta Studio audio amplifiers.

Publison Audio Professional

Rohde & Schwarz

Sanken Microphone

Schoeps Schalltechnik

On Display: The Colette Series modular microphone system comprising 15 classical condenser capsules. Numerous electrically active accessories can be inserted between the microphone amplifiers and capsules to allow for the miniaturization of the microphones and the adaption to the individual recording situation. Also shown will be windscreens, popscreens, stereo condenser microphones and novelties such as the RCY active tube, which is equipped with two capsules of the Colette series.

Seem Audio

Sennheiser Electronic

Shure Brothers

Solid State Logic

On Display: Scenaria digital post-production system that incorporates a digital mixing console with full EQ and dynamics processing, a 24-track random access audio recorder with editing, and a random access picture recorder—Visiontrack. Also shown will be the SL 4000 G Series Master Studio System with Ultimatum, the SL 8000 G Series Multi Format Production System with Ultimatum, ScreenSound digital audio editing, mixing and recording system and the SoundNet multi-user, mass storage digital audio network.

Sony

On Display: A full range of analog and digital audio equipment will be shown, including the following key products: DMX-S6000 Digital Audio Mixing Console for post production and sweetening; the PCM-3324S and the PCM-3348 DASH Multi-Track Recorders; studio and portable DAT recorders; DMX-E3000 16-channel Digital Mixing Console; MXP-2900 analog mixing consoles, AES/EBU digital routers and switchers; wireless and wired microphones; APR-24 and APR-5003V Analog Tape Recorders; the DPS Series of effects; and CD and MiniDisc mastering equipment.

Soundcraft

Soundtracs

Michael Stevens & Partners

Studer

New Products: The MADI routing system, based on a time division multiplex bus with a capacity of up to 840 inputs x 512 outputs; quadraplex A/D and D/A converters generating or accepting AES/EBU signals; and

REPORTIS portable reporter unit with direct 7 kHz ISDN access. Also, AUTOCONFORM, an enhancement to DYAXIS II multichannel audio workstation, which will accept edit decision lists from different video editing systems and effecting sound edits in conformity. Also, a new line of CD players, the D730 and D731, which also reproduce unfinished CD-Rs (see demonstration). The NUMISYS broadcast automation system will feature a new operation surface. The 990 broadcasting mixing console will be completed by the integration of a new and fully dynamic automation system.

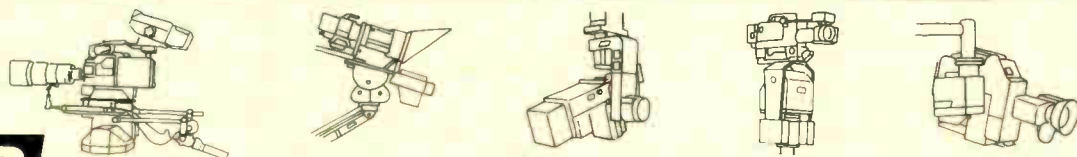
Symetrix

New Products: The 601 Digital Voice Processor and the 402 Dual Output Room Delay. The 601 features analog line and mic inputs, AES/EBU and S/PDIF IO, and stereo line outputs. The 402 offers 19-bit A/D conversion with 20-bit processing for a dynamic range in excess of 100 dB.

On Display: The 421 AGC-Leveler, 500 and E series signal processing and SX200 series half-rack devices.

TimeLine

On Display: Products to provide machine control and synchronization systems for the television, film and music industries. Shown will be the Lynx 2 and Lynx 2 Film Code Modules, which are used to control analog and digital audio tape recorders, video transports and film based transports; the KCU (Keyboard Control Unit), CCU (Console Control Unit) and SSU (System Supervisor Unit) system controllers or component parts of a larger integrated machine control network; interfaces to various consoles, and the Micro Lynx dedicated three-machine synchronizer with remote control unit and digital audio workstation control capabilities for small post production facilities or project studios.



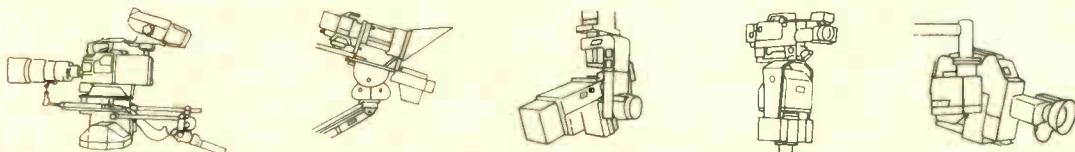
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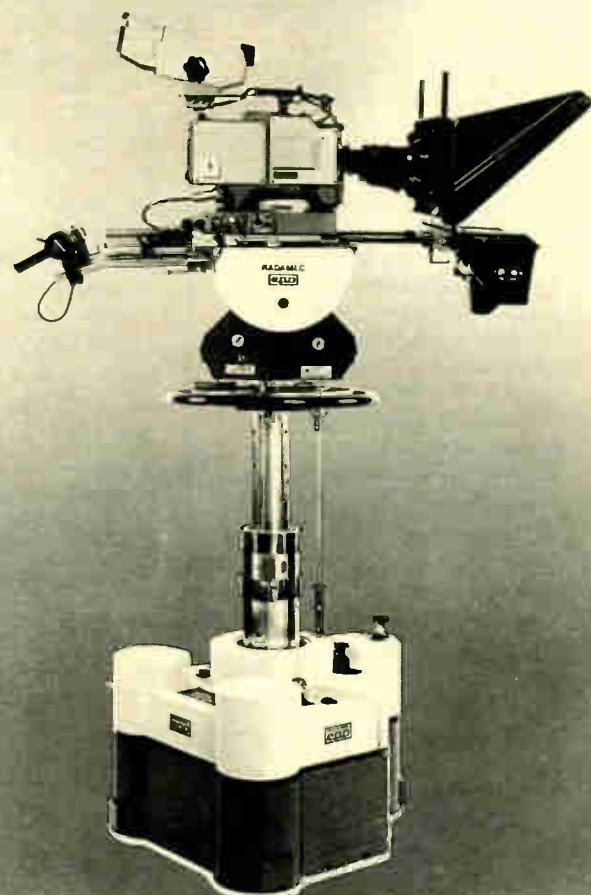
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DVI Makes Inroads into the Video World

(continued from page 1)

386DX or higher IBM-compatible running at a minimum of 25 MHz, with 4MB of RAM, according to Ralph LaBarge, president of NB Engineering (Crofton, Maryland), one of the first firms selected to join Intel's Technology Solutions Specialists (TSS) program. LaBarge recommends storage capacity of at least 1GB, which will accommodate up to 90 minutes of compressed video.

"The beauty is, you can install this hardware and software yourself," LaBarge said. "Most of the 200 or so users are doing off-line edits with the system, showing the EDL on the screen or outputting to videotape for use as an EDL. This saves them money on post house rent. The DVI system also saves them money because it is about half the price of (other) systems of roughly the same capacity."

While DVI is not considered technically superior to competitive compression formats such as JPEG (predominant in Macintosh desktop video systems) or the nascent MPEG standard, LaBarge stressed that the technology gained an advantage by being brought to market 18 months earlier.

Staying ahead

TouchVision's Terry Potter said DVI-equipped systems have a number of advantages over others, including network capabilities and the ability to import and play back the digital video file. In addition, the plug-in DVI boards are upgradeable, "so as improvements develop in technology, you can just take out the old board and pop in a new one," Potter said. "It's not going to become obsolete."

Outside the editing suite, DVI is making inroads in broadcast and cable television. MultiVail, a Miami, Florida firm, is using DVI to insert 3/4-inch-quality commercials on cable channels.

"When the network gives the inaudible tone signaling there are eight seconds to the break, the computer is programmed to play the commercial," said LaBarge, who doubles as president and co-founder of MultiVail's new product development arm, MultiVail Engineering.

"The technology is new and rather revolutionary," said Frank Beam, president of MultiVail. "We chose DVI for com-

pression because it's more efficient than others available, delivers better quality, and uses a very manageable file size. The closest performer is more than four times the file size we use, making it much more expensive."

Beam said MultiVail's digital commercial insertion systems are now available to cable stations for "local avails" and national ads.

DVI house

To attain the higher video quality desired for commercial insertions and other emerging broadcast applications, producers can send videotape masters on

preferred formats, such as Beta or 1-inch, to one of the four DVI Digital Compression Facilities (DCF) worldwide, which then sends the material back as a compressed digital file.

Symmetric vs. asymmetric

"A desktop DVI system uses symmetric compression, that is, full-motion video is compressed and played back in real time," LaBarge said. "Asymmetric compression, in which the video takes longer to compress but plays back in real time at the best possible quality, is used for production-level video, or PLV. That's what the DCF provides."

Of the four operating DCFs, only one, Intel's Multimedia Products Organization in Princeton, New Jersey, supports the NTSC format.

LaBarge said that, at Intel's request, NB Engineering began operating a DCF in mid-October in order to meet the heavy U.S. demand for the service. The firm already has purchased from Intel a \$1 million computer and software package to handle the PLV conversions.

"Intel wants to get out of the DCF business because its objective is research, not trying to fill a four-month backlog of compression orders," LaBarge said.

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Lyrec Opens Tech Center In Moscow

SKOVLUNDE, Denmark Professional magnetic tape manufacturer Lyrec has opened a technical center at the Melodiya headquarters in Moscow following an agreement reached between the two companies.

The Melodiya-Lyrec Technical Centre offers a full range of Lyrec tape duplicating and loading equipment for the audio cassette industry as well as a range of tape recorders for broadcasters. There is also a parts and service department on the premises.

The center is located at Tverskoy Boulevard 24, 103 009 Moscow. For more information, contact E. Bet-skov at telephone: +7-95-229-97-92.



How Do You Deliver Bad News?

I am not very good at delivering bad news. And from what I have heard and read, very few of us do a really good job of communicating bad news.

Yet our ability to deliver bad news can go a long way toward building credibility with employees. After all, anyone can deliver good news. But when things are going poorly, it is probably more important to your employees that they know where things stand. There may be life changes they need to consider while they are still in control.

There are a number of circumstances we let get in the way of delivering bad news. Three that come to my mind are: we think

things are not really as bad as they look at the moment; we think knowing the bad news will hurt employee morale; and we work for people who are not really too open about what is going on themselves.

No one wants to be thought of as an alarmist. So publicly predicting the worst when you personally think it may not be all that bad is a judgment call. I can think of two ways you can work through this situation.

First, you can give your staff a split opinion. You could say the official word is that revenues are off, there are some extraordinary expenses coming up and that those two factors point to a rough six

months. However, you could add that you have seen these circumstances before and that they do not always mean there are rough times ahead. You are going to watch the next few months closely.

A second way to handle bad news that you feel is overstated is to lay it out straight from the official line. Add to that official line that this is a worst-case scenario, and that if things begin to perk up you will give the employees a reevaluation of the situation.

Down goes morale

In both cases you have stated the full extent of the bad news; in both cases you

have allowed for a buffering.

A second reason we may be reticent to deliver bad news is because it will hurt employee morale. The answer to this is fairly simple. To paraphrase a very senior manager whose counsel I sought over such a matter, if you think morale is going to drop if you do tell them, think about how upset they are going to be later when they find out you did not tell them what you knew.

It is important to remember that it is the substance of the news which is going to lower morale, not the fact that you delivered it.

The final impediment to delivering bad news is the toughest. If your boss is not



by
Craig
Johnston

PRODUCTION MANAGER

being open with you, you are going to have a tough time being open with your employees.

I have worked for one of the most open bosses and then, immediately following, for one of the most secretive. Where one day I was a wealth of information, the next I could not tell my employees anything.

Always a catch

There's some "Catch 22" involved here. If your boss swears you to secrecy, then tells you something you really feel your employees deserve to know, you are going to be damned if you do tell them and damned if you do not.

If you do leak word to your employees, it will get back to your boss. Assuming you are then able to hang onto your job, chances are pretty small you will continue to have access to this supposedly "secret" information. That will likely affect your ability to do your job.

And, you will not be much of a source of information in the future to your troops.

But sitting on the information and doing nothing with it is wrong as well. This is, indeed, a tough situation.

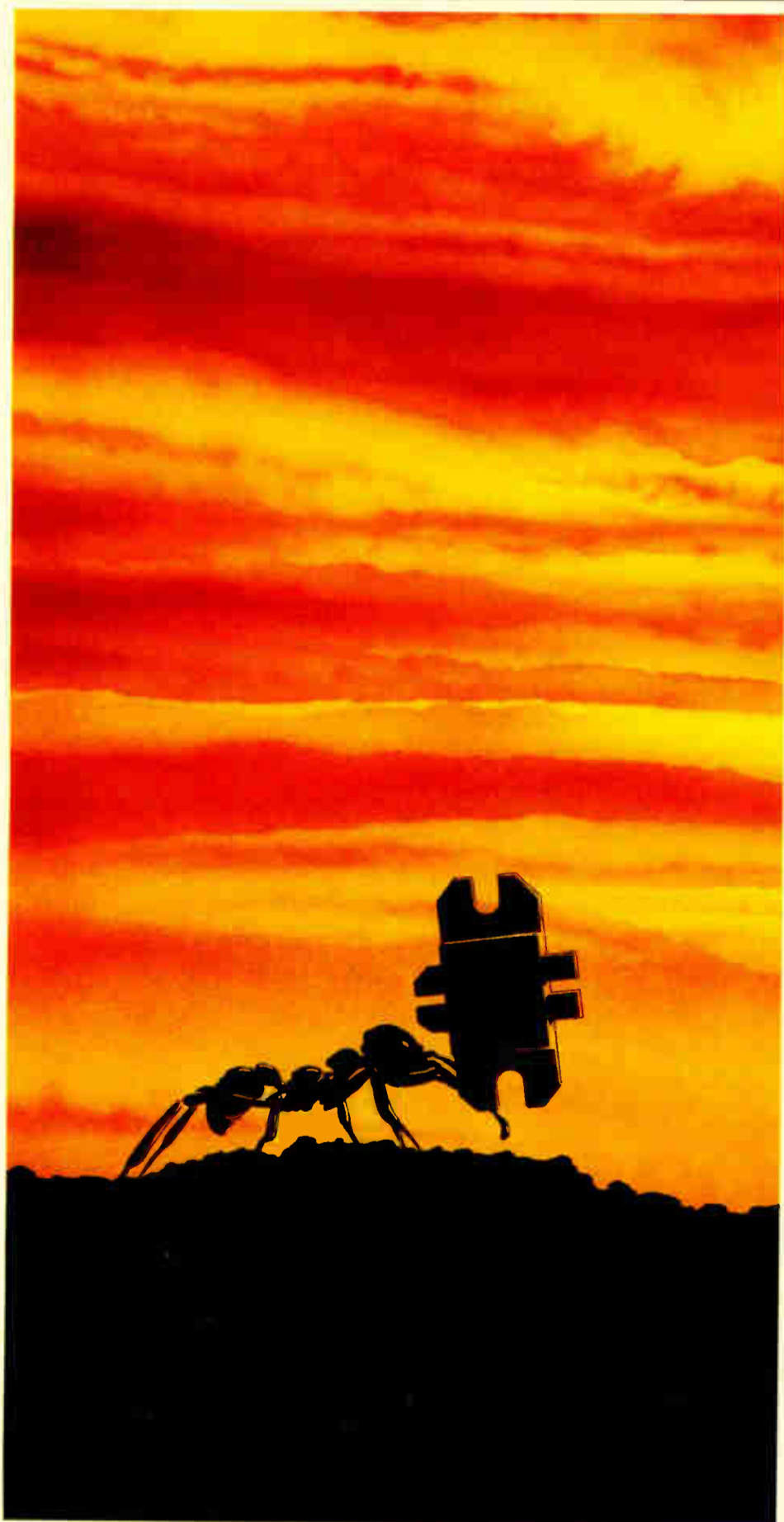
You can do what I did: argue. I argued we would lose credibility. I argued that morale would be worse when the truth came out. I argued that certain of the employees faced life changes as a consequence of the substance of the bad news we were suppressing. We owed it to them to tell them.

I didn't win many of the arguments. Eventually another boss came along and things got much better.

Looking back at the situation, my advice now is that, in addition to arguing for more disclosure, you should be as open with your employees as you can be about the situation you face. You can let them know the information you used to be able to relay to them is not as available as it once was.

You can discuss in broad terms the changes you see the industry and your operation going through. While you are not disclosing any "secrets," you have heightened their awareness.

Write to Craig Johnston in care of TV Technology.



Cool Operator

Launched at IBC 92, GEC-Marconi's Solid State UHF transmitters are somewhat unique.

The adoption of a liquid cooling system in such equipment is a remarkable innovation. Occupying less than half the floor area of their peers, these transmitters also exhibit a very low acoustic noise level.

However, liquid cooling means much more than this. The superior efficiency of heat removal afforded by a liquid when compared to air means that the transmitter runs cooler by about 10°C. That means a doubling of the output transistor MTF and a dramatic increase in reliability.

But, it is in the earth's hotter places where liquid cooling really scores. Whilst the average air-cooled transmitter struggles to cope with high external ambient temperatures, the GEC-Marconi transmitter remains cool.

Add to this, fully wideband (470 to 860 MHz) modules, no circulators, module changing on power and very gradual failure modes and you have a world beating transmitter - one of the new breed of Solid State transmitters from GEC-Marconi.

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Circle 65 On Reader Service Card

Translating Computer Pictures into TV

(continued from page 1)

scanning lines, your magical TV system would show alternating black and white horizontal lines.

Okay. Now tilt the camera slowly. When a line straddles two scanning lines, they'll both be grey, right? So the picture on your magical TV set will alternately flash between grey and horizontal stripes as you tilt. That ain't great. The scene being shot isn't flashing.

You may gripe every now and then about the resolution of your camera, but it does a reasonably good job of reproducing the real world. You've got the opposite problem with your computer.

Program it to make a big letter E, and you'll get an incredibly sharp, crisp letter. Program it to do the letter O, though, and, if all you're up to is Programming 101, you're gonna have jaggies—stairstep edges where the letter ought to be round. You can get rid of the jaggies by blurring 'em (pardon me—by *anti-aliasing* 'em), which is sort of what the front end of a TV camera does.

Now program the letter to move up and down. Just staying in computerland, you might have to get into some temporal anti-aliasing, so the letter seems to move smoothly instead of jumping, something your lensed camera, once again, does all by itself.

Buckle up

Here comes what you've been waiting for. Squirt the letter moving up and down out of the computer and onto a TV screen. Hooee! Fasten your seatbelt!

A lot of TV people gripe a lot about the problems of international standards conversion, but at least TV's got only two line standards to gripe about: 525/59.94 here and 625/50 there. I betcha I could fill this entire page with *current* computer display standards, using no more than a line for each.

You basically have two choices for the picture squirting: a standards converter that takes whatever the computer is squirting out and converts it to 525/59.94 (or 625/50), or a modification to the computer (maybe just the installation of a card) to make it squirt out the right stuff. And, if you aren't too picky about exactly what kind of video squirts out, as long as you can stuff it into a video system, I suppose another choice might be a few computers, like Amigas, that start right out with TV rates.

If your original computer picture had 640 pixels by 480, you can sort of get away without doing much more processing. If it's anything else, you need as much processing as you do for a 625 to 525 standards conversion.

Similarly, if the vertical rate of the computer's 59.94 Hz, you're in good shape. If it's 60 Hz, you might be able to fudge. If it's anything else, you're back to standards conversion.

The perils of progress

You aren't done yet, though. Chances are pretty near 100 percent that your computer operates with progressive scanning (line 2 follows line 1). TV operates with interlace (line 3 follows line 1). So your progressive computer pictures need work as they get squirted out.

Then there's color. I'm not going to get into esoteric stuff about color primaries

here. Let me just tackle something *real* simple: color encoding. Computers, in general, are component; NTSC ain't. The usual forms of computer components are red, green and blue or hue, saturation and luminance. For argument's sake, let me use the common video components: luminance, red minus luminance and blue minus luminance.

Suppose all three signals can go from zero to 255 (eight bits per component, a common computer practice). In computerland, there's no reason why all three couldn't be 255; in videoland, if all three were 255, red and blue would have to be twice as great as maximum luminance,



by Mario Orazio

Masked Engineer

and you just can't do that in NTSC, so you need still more processing in the squirting.

I've got more. What's the most important part of a TV picture? The center. What's the most important part of most computer screens? The upper left corner (that's where "home" is). In TV, to get rid of the edges of the picture, monitors are overscanned; in computers, to ensure that home is visible to matter what the monitor is doing, *signals* are underscanned—just another little something to take care of in the squirting.

Then there are all the NTSC artifacts you know and love so much. The naked pixel and interlace problems are what cause computer-generated, one-pixel-high

horizontal lines to flicker so badly—no camera blurred them enough to show up in both interlaced fields, so they're refreshed only 30 times a second instead of 60 (blurring software in good computer video systems substitutes for a camera).

Take a look at the line between green and magenta bars in color bars. On a component computer screen, that line can be as sharp as any white/black transition. You could do the credits of a show in magenta on a green background on a computer monitor with no sweat (except fear of the taste police); on TV it's a good way to make the "Batteries Not Included" disclaimer an unreadable mess of chroma crawl.

None of this says you can't squirt video

out of a computer. *Of course* you can, but it takes a little effort on your part or on the part of the designers and programmers of what you're using (come to think of it, I guess almost no one *does* take Programming 101 anymore).

Last but not least

Everything I've mentioned to this point involves taking computer pictures and squirting them into the world of analog NTSC. It's no easy task, but it's doable and doable in reverse (elba-od?) to get from analog NTSC into a computer.

Nope, I didn't accidentally leave out digital video. I saved it for last because, in some ways, it makes everything I've men-

tioned to this point seem like child's play.

I brought up the common 640 x 480 pixel computer format earlier. A lot of computer screens share TV's 4:3 aspect ratio, so 640 x 480 provides square pixels. You can draw a circle with a computer, rotate it 90 degrees, and have it stay a circle.

Now take a look at digital video. Pick a standard—any standard—4:2:2, 4fsc, 3fsc, SMPTE 240M HDEP—I don't care. *There ain't one single standard for digital video in the TV world that uses square pixels.* Not one. 4:2:2's my favorite. In 525/59.94, a 4:2:2 pixel is a fine, upstanding, vertically oriented rectangle; in 625/50, it's lying on its side. Rotate a circle in either case without doing one whole heck of a lot of math to compensate for the pixel shapes, and you lay an egg.

Consider this

Then there's bit depth. It's not uncommon for computers to use 24 bits per pixel (the three 255s I invoked earlier). If you ignore spatial chroma resolution, you could say a D-1 machine records 24 bits, too, losing just a wee bit to keep standards committees happy. D-2 and D-3, though, aren't anywhere near even eight bits, thanks to those awkward little composite video matters of sync, setup and encoded color.

So here's a little puzzler for those of you who thought computer pictures and video pictures were the same before you started reading this: How come a good D-2/D-3 picture of a face (forget the early machines with lousy A/D converters), with something on the order of an effective seven bits per pixel, looks better than the same face in a computer picture with 16 bits per pixel? Hint: It's why NTSC was created in the first place.

Mario Orazio is the pseudonym of a well-known television engineer who wishes to remain anonymous. Write him clo TV Technology.

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PLANEEMOS LA ILUMINACIÓN

La selección del sistema de luces para un nuevo estudio de televisión requiere saber cual va a ser el uso inicial de dicho estudio. Debe Ud. hacer un esquema de la carga de calor, considerando información pertinente a programas de espectáculos y un plano de cada uno de los escenarios o "sets" que se usarán, aunque todavía no tenga detalles exactos de su diseño.

Haga un plano con luces

Luego de dibujar los planos del piso de los escenarios, añada los elementos de iluminación sin escatimar. Recuerde que debe incluir luces para los puntos de entrada, las escenas fuera de las ventanas, el área de la clave croma y la instalación para la cámara para gráficas.

Las lámparas Fresnel de 2000 vatios para los puntos principales no presentan problemas pero es en el cálculo de las lámparas Fresnel de 1000 vatios para las luces traseras y para acentuar, donde los cálculos son generalmente deficientes. Si las cámaras son nuevas, posiblemente convenga reemplazar las lámparas de 2 Ks (Kelvins) por lámparas de 1 K y las de 1 K por lámparas de 55 vatios para mantener la amplitud de lente de las unidades mayores. Una lámpara Fresnel de 15 cm. con una bombilla de 1 kW no tiene la misma cobertura de campo de una Fresnel de 25 cm. con la misma bombilla de 1 kW.

En la primera lista de luces debe Ud. incluir todo lo que se le ocurra. El monto total será elevado pero posiblemente más tarde sea difícil obtener recursos para

comprar lo que necesite. Si compra Ud. estrictamente lo necesario, el gasto ya será considerable, de manera que échese al agua y compre el equipo extra. Tenga cuidado con las marcas desconocidas y de bajo precio. El equipo de este tipo resulta caro al final de cuentas porque puede requerir ajustes y reparaciones.

Incluya los accesorios o el equipo suplementario para cada luz: cortaluces o pantallas opacas de ocho hojas o secciones, marcos para color/difusión y "sets" de media pantalla y pantalla completa. Los planos para el estudio deben incluir espacio para el almacenamiento de luces y accesorios y almacenamiento horizontal con una superficie cómoda para cortar.

Estudie catálogos

Su primera lista debe incluir soportes para viseras de cámaras y soportes rodantes de varios tamaños. Estudie los catálogos de los fabricantes para escoger soportes y sujetadores de mano. La instalación rápida para anuncios de servicio al público y para cuñas comerciales puede hacerse más rápido y con menos movimiento de cámara si las luces están instaladas en soportes de pie. Es más fácil mover una luz en su soporte de pie que tratar de hacer un cambio en las luces elevadas o aéreas.

Yo cuelgo aproximadamente el 90 por ciento de las luces en varillas o pértigas a una altura inferior a la de la pasarela o puente de lámparas y la parrilla móvil, con excepción de las luces "ciclorama" y

el enfoque vertical en la escena.

La manera como se une o conecta la luz a la varilla puede facilitar el trabajo. La varilla puede terminar en un dispositivo en forma de estribo al cual se le agrega la luz con una presilla o mordaza. Igualmente, la varilla puede tener un dispositivo macho/hembra para que encaje con el agujero de las luces pequeñas o con el perno de las luces grandes.

En ambos casos es necesario asegurarse de que la conexión esté fija. Este sistema es poco práctico si todas las luces van a ser colgadas de la parrilla elevada. Si esperamos usar algunas veces las luces en soportes de pie, el sistema de perno ofrece mayor facilidad para la conversión de parrilla a soporte de pie.

El sistema de perno se usa generalmente

ENFOCANDO LA ILUMINACIÓN por Dave Clark

en las luces Mole-Richardson, fabricadas principalmente para los estudios cinematográficos en Hollywood, donde montan los instrumentos en soportes verticales, en puentes de luces o en soportes tipo trombón (en forma de U). La mayoría de los fabricantes incluyen las presillas o mordazas para varillas como parte del equipo para luces.

CBS diseñó un tipo de mordaza, que aún existe en los estudios equipados por CBS y que, a mi parecer, es excelente. La varilla tiene una "manga" cuadrada en el extremo. Se desliza la "manga" hacia arriba y encontramos un acoplador cuadrado abierto en uno de sus lados que parece una mano con los dedos doblados lista para encajar con otra mano. La "otra mano" está incorporada a la luz. Se encajan ambas manos, se desliza la "manga" sobre ellas y la luz está fija. No se necesitan herramientas y la luz y las varillas están seguras.

Desafortunadamente, estos acopladores no aparecen en ningún catálogo del ramo pero yo trataría de encontrarlos o de fabricarlos si estuviera equipando un estudio.

El punto importante es que todas las luces tengan el mismo sistema de acoplamiento para poder intercambiarlas rápida y eficientemente. Recomendaría que un grupo de luces esté en soportes rodantes y que éstas no sean usadas en posición colgante. Deben incluir una lámpara Fresnel de 5 KW, cuatro de 2 KW, ocho de 1 KW, dos luces suaves de 4 kW y cuatro muy suaves de 1 kW.

Reduzca la intensidad

Para ejercer el control necesario me gusta tener un atenuador o reductor de intensidad para cada circuito. Esto quiere decir que cada tomacorrientes está conectado a su propio reductor de intensidad y el tomacorrientes No. 148 responderá a la activación del atenuador No. 148.

Es posible que la consola de atenuadores tenga menos canales de control que atenuadores. No hay límite en el número de atenuadores que pueden ser asignados a un canal. Veinte circuitos (atenuadores) de luz "ciclorama" azul pueden ser asignados al canal 1, 20 circuitos de luces ámbar "ciclorama" pueden ser asignados al canal 2, etc. Para ejercer un control más

preciso, las lámparas solas y las luces de fondo deben tener su propio canal.

El costo principal en la instalación de un atenuador para circuito es el alambrado (cableado) y los atenuadores en sí. La consola de computadora que controla las órdenes a los atenuadores con un teclado sencillo y la memoria necesaria es relativamente barata, considerando el grado de complejidad necesaria para manejar la mayoría de los espectáculos de televisión. Para una entrevista con intercalación de presentaciones musicales solamente se necesitan unas 10 indicaciones (cues) y hasta las consolas modestas pueden manejar hasta 100 indicaciones.

Recuerde que una indicación para luz no significa, necesariamente un cambio drástico del día a la noche. Algunas indicaciones significan cambios sutiles en algunos de los atenuadores para alterar el equilibrio de la escena, como por ejemplo, cuando el locutor de la sección meteorológica deja el área de la clave croma para acercarse al escritorio de los locutores principales.

Si se instala un atenuador para cada circuito, se eliminan los tableros de conexiones complicadas y los subsiguientes problemas de mantenimiento. La conexión de los atenuadores y los tomacorrientes se hace en forma electrónica a los canales de control. Muchos de los sistemas más modernos ofrecen un teclado con un cable largo que permite la operación a control remoto, sin que el operador tenga que estar sentado al pie de la consola.

Para equipar un estudio se debe obtener el sistema que acabo de describir, si se puede demostrar, que éste proporcionará ahorros en tiempo, trabajo y dinero. Los planos deben incluir la ubicación remota de los atenuadores. Los atenuadores pueden ser de 2,4 kW y de 6 kW y vienen en bastidores o estantes de 96 atenuadores cada uno. Cada bastidor ocupa aproximadamente dos metros cuadrados de espacio y tienen una altura de unos seis metros. Es necesario que se tenga acceso a ellos por todos los costados para que haya movimiento de aire y sea fácil hacer reparaciones.

Listas "A" y "B"

Conforme vaya Ud. preparando sus planes, recuerde que el presupuesto va a tener que ser recortado por lo menos una vez, antes de que el estudio esté terminado. Prepare una lista "A" que incluye todo lo deseado y una lista "B" con todo lo esencial. Mantenga la lista "B" en secreto hasta que le confirmen que no podrá comprar todo lo que aparece en la lista "A". El sistema de parrilla y el sistema de un atenuador para cada circuito en la lista "B". Estos son elementos que resultan extremadamente caros si hay que cambiarlos más tarde; es más fácil agregar las luces que no se obtuvieron para la instalación original.

Puede Ud. agregar varias fuentes de energía "now-dim" de 6 kW para las cargas de iluminación y para ahorrarse algunos atenuadores. El bastidor tendrá algunos espacios vacíos al principio, pero puede Ud. llenarlos más tarde. Si la parrilla no es la correcta desde un principio, tendrá Ud. problemas tratando de colocar sus pocas luces en la posición óptima.

David M. Clark es director de iluminación de Imero Fiorentino Associates de Nueva York. Ha sido ganador de dos Emmys y ha recibido numerosas nominaciones a otros galardones por su trabajo. Es, además, artista gráfico, fotógrafo y diseñador escénico.

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VIDEO TECHNOLOGY

Examining the Applications of Microcomputers in Professional Video

Morph+ Adds Magic to the ASDG ADPro

by R. Shamms Mortier

ASDG's Morph+ package adds another level of magic to the qualitative Art Department Professional line. This software is really two separate modules. The first consists of new "operators" that can be run directly, or from the ADPro environment (which accounts for the "plus" sign). The second is the morphing software itself.

Exactly what is "morphing"? I am sure you have seen it by now. Recall any of a dozen ads for cars that show both interiors and exteriors stretching and pulling in exact harmony with the announcer's voice as new features are described.

This is morphing, or more precisely, metamorphosing from one shape to another. Morphing is the newest rage in computer animation options.

ASDG's ADPro is the perfect environment for its morphing package. The wealth of format translators (from Post-

X-Y-Z axes, and can either preview the actual painting of the results or see the plane as a grid.

Your viewpoint, the camera, can also be set anywhere in the 3-D space through the use of both sliders and numerical input. The focal length of the camera can also be set, allowing for some very exaggerated views.

Width/height and X-Y aspects can be set as well as image offsets. This operator is a natural for the production of flying rotating logo animations, and is made intuitive by the visually attractive interface.

"Refract" is an actual ray tracing operator, as it allows you to treat an image by varying the refraction index and the "pool depth" that your looking lens possesses. I watched for hours as Perry Kivolowicz, ASDG's commander, demonstrated the effects that this operator achieved on imported 24-bit images.

Pictures took on the look of crystals and diamonds, as well as evidenced some spec-

over the time of an animation. The image can wrap symmetrically or can be perceived to bulge radically as in a fish-eye lens effect. When ready, you can preview the effect before applying it to the data.

"Twirl" is a very strange operator that can produce unexpected results. Twirl also operates on a circular cut from the image, but adds a smear around the edges

USER REPORT

so that the cut is made to appear like a swirling aberration of the original. The actual width of this smear can be set.

A warped view

The "Warp" operator is a good place to zero in on before we actually talk about the Morph module, as being comfortable with the warping operator in Morph+ may be described as a prerequisite to more complicated morphing.

You would choose warp over morph if you were working on a single image. Otherwise, the techniques and processes are much the same, so your learning curve is enhanced. With the warp vectors, you can do such things as close the eye on a portrait or make an image smile.

A thorough understanding of vectors and their application is necessary in order to produce quality warps and (later) morphs. As far as I am aware, Morph+ is

the only morphing package that allows the "folding" of surfaces beneath others on a 2-D image.

Constructing the warp vectors is an exacting and careful process, and takes awhile to get accustomed to. The multiple zoom factor in the software, however, is a great aid in applying the changes exactly where you want them (accurate to 1/64th of a pixel).

Starting and ending vector points can be colored differently by palette selection, as well as sized large or small. You may even choose to have them displayed as numbers. Another nice time saving feature is the ability to start drawing before a zoom screen refreshes. All vector definitions can be saved and loaded in later to other forms. As with word processing tools, vectors can be deleted or copy/pasted to new locations.

The manual has a helpful listing of warping vector placement situations to avoid. Grouped vectors can be given hierarchical names and saved. Group motion and depth control is also included. The

speed with which varying warped areas of a picture take place can be controlled and altered by assigning specific curved
(continued on page 14)

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What is it? Morphing can produce some very strange results, as seen here.

Script to Targa to IFF and more) and the loads of processing tools add to the number of ways that images and animations can be processed and translated.

ARexx experience is helpful but not necessary, as a soon-to-be-released utility called "ANIMworkshop" from AXIOM software will address ADPro's features directly. Let us walk through the "plus" part of Morph+ first, concentrating on the new operators.

If you use the color controls to apply changes (brightness, contrast, gamma, and so on) to the imported graphic data and want to reapply more of the same beyond the range allowed, then Apply Map is for you. It allows you to extend the ranges of the controls by applying the settings to the raw data, and resetting the color controls to zero again.

A new perspective

"Perspective" is a wonderful new operator in Morph+. You are allowed to manipulate the picture plane and orientation of the imported image on any of the

tacular 3-D smearing. This operator alone is probably worth the cost of the software.

Making waves

Ripples? Yes. Now your images can be effected by animated waves as if they were made of liquid.

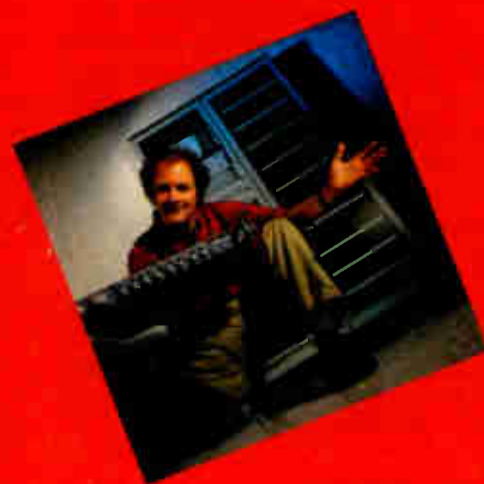
Ripples have all of the expected parameters, including amplitude, period, phase, and speed, and all of these can change over time. You can also generate multiple ripples and create interesting interference patterns.

The "Rotate" operator allows for the rotation of circular areas of your image from a movable center. This can be applied to circular elements within your picture (like a coin, for instance) or may be used to create interesting effects on a linear background.

The new "Sphere" operator allows you to wrap your 2-D plane around varying degrees of virtual spherical 3-D surfaces. These can be completely spherical, or just slightly curved like the surface of a monitor screen. This curvature can be changed

Barry Flannaghan, designer of the one rack unit CVR45, compares it with the 120 rack unit ACE.

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Electric Image Animates MTV

by Rich Fernalld, Co-owner
HUTCHISON/FERNALLD

LOS ANGELES, California Let me start with a bold statement: The ElectricImage Animation System is the most awesome, amazing, and incredible program out there for the Mac.

I have been producing animation for film and TV in some form or another for about 20 years—15 of that independently.

A Mac convert

I began using the Macintosh as a design and production tool from day one of its

introduction. Much of graphic animation back then was created with hundreds, sometimes thousands of black and clear line negatives that were backlit beneath an animation camera. The camera was usually under computer control that precisely introduced motion to the art. Depending on the artwork used, the filtration, and the "sweat" factor you applied to the production, any look could be achieved.

Rough art

Much of this art was rough and underserving of special detailing since some effect was usually introduced, such as a glow.

The apparent high resolution of the Mac screen and its deep, dark blacks was a perfect replacement for this artwork, so I began shooting directly off the screen.

During those years I used every trick I could to hide the "Mac-look," from fuzzing up the image with various filter packs to outputting hundreds of negatives created with the Linotronic L-300 and "cel-flopping" these under an animation stand.

I went through lots of time, lots of money and lots of hassle—but it all worked.

Significant improvements

Then the Mac II came along, followed by 24-bit color, Adobe Photoshop and the ElectricImage Animation System. True digital animation was available to me on my own terms in the form of the Macintosh and ElectricImage.

I now seldom deal with the negative aspects of film production: dust, scratches, static pops, film buckling, lab cut-off times, printer lights that shift on an hourly basis, and driving all over Hollywood just to look at a test only to discover that the negative was mistakenly picked up by another company.

All of this has been traded in for system crashes, incompatible software and a degeneration of my social skills as I spend countless hours on the Mac.

But I get exactly what I want these days, and even after eight years of involvement with the Mac it's all still new and exciting because of accelerating software and hardware advances.

A real nightmare

In February 1992, Hull Hutchinson/Panther Productions approached me to animate Mark Beyer's comic nightmares for MTV's Liquid Television. I was only mildly interested until I saw Mark's work.

His unique style was refreshing and it had a child-like psychosis that would be counter to anything I had seen in computer animation before. Hall and I had been developing a new look, Compu-Cut (a technique of simulating cut-out animation with the computer), and we both saw an opportunity to introduce it to



Scene from "The Adventures of Thomas and Nardo."

broadcast TV.

So we began producing Mark Beyer's "The Adventures of Thomas and Nardo."

"The Adventures of Thomas and Nardo" consisted of 5 two-minute episodes produced over a period of four months and rendered on a series of Rocket-accelerated Macintosh IIs.

ElectricImage's 3-D capabilities gave us total control over the models, lights and

Get Professional Results With the Morph+ Package

(continued from page 11)

paths to the warps in the Group Motion/Transparency Curve panel.

You can even set bouncing motions at the end of a warp animation, adding a bit of humor to the movement.

Morphing itself

The actual Morph program in ASDG's Morph+ is a subset of Morph+, and Morph+ must be running in the background for Morph to run. My description above of the Morph+ Warp operator gives you a good idea of the capabilities and procedures used by the Morphing module.

The difference is that Morph is used when you want one screen to transform itself into another, different image on another screen. It can also be used to generate morphing images within an animation.

I saw some spectacular outtakes from an upcoming TV series created with ASDG's Morphing software while on a visit to the ASDG offices in Madison, Wisconsin. At various points in the morphing process, it helps to see the two images blended at a strength of 50 percent for each image and halfway through the procedure.

Generally, if the images look to be pretty equally contributing to this scene and their placement in space is similar, you can be assured that you are on your way to a smooth morphing process.

Seeing it through

The Morph module has a Visual User Interface, and using it in combination with the zooming gadget makes it easy to see exactly what area of an image you are working on. The VUI also boasts an "Onion Skin," a see-through screen that allows one to see the overlay of both source and target images.

camera, which we kept constantly moving and changing throughout the episodes.

The opening title alone has approximately 700 models and 200 lights that the camera maniacally flies through, underscoring Mark Beyer's exhilarating style.

ElectricImage is now shipping its new

USER REPORT

upgrade, ElectricImage 1.5. EI has continued its effort in providing a 3-D and animation tool for broadcast quality work.

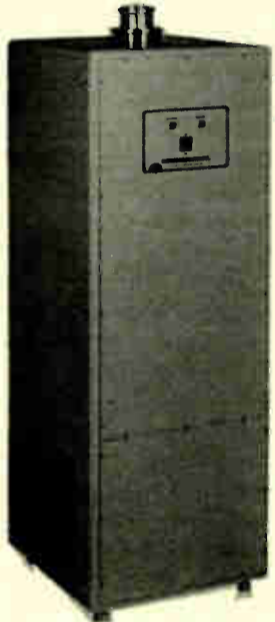
Hall and I have since merged our efforts to form HUTCHISON/FERNALLD, producing animation and special effects from concept and design to final production.

HUTCHISON/FERNALLD consists of Hall and Deborah Hutchison and Rich Fernalld, and is located at 7797 Torreyson Drive in Los Angeles. They can be reached at +1-213-850-5922. All have extensive experience in every form of film/video production.

The opinions expressed above are the author's alone. For more information on ElectricImage's Animation System, contact Wendy Bozigian at: +1-818-577-1627, FAX: +1-818-577-2426, or circle Reader Service 94.

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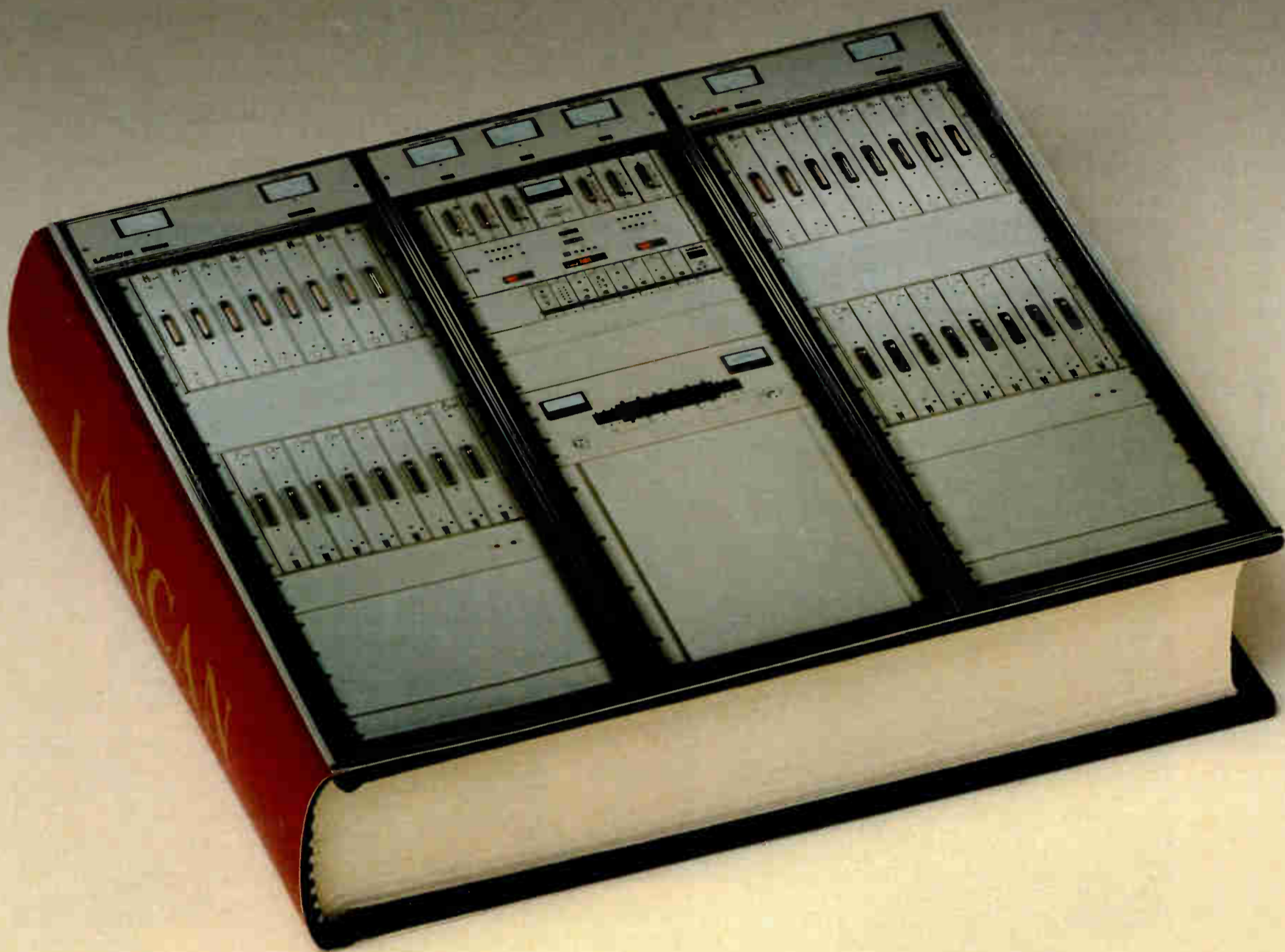


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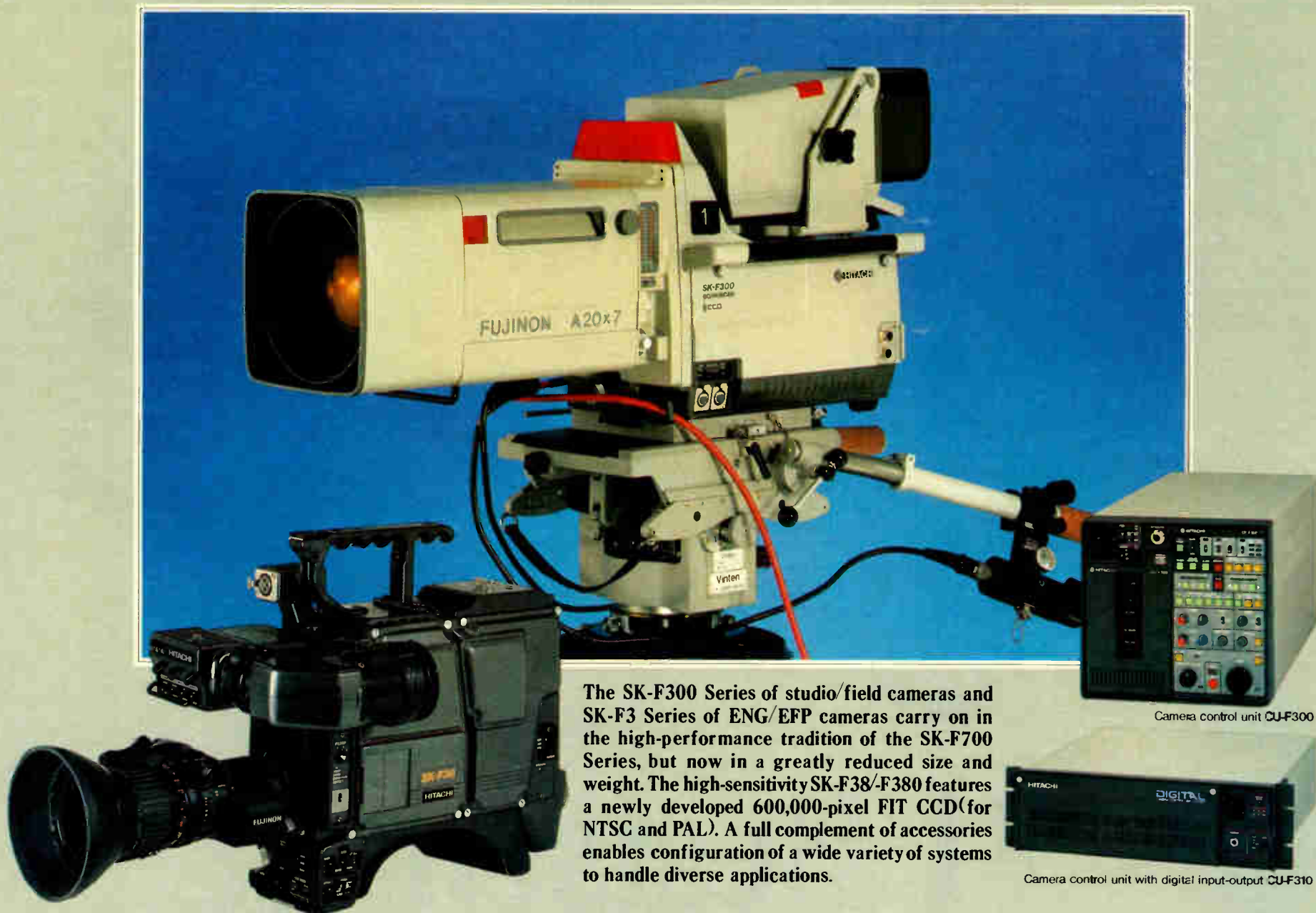
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BUYERS GUIDE

Test & Monitoring Equipment

Digital Center Relies on Tek TSG-422

by Andreas Weiss
Head of Production
n-tv

BERLIN One of Germany's newest private commercial TV broadcasters, n-tv, the first news-only channel in Europe, went on the air 30 November following a very ambitious installation schedule.

Being the first in anything always carries a certain amount of risk, but n-tv's list is astounding: first fully serial digital broadcast production center; totally auto-

That's one of the reasons why BFE, the Mainz-based turnkey systems house in charge of the project, worked closely with Tektronix from the early stages. Many aspects of serial digital systems are new, and Tektronix already has products on the market (and under development).

Working with Tektronix helped BFE ensure as many products as possible were available on time for both the equipment pretesting and installation phases of the n-tv project.

Tektronix's precision deserializer, the

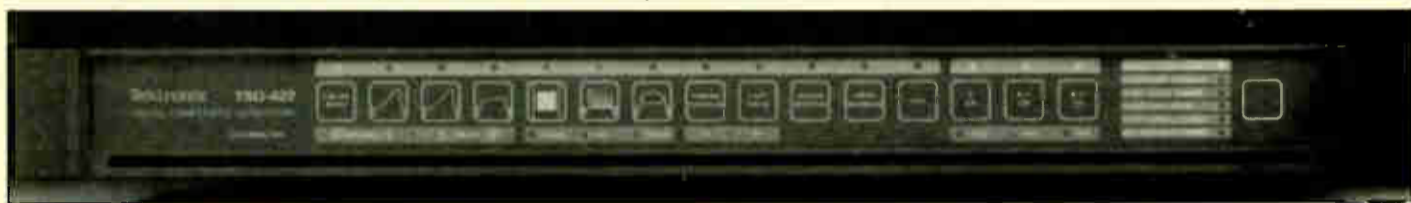
co-siting verification signal verifies the correct luminance and color difference sample positioning in the digital domain.

Also, the unit's blanking markers make sure the proper blanking width is maintained throughout the system.

A large number of Tektronix's extensive family of component signal monitors are also integrated into equipment racks and control desks. Since most of the incoming signals are expected to be in PAL format for many years to come, a number of VS211 PAL video synchronizers and

January of 1992.

The opinions expressed above are the author's alone. For more information on Tektronix equipment, contact Donna Loveland in the U.S. (Phone: +1-503-627-3124; FAX +1-503-627-5801), or circle Reader Service 52.



n-tv used the Tektronix TSG-422 to test its new serial digital component system.

mated studio cameras and mounts; radical new approaches to the director's role in production—and the list goes on.

The plans for n-tv started three years ago, with the company officially founded in late 1991.

Major reconstruction started in May 1992—just months before n-tv's inaugural air date.

All systems were designed and installed as serial digital component, which makes for easier wiring and signal routing, something especially important in large systems. Even so, serial is in its infancy as far as system integration is concerned—particularly with regard to test and measurement and signal monitoring.

DAC422 component digital-to-analog converter, proved invaluable in allowing standard analog component signal monitors to test the system.

The Tektronix TSG-422 digital compo-

USER REPORT

nent generator was used both as a test device and as a central SPG for several parts of the system. The 422 provides general purpose signals, as well as signals specific to the 4:2:2 environment.

The 422 provides two identical digital outputs. A limit ramp signal gauges the maximum dynamic range of the system, while

PAL monitoring products are essential system elements.

The n-tv facility list is impressive, as it should be for a national service that can be received via cable or satellite. The station occupies a total of 4,000 square feet of space and employs 240 people. It boasts five edit suites and no less than three dedicated graphics areas in Berlin, as well as local studios in Bonn and Frankfurt.

Editor's note: Andreas Weiss has been a broadcast engineer for 10 years and is the founder of PVK, which developed the Vision 4 real-time disc-based video storage system in 1986. He joined n-tv in

BUYERS BRIEF

Leader Instruments Corp. has released the Model 2250, a 250 MHz, four-channel oscilloscope.

The unit features a menu-driven setup providing automatic calibration and sensitivity, interchannel time matching, and time base setup, as well as a four-digit on-screen frequency counter display and full cursor operations.

Trigger options include sync sourcing from one of the four channels and P-P AUTO sync that maintains positive triggering despite amplitude changes.

Other features include delayed sweep operations, such as TV line select referenced to either field and an event counter delay that triggers the delayed sweep from a user-definable number of sync pulses following the A time base start.

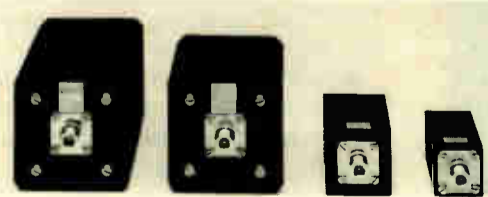
Cursor measurements include voltage, time, frequency, voltage ratio in percentage or dB, and time ratios in percentage or degrees.

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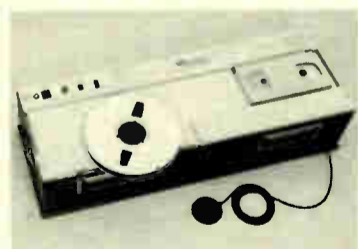
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READER SERVICE NO. 33

Test Market Follows Trends

by Fumihisa Nobui

TOKYO The stability of video equipment has been remarkably improved, and neither frequent adjustment nor maintenance are needed anymore. But now a higher and more severe standard is required to take advantage of the far higher quality of video that can be produced with the increasingly sophisticated video equipment appearing on the market.

The rapid "digitization" of equipment has accelerated the trend toward higher quality. Also, more of this equipment is finding its way into more places. For instance, multicamera shooting and A/B-roll editing is becoming increasingly commonplace even on the corporate video level.

In response to these trends, test equipment manufacturers are expanding both their products and their markets.

Let's overview the Japanese market situations of the waveform monitor and vectorscope, focusing on Leader Electronics and Sony Tektronix.

Leader and Sony Tek

Popular suppliers in the Japanese domestic waveform monitor market are: Tektronix (identified as Sony Tektronix in Japan), Leader Electronics, Shibasoku, Hitachi Denshi and Kenwood. In the broadcast station and post production facility markets, Tektronix and Leader Electronics share the major part of the market.

In the broadcast station market, Tektronix is dominant, and in the post production facility market, Tektronix and Leader Electronics share the market evenly. Leader Electronics is stronger in the corporate video market.

Recently, audio manufacturer Kenwood has entered the market and has begun aggressive sale activities targeting the broadcast station market.

Leader Electronics entered the market eight years ago with a vectorscope. Before that, Tektronix had been dominant

both in the broadcast station and post production facility markets.

Price is one of the key factors leading to the success of Leader Electronics products. Some product prices are set at 50 percent of the competing lines. Price is what attracts the non-broadcasting facilities covering the rather limited corporate and business video market.



ties covering the rather limited corporate and business video market.

Future direction

The current waveform monitor product lines can be divided into three categories: 1) 1/2 rack size; 2) portable; and 3) full rack size.

In the post production facility market,

the major category for both Tektronix and Leader is half rack size, and the most popular models are those featuring a combined waveform monitor/vectorscope.

The competitive models for the manufacturers are, respectively: Leader Electronics: 5870 (NTSC)/5871(PAL); 5872(NTSC)/5873(PAL) and Tektronix: 1740A; 1750A; 1760A.

Product size is especially crucial for the space-conscious post production facilities in Tokyo. Leader Electronics Model 5872A/5873 and Tektronix 1740A Series accept DC source, which is convenient for mobile units, field use or in other areas of limited space.

Leader Electronics 5870/5871 and Tektronix 1750A provide SCH phase measurement function, too.

For the growing D-2 composite digital market, Tektronix offers 1730D and Leader Electronics responds with the 5860D, which can accommodate D-3 as well. Both instruments are equipped with

D-2 parallel and serial input/output. The 5860D accommodates (factory outlet option) SMPTE standards and the serial transmission standard 10B1C, proposed by NHK and NEC.

Both companies have introduced Hi-Vision versions: Model 5100 from Leader Electronics and 1739HD from Tektronix. The need for these HD-related product lines will be increased by the expansion of non-broadcasting use of HD for film production and in the medical field.

Much attention is paid to the future direction of video signal measurement with Tektronix's NTSC/PAL VM700A video analyzer, digital waveform/vector monitor, which provides high speed, high resolution, A/D conversion and integrated video signal measurement by 32-bit CPU. Numeric control is available on this model, as is leveling of the video signal, freezing, frequency and jitter analysis. So is automatic measurement and a hard copy of the signal.

In short, test equipment manufacturers are continually improving their methods of signal measurement as video equipment manufacturers improve the quality of their products.

Videotek Unit Boasts Versatility

by Steve Harrington, CE
Boston Catholic Television

NEWTON, Massachusetts Back in June 1992, the Videotek TVM-730 video analyzer caught my eye at NAB because of its portability. Weighing about 23 lbs., it is not a featherweight, but it is compact and only takes a standard half rack when not on the road.

Although it is a standalone unit, it has RS-232/422 communications ports, and we often bring a portable PC to log more than one test result at a time.

The TVM-730 is primarily a combination (composite) waveform monitor/vectorscope. While it performs well in that capacity, the real power is in its auto measure capabilities.

The unit has two levels of operation. The first is aimed at the everyday operator and provides all the basic functions required for day-to-day evaluation of the video signal. If the gear is assigned to an operator, he or she could stay within that level and never be concerned with automeasure.

To access the automeasure capabilities, the operator simply hits the level 2 switch.

The menu screens are well thought out and easy to use.

Measurements are made to several standards (NTSC, NTC-7, RS-170A, etc.), and are capable of doing more tests than I have time to review. Thankfully, tests can be designed and customized depending on the application needed.

At Boston Catholic, we have stored tests for our transmit facilities, videotape

rooms, edit suites, and various receive locations. Each of these tests can be labeled with an appropriate name to avoid guesswork.

Added features include the use of programmable high and low tolerances for any test, and the use of cursors for added preci-

USER REPORT

sion. Line selection is easy to use, as is the SC/H phase measurement function, and we have found the ICPM test to be very helpful in transmitter alignment.

I like Videotek's approach to PC control. The software mimics the screen controls, and makes it very easy to switch back and forth when required.

The TVM-730 also has four video inputs that lend themselves very nicely to our operation. On arrival each morning, I can quickly review preset tests on each of our four main transmit frequencies. I can also look at the outputs of our four main control rooms at our primary studio facility. With an engineering staff of three, this ability to quickly check video quality is a big plus.

While operation of the TVM-730 has been well received at BCTV, the unit has not been flawless. Recently, we had a UART fail in the device, causing us to lose PC control.

Fortunately, Videotek's three-year warranty was in effect, and our repaired unit was back to us in about a week. The company picked up shipping costs as well.

Overall, we have been quite pleased with the TVM-730. The unit might not have all the bells and whistles of other devices, but it does meet all of our day-to-day needs for substantially less.

Editor's note: Steve Harrington has been a television engineer since 1975 and was appointed chief engineer at BCTV in 1990.

The opinions expressed above are the author's alone. For further information in the TVM-730, contact Eric Wahlberg at Videotek (Phone: +1-215-327-2292; FAX: +1-215-327-9295), or circle Reader Service 38.

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Signal Creator Tests for Sony

by Don Featherson
Test Engineer
Sony Corp. of America

SAN JOSE, California Through the combined efforts of Sony Corp.'s Business and Professional Group Quality Assurance Departments, the company now has a more efficient and cost effective method of product specification testing.

USER REPORT

Providing specification measurement testing for Sony's diversified products requires test equipment that is expandable and sufficiently flexible to handle technological changes. We required a test station that could accommodate audio and video testing at the same time (with multiple video standard support) and expandability to meet digital requirements.

Maintaining Sony's high quality standards mandated a considerable amount of specification testing and data collection. Information collected has to be analyzed to detect changes in the manufacturing process.

Considering the options of using traditional devices or building a custom system from scratch, we found the automatic test equipment approach to be the most appealing and the most satisfactory in terms of meeting our testing requirements.

In designing our automated test station (ATS), we specified equipment with demonstrated functionality and reliability. We found that most of the components we required had been in use for several years.

The elements of the ATS include a DOS-based personal computer with a VGA display and several interface adapters, an Audio Precision SYS-322 audio generator/analyzer, a Tektronix VM700A video analyzer, a Sony BVS-V1212 video matrix switcher, and a Magni Systems' SC-P-BB-SD Signal Creator.

The Magni device is particularly important to the ATS for several reasons. First, the Signal Creator has dual video standard capability, which allows us to measure NTSC and PAL products without multiple signal generators.

The system also supports multiple video formats. In one device we can quickly and easily produce test signals for products operating in Betacam Y/By/Ry, SMPTE Y/By/Ry, RGB and S-VHS. The unit also has the ability to generate test signals in D-1 and/or D-2 parallel and serial formats.

Similarly, the Signal Creator offers the flexibility to create specialized or non-standard custom test signals. This is an excellent capability for an organization in which requirements change from moment to moment. As an example, we use the Signal Creator to generate a custom matrix signal consisting of color bars, multiburst, modulated ramp, pulse and bar and other signals required for speci-



The Magni Signal Creator has dual video standard capability.

fication measurement. This custom signal, combined with the Tektronix block mode measurement capability, allows the ATS to execute a sweep of measurements by sending a single command.

Other examples include the ability to customize multiburst signals to include frequency packets specialized for different product models. With this capability, a new generator need not be purchased each time a new or special requirement arises.

Finally, the device is computer controllable. From the PC, an application procedure can download test signals and control the Signal Creator by computer command. This allows us to quickly match test signals to the product being tested and avoids the need to control the signal generation process manually.

A self-contained testing station that requires no interfacing to external distrib-

ution equipment, but which can be networked to existing systems, offers considerable economies. The fact that the cost of this test equipment suite is less than that for a comparable manual approach makes the ATS all the more appealing. In addition, this approach easily accommodates a variety of different products, and much of the testing can proceed unattended.

Editor's note: Don Featherson has been with Sony for 10 years, working as a test engineer for the past three.

The opinions expressed above are the author's alone. For further information on the Signal Creator, contact Ed Kiyoi at Magni Systems (Phone: +1-503-626-8400; FAX: +1-503-626-6225), or circle Reader Service 111.

Majec Finds Quality in Hamlet

by Jordon Gershon
Production Manager
Majec Video Productions

OVERLAND PARK, Kansas I read about the Hamlet Video International Videoscope and its unique capability of transmitting digitally generated waveform and vector signals to any standard monitor, LCD or viewfinder. I was somewhat skeptical about purchasing a critical piece of test equipment that is half the price of other units yet claims to offer comparable, if not more, features.

Wise decision

But I am glad I decided to purchase the Videoscope. In fact, it was one of the most cost effective and efficient decisions Majec has ever made.

I integrated the Hamlet Videoscope into my system in a matter of minutes. It only requires one rack space, and due to low power consumption and convection cooling, there are no ventilation or noise problems.

All of the controls are laid out in a very easy-to-read way. Waveform controls are on the left side, and vector controls are on the right.

Not only did I find the Videoscope to be inexpensive, space-saving and easy to operate, but I was pleasantly surprised with the features and display quality.

With the Videoscope, I am able to read three inputs at once, which is handy for timing the studio and adjusting various video distribution amps. It offers a high impedance input that allows testing of an external source or having it serve as a fourth input. And an internal/external reference enables the operator to input a signal to compare the three inputs against each other.

When conducting my initial search for test equipment, I had budgeted for a SC/H meter separately from a waveform/vectorscope. However, the Videoscope includes both.

Some of the other standard features include a built-in calibration signal, which, when coupled with variable gain control, produces extremely accurate measurements: a scale

intensity control dial that controls of the scale intensity of the electronic graticules; and freeze and store functions to freeze displays for further analysis.

Ready for action

In addition, the filter selection feature filters the video between flat (chrominance and luminance), low pass (luma only), and chroma pass (chroma only).

Automatic standards selection—H, 2H, V, 2V, H-Mag and V-Mag display select, horizontal and vertical shift, DC restoration for stable measurement, and oscilloscope operation—are also standard. Optional features include RS-232 remote control and stereo phase display.

The Hamlet Videoscope has also freed us from 4-inch CRT screens; the signals can be viewed on any size monitor. There is also a choice of full-screen display of either the waveform or vector signals or both, or one-quarter screens simultaneously displayed on the top or bottom of the monitor, with either screen keyed over black background, color bars, or incoming video. All the displays are easily selectable from the front panel.

Since the Videoscope can be powered off of 110V or by a 12 VDC battery, we take it out on location. But because this causes quite a stir with my co-workers who want to use it in the studio, we have ordered Hamlet's new Microscope, a portable waveform/vectorscope that fits in the palm of your hand and runs off a 12V battery.

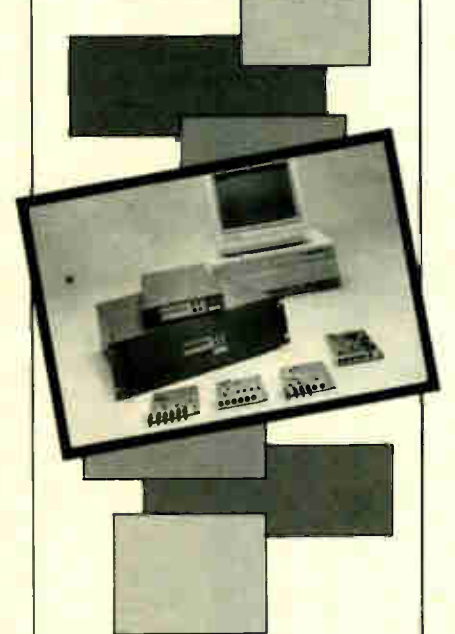
We asked Hamlet for the first one out of production.

Editor's note: Jordon Gershon has more than 15 years' experience in video and audio production.

The opinions expressed above are the author's alone. For further information, contact Nick Nichols at James Grunder & Assoc. in South and North America (telephone: +1-913-831-0188; FAX: +1-913-831-3427); elsewhere, contact Steve Nunnery at Hamlet (telephone +44-49-477-5850; FAX +44-49-479-1283), or circle Reader Service 74.

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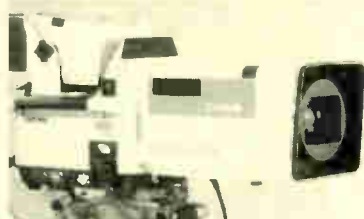
MARKETPLACE



Audio editor

The new AudioVision, from Avid Technology, is a fully digital sound and pictures track layout and editing station that integrates full 24-virtual track digital audio editing with sync-locked digital picture playback.

For more information, contact Christine Cataudella at +1-508-640-6789, FAX +1-508-640-1366, or circle **Reader Service 1**.



CCD camera

The Hitachi SK-F380 is a compact, light weight CCD camera for studio or EFP use. It features an FIT CCD with 600,000 pixels and horizontal resolution of 850 TV lines.

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For more information, contact your local Hitachi representative, or call the head office at +81-3-3255-8411, FAX +81-3-3257-1433, or circle **Reader Service 9**.



Viewfinder attachment

OpTex has a new addition to its range of wide-angle viewfinder attachments, designed specifically for the Sony BVW 300/400, BVP 70 and Ampex equivalents manufactured after mid 1991.

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For more information, contact Richard Stone at telephone: +44-1-441-2199, FAX +44-1-449-3646, or circle **Reader Service 135**.

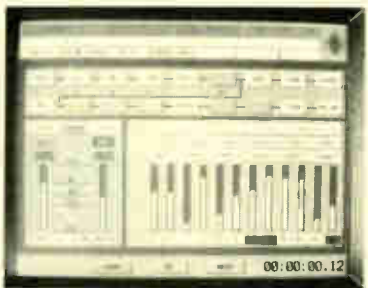


Universal sync generator

The new NV5000 universal sync generator from NVISION provides simultaneous outputs of PAL video and NTSC video locked to a common clock, which eliminates the lost samples, pops, and clicks that can result when VTRs are not locked together.

The NV5000 may either be locked to a 5 MHz external atomic master or may serve as the master timing reference in a "free-run" mode.

For more information, contact Sue Evans at +1-916-265-1000, FAX +1-916-265-1010, or circle **Reader Service 110**.



Sound mixing system

The N7000 from Georg Neumann GmbH in Berlin is a computer controlled sound mixing system suited for broadcast and video productions with synchronous sound track. The console employs digitally controlled analog signal processing. All settings can be stored and recalled with frame accuracy.

For more information, contact Georg Neumann GmbH at telephone: +49-30/2-59-93-0, FAX +49-30-2-59-93-108, or circle **Reader Service 77**.

Time base corrector

FOR.A Corp. has a new, low cost time base corrector made to stabilize the input signals for desktop video systems.

The TBC is available in two versions—the FA-100P, a stand-alone unit; and the FA-10, a plug-in card that fits into a single slot of a PC AT or Amiga 2000 or 3000.

Both versions offer full frame correction of both Y/C and composite inputs and simultaneous Y/C and composite outputs. Also available is two-stage image enhancement with the optional computer control or remote control.

For more information, contact Per Sjöfors at telephone: +44-81-788-7664, FAX +44-81-788-7435, or circle **Reader Service 67**.

Microphone

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For more information, contact Hans-Jürgen Dietz at telephone +49-3-66-49-262, FAX +49-3-66-49-280, or circle **Reader Service 21**.



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For more information, contact Microvideo at telephone +44-223-834119, FAX +44-223-834471, or circle **Reader Service 122**.



Upconverter

National Transcommunications Ltd.'s NTL 900 Upconverter enables the maximum resolution to be obtained from standard interlaced sources, including videotapes from VHS to studio quality, laser disks and off-air signals—satellite as well as terrestrial.

The unit employs motion-adaptive processing to produce near-HDTV quality television pictures suitable for widescreen presentation from a conventional 625 or 525 line source, according to the company.

For more information, contact NTL at telephone: +44-962-822243, FAX +44-962-822374, or circle **Reader Service 79**.

Video signal converter

The MR Encode from Display Research Laboratory provides a convenient method of converting the standard Macintosh RGB data to composite or S-Video.

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For more information, contact Display Research Laboratory at +852-526-0008, FAX +852-877-8810, or circle **Reader Service 57**.



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JVC KY310 w/Fujinon 15x lens, exc tubes w/hard case pwr sply, \$1500. M Adams, Adams Video, 7324 15th NW, Seattle WA 98117. 206-783-0827.

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JVC BY100 (6), gd cond, batts, AC pwr splys, ext mics, 5 w/cases, \$500-750. P O'Keefe, Columbia Coll, 600 S Michigan Ave, Chicago IL 60605. 312-663-1600x408.

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Video Analyzer Suits Studio Use

by Kevin Cordle
Senior Design Engineer
Jerrold Communications

CARROLLTON, Texas With the complexity of modern television transmission and reception, impairments often occur on local or intercity video transmission facilities, even under the best conditions.

This means that constant monitoring of the transmitted signal must be done and the appropriate corrections must be made to the transmitter on a frequent basis.

Today's video analyzer must be able to remotely monitor certain critical video parameters, and these remote stations must also be able to report back to the main center by some means, typically through a telephone. This telephone connection, by way of modem, requires that the instrument either have RS-232 capability or an internal modem.

Studio remotes

For studio monitoring, the video analyzer must be adaptable to remote control through the IEC/IEEE bus or the RS-232 port of a PC. Mechanically, the video analyzer should be able to stand freely, or be mounted on a table or rack.

Designed as a studio monitor, the Rohde & Schwarz UAF video analyzer meets most of these requirements, and proves adequate for some remote operations as well.

The UAF analyzer is available in both M and B/G standards and features three 75 ohm signal inputs, full field measurements and covers a range of 25 video parameters. It also handles the S-VHS component signals Y/C for quality and production control of video recorders.

With a typical resolution of 0.1 percent (or 0.1 dB where applicable), it can measure luminance bar amplitude, black level distortion, tilt of luminance bar, 2T pulse amplitude, 2T K factor, luminance non-linearity, residual picture carrier, sync pulse amplitude and color subcarrier gain. It also covers chrominance/luminance intermodulation and delay, differential gain and phase, color subcarrier non-linearity and phase, burst amplitude,

multiburst amplitude, luminance S/N, chroma-sound intermodulation, hum and a DC level measurement.

The position of the test lines can be selected over the entire picture area and in the field blanking interval.

To the limit

The UAF also includes a "limit monitoring" feature that enables automatic monitoring of parameter limits. If the parameter is out of limits, as defined by the user, than the analyzer triggers the action requested, such as printing out a hard

well as trigger special functions. The softkeys perform various functions depending on which of the unit's eight "menus" is chosen. The menus are SETUP (for instrument setups), INPUT SELECT, SYNC SELECT, MEAS. TIME, AUTORUN (for activation of an automatic test sequence), PRINT, MONITORING (setting up limit monitoring) and MEAS. HOLD.

Softkey functions

This "softkey" arrangement is convenient and goes a long way toward reducing front panel clutter and complexity. It is here, rather than with the graphical presentation of data, that the LCD display shows its worth.

The UAF does not include a built-in display of the video waveform. However, it does include a monitor output in which the signal being measured can be output to a separate waveform monitor. In addition, it also provides the means to superimpose marker pulses on this video signal to mark measurement time intervals.

The UAF offers two ways to implement automatic test sequences via the IEC/IEEE bus protocol. The first is by using the AUTORUN function, which is essentially an internal IEC/IEEE bus controller, while the second is by an external controller.

AUTORUN programs can be written, stored and executed without the need for an external controller. The UAF can store one AUTORUN program in non-volatile memory and additional programs can be stored and retrieved from a memory card.

At your command

The AUTORUN programming language includes a number of special commands to implement conditional jumps, loops, variable delays and the output of data to the memory card or printer. The text of these commands is entered in the Text Editor mode by selecting one letter at a time from a character matrix. This can be very tedious and time consuming.

However, the AUTORUN feature allows the instrument to stand alone at a remote site and still be capable of executing specialized test sequences. It is not

suitable for a lab environment, which is why the external control (such as from a IEC/IEEE bus equipped PC) is included. The external controller is connected through the IEC-625/IEEE-488 bus interface connector located at the rear panel.

Built to last

Mechanically the UAF is well-built, with the exception of the AC selector box located at the rear panel. This selector consists of a plastic cam that pushes two copper "fingers" together to select either 100, 120, 220 or 240 VAC operation. These "fingers" are frail and if bent can render the instrument unpowered and useless.

This is exactly what happened when I first received the UAF. It took some pliers and a lot of patience to bend the "fingers" in such a way as to make contact.

Fortunately Rhode & Schwarz has gotten away from this cam method of VAC selection on some of its other instruments. However, the documentation I received with the UAF shows the other version of the AC selector, not the cam system the instrument came with.

The documentation itself is sketchy but adequate for the video professional who is already familiar with this type of equipment.

... the R&S UAF video analyzer is a good piece of test equipment with excellent accuracy and all the video functions we require.

copy of the data in question or storing it to a memory card.

The UAF comes equipped with a Centronics parallel interface, located at the rear panel, for directly driving an Epson compatible printer.

The front panel consists of push-button switches that control two functions: selecting a particular video parameter, as well as numeric input and cursor control. The operator selects the functions according to the test mode selected, and a LED indicator displays the selected function.

The UAF also includes a liquid crystal display (LCD) capable of displaying data in both alphanumeric and graphic forms. The graphics are relatively crude and consist of a horizontally scaled bar with the alphanumeric text displayed below.

The unit can display up to three different parameters simultaneously without the bar graph representation. But because the graphics are so simple, this mode does not add anything to the visualization of the data. The LCD contrast can also be adjusted to enable viewing from different angles.

The UAF also provides five "softkey" push buttons that are used to set general test conditions and parameter setups, as

USER REPORT

Technical support has also been adequate, but not exceptional. When I first encountered the AC selector problem, I called the company twice to request a new AC selector box, but I never received one.

Even so, the R&S UAF video analyzer is a good piece of test equipment with excellent accuracy and all the video functions we require. It is well-suited for studio use, which is what it was designed for, and can be used at remote sites as well, provided someone can travel to the location and retrieve the data from the printer or memory card.

Editor's note: Kevin Cordle holds one patent and is currently project engineer for a new set top converter design scheduled to go into production in 1993.

The opinions expressed above are the author's alone. For further information on the UAF video analyzer, contact Scott Elkins at Rohde & Schwarz (Phone: +1-301-459-8800; FAX: +1-301-459-2810), or circle Reader Service 91.

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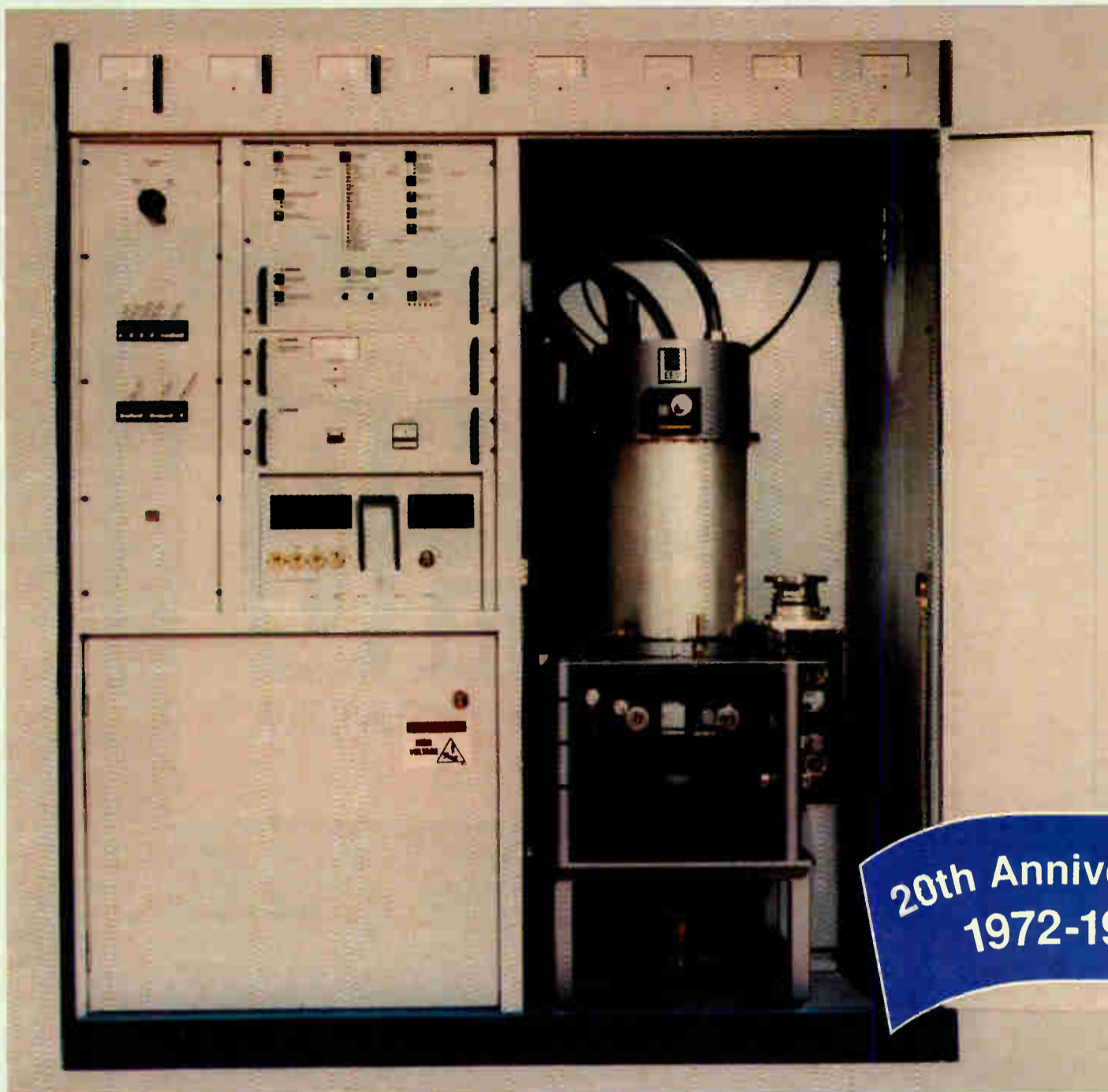
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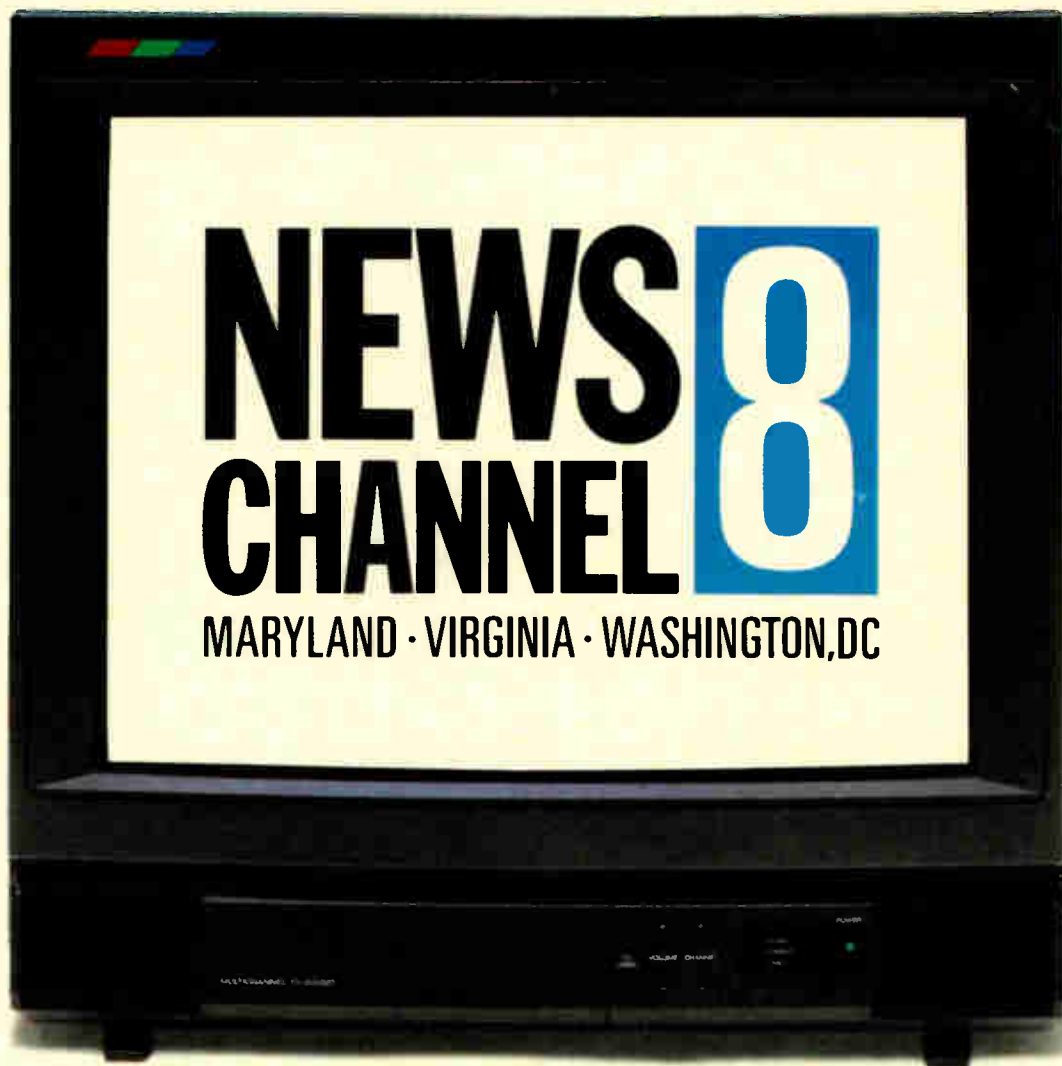


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