INTERNATIONAL EDITION

VOL 13 NO 3, MARCH 1995

CORPORATE AND CABLE INDUSTRIES

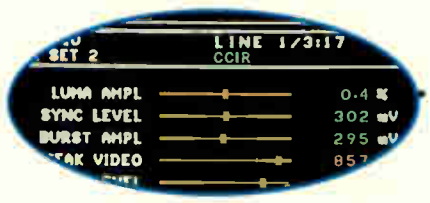
PRODUCTION, POST PRODUCTION,

SERVING THE BROADCAST,

TV TECHNOLOGY

IN THIS ISSUE

A Tale of Two Tape Formats
The Masked Engineer 12



Magni Takes Impact to the Limit
Buyers Guide 36

Desktop Systems Keep Evolving
Computer Video 50

NHK Shines During Emergencies

by Thomas Caldwell

TOKYO

Like most nationally owned broadcast networks, Japan's NHK is set up to inform the public in the event of a regional or national emergency — be it an earthquake, flood, volcanic eruption or any of a number of catastrophes Japan is known to experience from time to time.

The January 17th earthquake centered around the port city of Kobe measuring 7.2 on the Richter Scale was just such an emergency. More than 5,000 people were killed by the pre-dawn quake.

FIRST REPORTS

NHK was the first with the news immediately after it happened and for the first several days following the quake. The speed in which NHK broadcast the data of the disaster within seconds of it happening was almost as much a news story as the earthquake itself.

The system developed by NHK is probably one of the most extensive of its kind for covering natural disasters — but it is also very simple in design. The equipment used is not so out of the ordinary.

NHK has a network of 54 stations throughout Japan. Each one is tied to the other through a combination of leased circuits — both land line and satellite. Each of these stations is also connected to a local system of what NHK calls Skip-Back Recording Cameras. These units are placed at strategic locations throughout the country: city centers, airports, shipping facilities, train stations and other similar places. A camera is also located atop every NHK broadcast facility.

There are more than 100 cameras tied into the NHK network at any given time. Virtually every major landmark of the country is constantly being watched just in case "something happens."

When something did in Kobe, a Skip-Back caught the action of an NHK employee on night duty being shaken around the Kobe control room. Another atop the building captured the city lights shaking wildly and then going out.

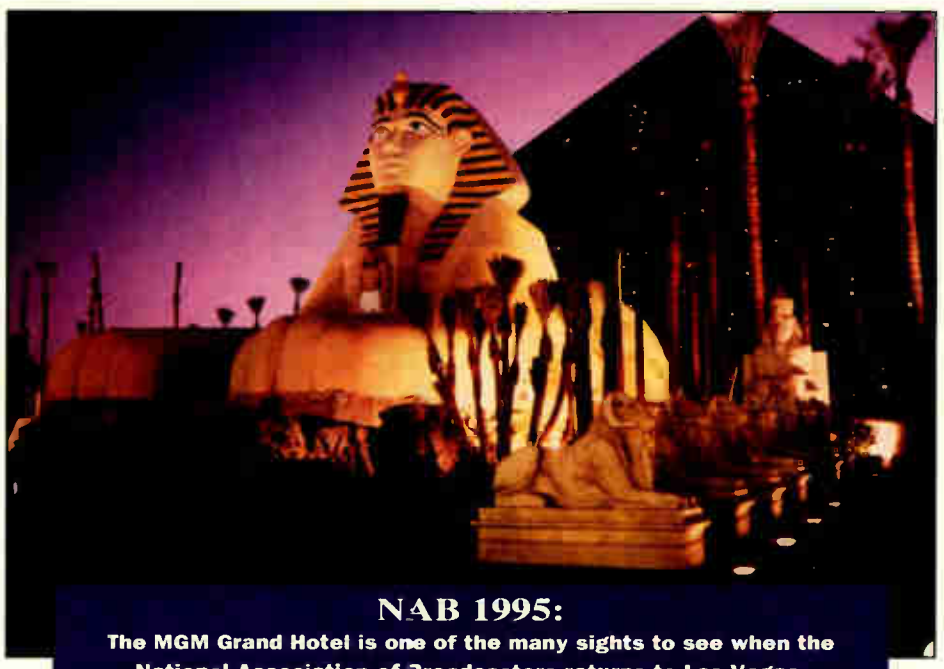
The Skip-Back gets its name from the timing functions the camera has. All the cameras are on a delay action recording loop. That way, there is no chance for the people in the control room missing any of the action if the camera's image is not up on screen. The camera on the wall of NHK's Kobe control room had a 10-second delay. Others have more or less delay depending on the location and camera type. When the earthquake alarm went off, the Osaka and Tokyo broadcast centers saw images within ten seconds, missing none of the action. The worst of the quake lasted only 20 seconds.

The cameras vary in size and design. Some are Hi-8 and others are full broadcast cameras. Not all of the cameras are on at all times. Most of them, like the one in the Kobe control room, are activated automatically under certain circumstances, such as earthquakes.

EARLY WARNING

As far as earthquakes go, NHK's computers are tied directly into the earthquake warning and notification system at the government's Meteorological Agency — the part of the government responsible for measuring earthquakes. The system consists

(continued on page 8)



NAB 1995:
The MGM Grand Hotel is one of the many sights to see when the National Association of Broadcasters returns to Las Vegas.
For details, turn to page 19.

Interactivity in the Here and Now
See Page 11

1 3/4 inches you can be proud of

Snell & Wilcox engineering and performance - in affordable single rack units

TBC Synchronisers | Standards Converters
Test Image Generators | Noise Reducer
Decoders/Encoders | Colour Corrector

For full details call Snell & Wilcox Ltd
Tel. +44 (0) 730 821188 Fax +44 (0) 730 821199

Circle 47 On Reader Service Card

Save Your PC Animation From Being Eaten Alive.

You know how an animation can take on a life of its own. Sometimes it takes forever. Or it costs too much. Or a tape machine mistakes it for lunch.

The DPS Personal Animation Recorder™ solves these and other animation-production problems. The IBM PC® compatible DPS Personal Animation Recorder complements all 3-D applications which generate 24-bit image files, including 3D Studio® and TOPAS Professional.™

With the DPS PAR,™ you can digitally record your animations onto a dedicated hard drive* and play them back in real time. Which means you can create 3-D animation without the expense and aggravation of single frame tape decks.

Because the Personal Animation Recorder operates in a totally digital environment, you can master an infinite number of first-generation tape copies. Component (Betacam,® MII®), S-Video (Hi8®/S-VHS) and composite video outputs are standard. For rotoscoping, just add a DPS Video Capture Card which allows you to capture real-time video on the PAR's hard drive.

Rescue your productions from the jaws of traditional animation systems for a fraction of the cost with the DPS Personal Animation Recorder.

DIGITAL
PROCESSING SYSTEMS INC.
If you want to look your best

DV AWARD OF EXCELLENCE
DIGITAL VIDEO

CADENCE EDITORS' CHOICE AWARD 1994

50-17 Tiffield Road • Scarborough, Ontario M1V 5B7 Canada • (416) 754-8090 Fax: (416) 754-7046

*Hard drive not included. DPS Personal Animation Recorder™ and DPS PAR™ is a trademark of Digital Processing Systems, Inc. Hi8® and Betacam® are registered trademarks of Sony Corp. MII® is a registered trademark of Panasonic Broadcast. IBM PC® is a registered trademark of the IBM Corp. 3D Studio® is a registered trademark of Autodesk, Inc. TOPAS Professional™ is a trademark of Crystal Graphics, Inc.

See Us At NAB Booth 11832

Circle 91 On Reader Service Card

SATELLITE

NEW ASTRA BIRDS COMMISSIONED

LUXEMBOURG

The Société Européenne des Satellites (SES) has commissioned a seventh satellite, designated 1G, with the Hughes Corporation and placed an option for its successor, Astra 1H.

The new satellite is due to be launched in the Spring of 1997 and is to be co-positioned with all other Astra satellites in geostationary orbit at 19.2 degrees East for Europe. This is SES's seventh and the third that is to be digital. Astras 1E through to 1G are to use the so-called high band (11.7 to 12.75 GHz) and will provide Europe with a total of 57 digital transponders, each capable of transmitting some ten channels using MPEG compression.

Astra 1G and 1H are to be Hughes 601 High-Power series birds producing a TWTA output of 100 watts with an EIRP of 52 dBw. The life expectancy in stable orbit is 15 years and total power consumption 7.075 Kw. Astra 1G is to have 56 transponders on board, but only 16 are to be used for primary transmission, the other 40 to be used for backup for Astras 1E and 1F.

The newly commissioned satellites are to have a new antenna design made of two ultra-light reflectors using what Hughes calls "Contoured Surface Technology." The launch vehicle has yet to be decided.

Meanwhile, Astra 1E is to be launched with Ariene flight number 78 this year, and 1F is to go into space on the Russian Proton D-1-a rocket. The Russian vehicle is from the LKIE consortium, a joint venture between Lockheed Corp. of the U.S., and Khrunichev and NPO Energia, both of Moscow.

CABLE

JAPANESE CABLE SYSTEMS PLANNED

TOKYO

A group of Japanese and American companies have agreed to form a new company that will establish cable television systems in Japan.

The company, to be called TITUS, will be owned by Itochu Corp., Toshiba (28.4 percent each), U.S. cable television systems owner Time Warner (15.4 percent) and U.S. telephone company U.S. West (17.9 percent). In addition, a Time Warner Subsidiary, Time Warner Entertainment, which is part-owned by U.S. West and several Japanese investors, will own 9.9 percent of TITUS.

The company is funded with US$28 million in start-up capital and will be headed by Minoru Akimora, formerly an executive at Itochu.

Initially, the company plans to create three cable systems in the Tokyo area serving about 700,000 people. However, the company expects to add additional systems with a total subscribership of about 2 million.

The company was formed largely in response to new cable/telephony guidelines issued on November 8. In addition, the government has said it will provide low-cost loans for cable development.

NETWORKS

SINGAPORE PLANS VOD TRIAL

SINGAPORE

Singapore Telecom (ST), the nation's telephone service, has announced it will conduct a video-on-demand (VOD) using video server technology from Hewlett-Packard.

The trial, announced under the government's IT 2000 communications initiative, will provide a portion of ST's 3.2 million customers with interactive programming, home shopping and other services. The heart of the system will be Hewlett-Packard's MediaStream video server which is capable of delivering from 75 to 10,000 separate video streams.

Other companies involved in the project are Mitsui & Co. and Fujistu Ltd. of Japan, Philips Singapore Pte Ltd of the Netherlands, and Sybase Inc. of the U.S.

MULTIMEDIA

FIRMS EYE GERMAN MARKET

STUTTGART

With a plan to establish a fiber optic-based interactive video system dashed by the European Commission, two leading media companies are attempting to set up a similar program with Daimler Benz.

Late last year, officials from the Leo Kirch media group and the Bertelsmann chairman Mark Woessner met with Benz chairman Edzard Reuter and his appointed replacement, Jurgen Schremp. Also at the meeting was publisher Burda Verlag, a leading investor in the Europe Online video network project. The object of the meeting was to outline how to install a "video-on-the-internet" type of multimedia company that would use fiber-to-the-home technology to deliver programming to the German market.

The drive to establish such a network is largely fueled by developments in the U.S. Continental Cablevision in Boston, Massachusetts, for one, is working to provide residents of Cambridge, Mass., with broadband Internet access. Also Jones Intercable of Englewood, Colorado, has already begun offering broadband Internet in Alexandria, Virginia, and perhaps most significantly, Viacom is setting up a trial system in New York.

In Europe, operators claim that regulations and the continuing state monopolies in most mainland countries prevent the development of similar services. The U.K. has granted a license to TeleWest Communications to start a pilot scheme in London, and Nynex CableComms is planning a broadband Internet access system in Manchester. But in Germany, Deutsche Telekom is lobbying hard to be allowed to keep its monopoly until the EU 1998 deadline.

Daimler Benz, parent company to Mercedes Benz, Deutsche Aerospace and AEG, already has its own world-wide satellite and fiber network. Schremp has stated that the company intends to enter the broadband multimedia market using knowledge already gained from its own operations.

Meanwhile, the German electrical supply company Veba has applied to the government to be allowed to install fiber to the home. A spokesman for Veba said that talks between Veba chairman Ulrich Hartmann and Bertelsmann's Mark Woessner had already taken place.

Late last year, the European Commission rejected a plan by Bertelsmann and Kirch to establish a broadband service with Deutsche Telekom.

SATELLITE

APSTAR-2 LOSS HURTS PROGRAMMERS

BEIJING

Video programmers were badly hurt by January's loss of the Apstar-2 satellite, which was destroyed during the explosion of a Chinese Long March rocket.

The satellite, a Hughes HS-601 bird, would have provided 26 C-band and 8 Ku-band transponders for delivery of video, telecom and data throughout much of Asia, Eastern Europe, Africa and Australia.

Among the programmers that were slated for service were Capital Cities/ABC, Discovery, ESPN, HBO, Reuters, Turner and Viacom.

As of presstime, companies were reported to be looking for carriage on NASA's Tracking & Data Relay satellite or possibly PanAmSat's PAS-2 bird.

Meanwhile, Beijing officials announced that six people were killed and 23 people were injured from falling debris from the rocket, which exploded shortly after launch on January 26. As of presstime, there was no explanation for the explosion.

APT Satellite Co., the Hong Kong-based owner of the satellite, has vowed to launch a replacement as soon as possible.

COMPRESSION

ALCATEL, NUKO OFFER NEW MPEG 2 SERVICES

RICHARDSON, TEXAS

Alcatel Network Systems and NUKO Information Systems have reached an agreement to provide a new line of MPEG 2–based services to cable headends and satellite providers over existing telephone networks.

The services will be available through Alcatel's Switched Digital Video Network (SDVN) and will take advantage of NUKO's MPEG 2 codecs and Alcatel's 1000 AX ATM system.

The Alcatel SDVN network is currently operating under the Cinema of the Future network form U.S. telecom Pacific Bell. The network provides high definition movies to theaters over fiber optic lines.

The new MPEG 2 services are expected to go to trial in the United States early this year.

CONTENTS

NEWS

NHK shines during emergencies 1
Czech station plans for growth 4
Guest Commentary 6
Interactivity in the here and now 11

FEATURES

Masked Engineer 12
Mario Orazio
Engineering Corner 14
Brian Flowers
Via Satellite 16
Phil Dubs
VideoWatch 24
John Watkinson
RF Technology 26
Doug Lung
Wireless Cable 55
James K. Vines
Mobile Television 56
John Hazell

SHOW SECTION

NAB 1995 Preview 19

BUYERS GUIDE

User Reports 30
Hamlet, ShibaSoku, Vistek, Multidyne, Magni, Tektronix, Philips, Hewlett-Packard, AAVS, Dorrough

SPECIAL SECTION

Computer Video 45

EQUIPMENT

Marketplace 52
Product Showcase 28
Equipment Exchange 57 & 58

TV TECHNOLOGY Vol 13, No 3 MARCH 1995

Editorial Director: Marlene Lane
Asst. Editorial Director: Richard Farrell
International Editor: Arthur Cole
U.S. Editor: Mary Ann Dorsie
European Editor: Chris Dickinson
Phone/Fax: +44(71)249-5890
Latin American Editor: Rogelio Ocampo
Associate Editor: Jennifer Milliken
Technical Consultant: Lyn Heiges
News Correspondents: *New York:* Frank Beacham, Mary Gruszka, Andrew Morris; *Los Angeles:* Bruce Goren; *Jakarta:* Mark Timpany; *Prague:* Charles Recknagel; *Toronto:* James Careless
Publisher: Stevan B. Dana
Associate Publisher: Carmel King
U.S. Sales Manager: Mike Dahle
Marketing Assistant: Annette Deutscher
Marketing Consultant: Al Leon

Production Director: Lisa Stafford
Publications Manager: Cristina Strigel
Desktop Sys. Manager: Julianne Shannon Stone
Ad Production Coordinator: Kathy Jackson
Classified/Showcase Production Coordinator: Vicky Baron
Production Assistants: Laurie Anne Tarkington, Lisa Lyons

Ad Coordinator: Caroline Freeland
Circulation Director: Eleya Finch
Circulation Manager: Tiana Hickman

TV Technology (ISSN: 0887-1701) is published monthly, except for April and November which have 2 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.

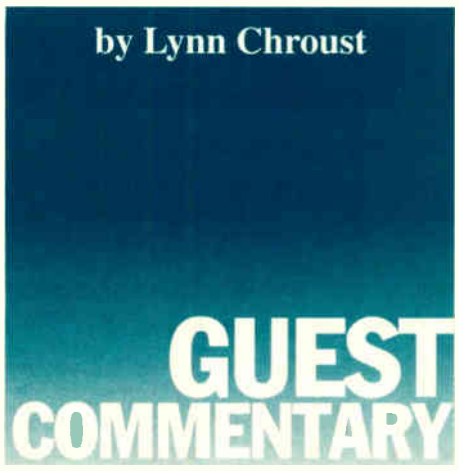
Copyright 1995 by Industrial Marketing Advisory Services, Inc. All rights reserved. For reprints contact the author and **TV Technology**.

Free subscriptions are available to professional broadcasting and audio-visual equipment users. For address changes, send your current and new address to TV Technology a month in advance at the above address. Unsolicited manuscripts are welcome for review; send to the attention of the appropriate editor. REPRINTS: Reprints of all articles in this issue are available. Call or write Regan Deatherage, P.O. Box 1214, Falls Church, VA 22041. (703) 998-7600 Fax: (703) 998-2966.

Member, Business Publications, Audit of Circulation BPA INTERNATIONAL

PRINTED IN THE USA

Choose Compression Carefully



Today, video servers are offered with a variety of methods to store digitized video, from uncompressed to JPEG to MPEG with hybrids in between.

Obviously, picture quality is a main concern in choosing a video server, but there are a number of other factors that should be considered when evaluating different manufacturers' equipment. What will my choice of compression allow me to do? What won't it allow me to do? What are the trade-offs of different compression schemes? What is the most effective way to evaluate different manufacturers' claims regarding picture quality?

THE RIGHT WAY

Many companies are making claims about the "right" compression for broadcast applications. However, the truth is there is no right method, and even servers that leave the choice of compression to the user have their limitations.

Obviously, one of the biggest concerns in choosing a video server is the video quality. None of us want any surprises when airing a high-profile commercial from a major advertiser. Why, then, use compression at all in a broadcast video server? The simple reason is cost. One 30-second commercial in an uncompressed format (CCIR-601) requires a little over one gigabyte (GB) of storage. Multiply that by an average commercial library of 300 to 400 spots and the cost of storage alone is tremendous. And while prices are falling rapidly (dropping by half every 18 months), waiting until you can afford an uncompressed video server probably is not justified given the benefits of improved efficiency and reduced costs you can reap today.

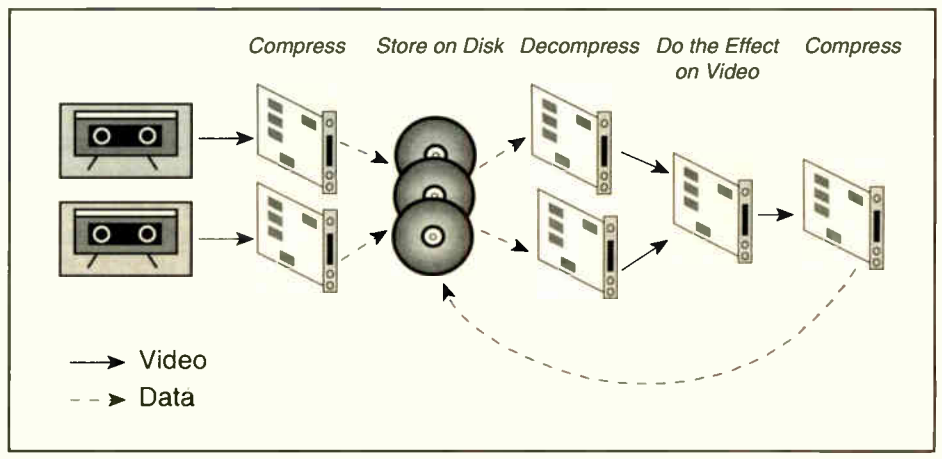
Based on economics, most people concede that compression is required. Now, the choice comes to the type of compression to use: MPEG, JPEG, SPEG or one of the numerous other types that are available. How do you choose among these? Fortunately, the answer does not involve going back to school. Simply put, the best judge of picture quality is your eyes. Add a high-quality monitor and controlled lighting, and you have a good set of evaluation tools. Some of you may have been expecting a more objective, scientific answer. Unfortunately, at this time there is no objective method or test equipment to provide a clear answer. Your eyes are your best judge.

Some people may argue that the compression ratio is an accurate means to evaluate different servers. However, there is a fallacy to this method. Many compression methods can be varied, and a compression ratio is a measure of how much data has been removed. So, if the compression ratio of a picture is given as 2:1, then approximately half the information has been removed. However, this is not an indication of relative picture quality because the two servers may use different algorithms.

For instance, JPEG compresses video by removing redundant information within a frame, a process known as interframe compression. MPEG looks at a group of frames and takes advantage of the redundant information within a frame and between frames, or intraframe compression. Because of the single fact that the compression algorithms are fundamentally different, compression ratio comparisons will not give you an indication of the relative picture quality of the two algorithms. It is like comparing apples and oranges. With even more compression schemes on the way, the safest way to protect yourself from a salesman's pitch is to use your eyes.

SIDE BY SIDE

A few words then about evaluating picture quality. While the trade show floor is an excellent time to see all vendors' systems in one place, it is not a good place to compare video quality. A reputable manufacturer should be willing to give you a tape of your material played through their system. Better yet, they should offer delivery of a system for evaluation in your own facility. But if a tape is all you can get, do the following simple tests. First, ensure that your tape has a variety of material on it, including fast motion, slow motion and graphics. Put the original and compressed material and the different compressed versions through a mixer and do a split screen. A split screen is important because it eliminates your eyes jumping from monitor to monitor. It also will eliminate any discrepancies due to imbalanced monitors.



While picture quality is the ultimate test, there are other important factors to consider when evaluating compression algorithms. Three of the most important factors are storage efficiency, editability and transportability.

As mentioned above, video requires a significant amount of data, so storage costs are going to be a big part of the total system cost. The right choice in a compression algorithm can have a positive impact on your system cost. Currently, the two most common choices of compression are JPEG and MPEG. Because of the difference in interframe and intraframe compression, JPEG uses twice as much data as MPEG to get the same picture quality. To be specific, the picture quality of a 24 megabit-per-second (Mbps) JPEG data stream is at least equivalent to a 12 Mbps MPEG stream, and depending on the type of material, MPEG may be even more efficient. Because JPEG is at least twice as storage-hungry as MPEG, you can store double the amount of video material if it is MPEG-compressed. This could definitely have a big impact on your budget.

So, why would anyone use JPEG? Because of the relatively low volumes in which they are manufactured, MPEG chips are currently more expensive. In fact, at today's MPEG chip cost, MPEG only becomes more economical than JPEG if you store six or more hours of video. However, major manufacturers IBM and LSI have announced MPEG chip sets for 1995 in the same price range as JPEG, so expect cost reductions to follow soon. Total storage needs over time, not just initial purchase requirements, should be factored into your decision.

EDITING CONCERNS

Another factor to consider when choosing a compression algorithm is how easy it is to edit video in its compressed form. Some claim that only JPEG is editable. This is untrue. The first step in any non-linear editor is to digitize the video. Coming in as full bandwidth video, it passes through a JPEG encoder and is stored in compressed format on hard disk. As a user drags and drops scenes together, an EDL (edit decision list) of these different scenes is created inside the editor. The compressed video on the hard disk is not modified or rearranged to line up in the way that the clip is being edited together. When the edited piece is played back, the non-linear editor follows the instructions on the EDL, and the hard disk streams off the compressed data in the correct order. The compressed data is fed through a JPEG decoder and is seen on a monitor. The video is seamless because the

(continued on page 8)

Send letters to Readers Forum, TV Technology, Box 1214, Falls Church, Virginia, 22041, USA or 302-7776@MCIMail.com

Rainy days

Dear *TV Technology:*

The cover article on your December '94 issue of the International Edition of *TV Technology* entitled "Wireless Cable Coming on Strong" by Andrew von Gamm contains a few misconceptions we would like to correct.

The team from Sarah Clay & Partners Ltd. stated "One of the major difficulties facing MMDS is rain attenuation." We feel certain they were referring to the 12 GHz system Marconi installed in Hong Kong. We have been building 2 to 3 GHz MMDS systems around the world since 1984 and have never encountered rain fades in this portion of the frequency spectrum, even in Panama where the rainfall can reach 10 inches in an hour. The quote would infer that all MMDS systems suffer from rain fades, and that simply is not true.

Regarding the fears of microwave radiation in Ireland, perhaps instead of eliminating the word "microwave" from the acronym as the British have done with the MVDS, we should look at the realities of radiation danger from MMDS.

The maximum allowable dosage of microwave radiation to the human body is 5 milliwatts per square centimeter. By Andrew Corporation's calculations, the 11-channel MMDS systems in Ireland produce an effective radiated power out of the transmitting antenna of 3,763 watts.

However, at 40 feet from the antenna, the actual microwave radiation is only 0.00079 milliwatts per square centimeter. Their household microwave oven probably gives them a heavier dosage than that. For the citizens of Ireland, the dosage would even be less than those given above, because we are almost certain no one lives within 40 feet of the transmitting antennas. Humanity loves to frighten itself with imagined dangers.

Jack A. Rickel
President/CEO
Comex Worldwide Corp.
1657 Northwest 79th Ave.
Miami, Fla., U.S.A. 33126-1105

Andrew von Gamm replies:

Mr. Rickel is correct in stating that rain attenuation at around 2 GHz is negligible. Unfortunately, use of this band is either limited or unavailable in most parts of Europe and the Far East. The figures for rain attenuation during a tropical downpour (100 mm/hr) for horizontal polarization provided by Sarah Clay & Partners, Hong Kong, are:

2 GHz VMS/AM 0.05 dB/km
12 GHz VSB/AM 4.6 dB/km
12 GHz FM 4.6 dB/km
29 GHz FM 20 dB/km

The figures for vertical polarization are some 25 percent better.

In the second point, Mr. Rickel seeks to allay the fears of the European Green movement with rational argument. Having seen such films as "Godzilla Meets the Three-Headed Space Monster," German environmentalists have effectively banned all DNA research (much to the benefit of the U.S. and U.K. biophysics industry). There is now a movement throughout Germany to have mobile digital telephone banned on the grounds that we shall all get brain tumors. No matter how asinine an argument may be, if introduced before a technology has gotten off the ground, it has the effect of delaying its start and possibly killing it altogether.

The new Sony 9-inch monitor.

It cuts out the need for a D/A converter.

It may seem like a minor issue.

But saving a small amount of space when that's all you have adds up to a big benefit.

Introducing our new digital 9-inch monitor. Because it has a built-in SDI interface, it cuts the need for a D/A converter.

And that means one less piece of kit in the OB van. One less piece of occupied space in the edit suite.

And wherever you are, a handy piece of space liberated for some coffee and a hamburger.

There are also the small matters of Sony digital picture quality and Sony features – which you'll also find on our 14-inch SDI monitor.

But they're something we'd never dream of cutting.

The Sony BVM-9044D digital monitor. One less box, one more space.

And one cut that no-one's ever going to complain about.

SONY

SONY BROADCAST & PROFESSIONAL EUROPE, JAYS CLOSE, VIABLES, BASINGSTOKE, HAMPSHIRE, RG22 4SB, UNITED KINGDOM.
SIMPLY CALL US ON: **AMSTERDAM** 020 6581911; **BRUSSELS** 02 724 1813; **BUDAPEST** 01 221 5048; **COLOGNE** 0221 59660; **COPENHAGEN** 043 995100; **DUBAI** 04 313472; **HELSINKI** 0 50291; **ISTANBUL** 0212 224 5961; **LISBON** 01 720 4000; **MADRID** 01 536 5700; **MILAN** 02 618381; **MOSCOW** 095 205 3867; **OSLO** 0230 3530; **PARIS** 01 4945 4000; **PRAGUE** 02 232 7713; **ROME** 06 549 131; **STOCKHOLM** 0879 50800; **VIENNA** 01 610500; **WARSAW** 02 661 5470; **WEYBRIDGE**, UK 01932 816300; **ZURICH (SCHLIEREN)** 01 733 3411; **EAST CENTRAL EUROPE, CIS, BALTIC STATES** – UK 01256 483294;
MIDDLE EAST/NORTH AFRICA – GENEVA 022 7336350; **AFRICA** – UK 01256 483248. Sony is a registered trademark of the Sony Corporation, Japan.

Circle 117 On Reader Service Card

CONTINUED FROM PAGE 6

Choose Compression Carefully

system is designed to be able to jump anywhere on the hard disk to play the compressed video without any glitches. In this cuts-only example, the JPEG video, as originally compressed, was never modified or moved on the hard disk. To add effects, the same process is used. However, the effect is created in full bandwidth video. So, the two streams are fed from the hard disk, decompressed, run through the effects device and the resulting effect is JPEG compressed and stored to hard disk. The new scene with the effect is inserted into the EDL and playback happens as in the cuts-only case.

So, what is the point of all this? The JPEG data was not magically edited. Clips are pasted together frame-accurately for cuts only and when effects are needed, the compressed video is brought back to full bandwidth, operated upon and then recompressed. The lesson is that today any compression algorithm when edited uses these same steps, including Wavelets and MPEG. A final argument used against MPEG is that while editing is possible, it is not on a frame-by-frame basis. Skeptics say that editing can only happen at the beginning of the group of frames, which is every 8 to 12 frames. This is also untrue, as evidenced by the Hewlett-Packard Broadcast Video Server, which is able to stop, start and join clips together at any time code frame accurately.

SHARING FILES

Besides picture quality, storage efficiency and editability, there is one other important attribute of compression algorithms that needs to be considered, and that is transportability. Transportability is a new concept that has not received a lot of discussion but could be the key in your ability to control costs and add new revenue-generating services to your facility.

Transportability is a characteristic of a compression algorithm that allows it to be encoded and decoded with a standard key. This means that the compressed data can be decoded by a different manufacturer's device than the one that encoded it. With high-quality compressed video stored in network-accessible servers, the possibility of transferring video over high speed digital networks is a realistic alternative to the physical method used today. The ability has been in existence for some time, but never at an economical cost. Given the high data rate of video and the speeds of existing networks, high quality compressed video uses significantly less bandwidth and allows fast digital networks to deliver information at faster than real-time speeds, improving the ability to deliver information in a timely manner. In fact, several leading edge broadcasters have adopted this means already as a way to save costs and improve response time and efficiency. In addition, a transportable compression format also means that the broadcast community will not be locked into using one manufacturer's equipment.

Obviously, one of the biggest concerns in choosing a video server is the video quality.

JPEG, while standardized in some respects, does not define a standard key allowing equipment of different manufacturers to work together. This is why nonlinear editors cannot share compressed video files today. Each manufacturer has developed its own key, preventing interoperability. Today, only MPEG defines a standard key, or transport layer, allowing many manufacturers to make equipment that can operate together. MPEG offers the opportunity to allow you to change the way you receive and distribute video, as digital networks become more prevalent and lower in cost.

Finally, there are servers that let you operate with both compressed and uncompressed video simultaneously, which would seem to be the best of both worlds. However, this capability also has limitations. When examining a video server with this capability, you must always account for the highest bandwidth required if you are to ensure sustained playback and record functions. For example, if you want the ability to play out uncompressed video for a small fraction of your library, in order to ensure this is always possible you must assume that the play-to-air channel is always uncompressed. Otherwise, when designing a multichannel system, you may block your ability to record or play back on other channels because your system has run out of bandwidth. Similarly, if you want to dub in uncompressed video, then that channel must always be thought of as running uncompressed during system design. This will naturally lead to a more expensive system, as one uncompressed signal means your minimum system bandwidth is 270 Mbps. Simultaneous record and play of uncompressed video requires a system bandwidth of 540 Mbps, and so forth. If only a small fraction of your material needs to be compressed, it may be more economical to store those on tape or a long-form digital disk recorder.

The compression format used by a video server can have some serious consequences for your lifetime storage costs, as well as your ability to link into digital networks easily for delivery or receipt of video material. Carefully considering these factors as well as picture quality in a controlled environment is the key to achieving your business goals with a video server. ■

Lynn Choust is product manager for broadcast video servers at Hewlett-Packard. For further information circle ***Reader Service 43.***

CONTINUED FROM PAGE 1

NHK's Emergency System Shines

of a series of mini-computers tied together with a simple 4800 baud leased line.

The software packages running on the computers at the agency and NHK are identical. They effectively are one system. When an earthquake happens anywhere in the country, the agency's computer notifies the NHK system of the location and magnitude of the quake. This data is then sent to simple desktop PCs and processed into images that are then transferred to screen and broadcast automatically.

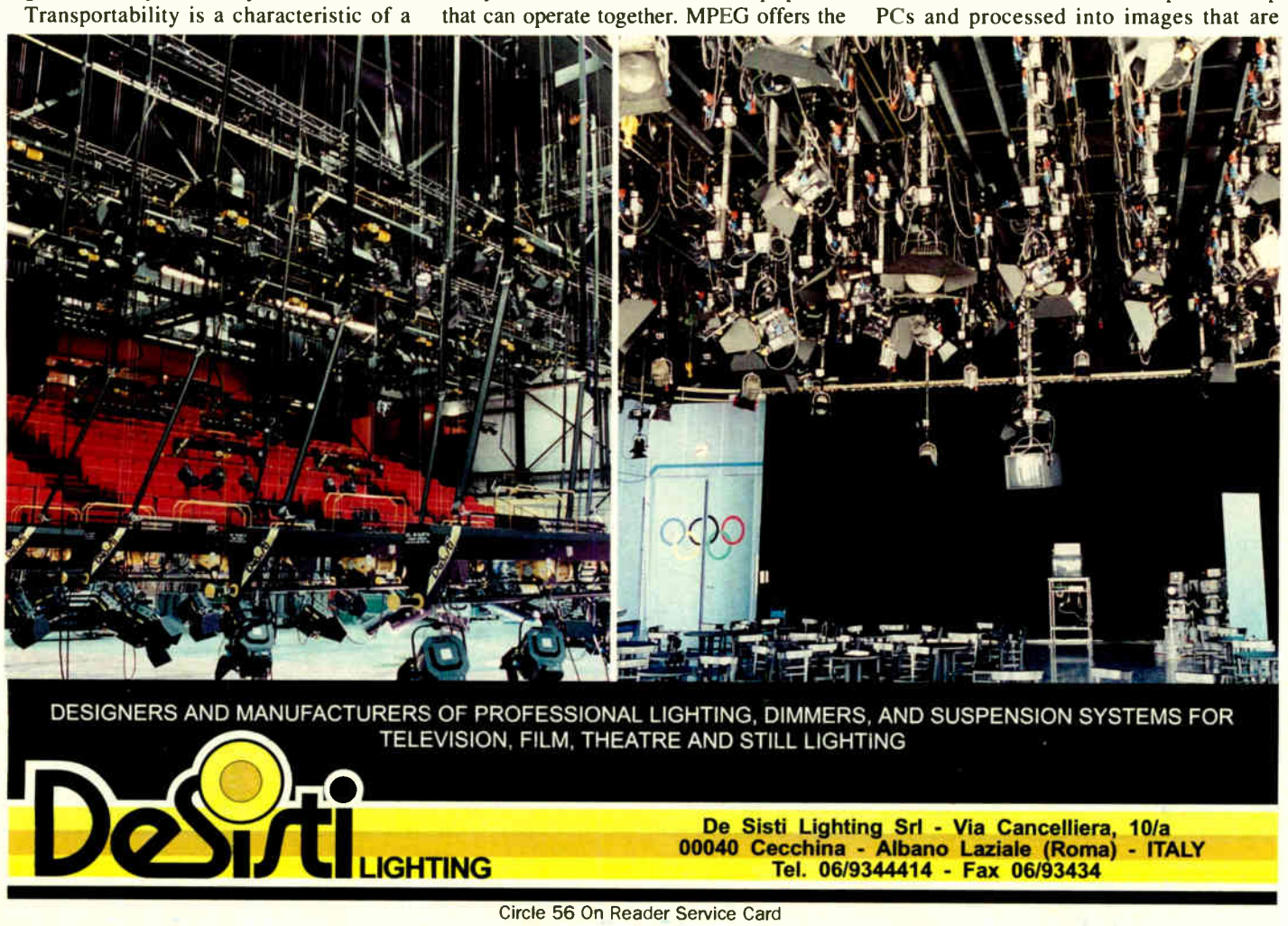
To back up its data from the government, NHK also has its own private network of earthquake detectors at each of its stations. The data from these units are not broadcast on the air but are, according to NHK, used only for reference.

The system may sound rudimentary, but it is very fast. When the Hokaido area was hit by a major earthquake at the end of December, the news of the earthquake only took a few seconds to reach Tokyo, but the shock wave from the earthquake took one and a half minutes to reach the Japanese capitol. People were being told how powerful an earthquake was before they had even felt it.

Since the quake, NHK has gotten what a company spokesman called "several inquiries" from overseas governments interested in learning more about their emergency broadcast system. Officials from the company would not comment on whether or not NHK may help set up similar systems in other countries. One of the companies who would profit from any such export of this type of system would be the company that developed the Skip-Back recording system with NHK; Osaka-based Eletex Co. Ltd.

Because of its simple design, the NHK system could be easily duplicated elsewhere. It is a very good example of using simple, reliable equipment to get real "high-tech" results. Instead of looking for the most up-to-date equipment available, the engineers at NHK just made due with the best they had — and it worked. ■

Thomas Caldwell is a Tokyo-based writer and radio journalist. He covered the Kobe earthquake for Monitor Radio.



Circle 56 On Reader Service Card

'Risks are for the contestants.

'Not the producers.'

Franz Kraus
Managing Director
ARRI TV, Munchen.

'At ARRI TV we produce and edit a lot of television programmes, like this one for SAT 1. *Riskier Was* is all about taking risks, but it's only a game – and if you lose, it costs you nothing.

'Real life isn't like that. A bad business decision can lead to disaster, so we thought long and hard about our upgrade path to component digital. Digital BETACAM

'In the end, only one format was good enough – Digital BETACAM from Sony. It gives us superb pictures in a value-for-money package. And for longer programmes, where the budget doesn't justify D-1, we get high quality at a realistic cost.

'We also use Digital Betacam in telecine. Because colour correction can take up a lot of expensive time, we do it all after recording onto Digital Betacam – and put the telecine to more profitable use.

'Something that's also particularly important to me is sound. As more programmes are transmitted in stereo and the sound handling of domestic receivers improves, audio quality becomes increasingly critical. Digital Betacam allows audio to stay in the digital domain, right through the production process – and produces a superb result.

'So for us, choosing Digital Betacam was never a risk. It was always a certainty.'

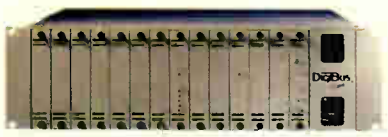
SONY

SONY BROADCAST & PROFESSIONAL EUROPE, JAYS CLOSE, VIABLES, BASINGSTOKE, HAMPSHIRE, RG22 4SB, UNITED KINGDOM.
SIMPLY CALL US ON: **AMSTERDAM** 020 6581911; **BRUSSELS** 02 7241711; **COLOGNE** 0221 5966; **COPENHAGEN** 43 995100; **DUBAI** 04 313472; **HELSINKI** 0 50291; **ISTANBUL** 0212 224 5961; **LISBON** 01 837 2566; **MADRID** 091 536 5700; **MILAN** 02 61838440; **MOSCOW** 0501253 4854; **OSLO** 02 2303530; **PARIS** 1 4945 4000; **PRAGUE** 02 232 7713; **ROME** 06 549 131; **STOCKHOLM** 08 7950800; **VIENNA** 0222 61050; **WEYBRIDGE**, UK 0932 816300; **ZURICH (SCHLIEREN)** 01 733 3511; **EAST CENTRAL EUROPE, CIS, BALTIC STATES** – UK 0256 483294; **MIDDLE EAST/NORTH AFRICA** – GENEVA 022 7336350; **AFRICA** – UK 0256 483248.
Sony and Digital Betacam are trademarks of the Sony Corporation, Japan.

Circle 125 On Reader Service Card

See us at NAB '95, Booth No. 15748

Glue lagoon



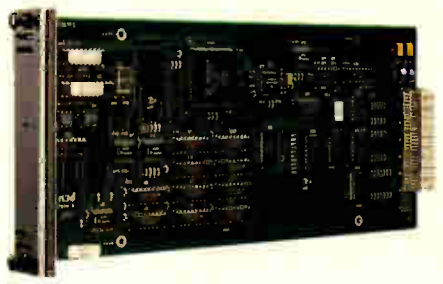
Just as a lagoon is separated from the ocean by reefs and sandbars, so your digital facility is separated from a sea of analogue signals.

Audio and Video Synchronisers

Synchronising signals with Leitch equipment brings a tranquility and peace of mind that we call 'Glue lagoon'. Performance is guaranteed by using innovative and proven technology to perform video retiming functions or to stabilise the most turbulent audio and video feeds.

Therefore, should you require multiple synchronisers operated under a single powerful control system, synchronisation of audio to video or simple line synchroniser functions, Leitch offers the complete solutions.

With experience and understanding Leitch applies advanced technology to your applications, bringing the most effective solutions to modern broadcasting.



Call Leitch or your nearest dealer today.

LEITCH®

Leitch Technology International Inc., 220 Duncan Mill Road, Suite 301, North York, Ontario, Canada M3B 3J5. Tel. +1 416 445 9640 Fax +1 416 445 0595
Leitch Europe Ltd., 24 Campbell Court, Bramley, Basingstoke, Hampshire RG26 5EG, UK. Tel. +44 (0) 1256 880088 Fax +44 (0) 1256 880428
Leitch Incorporated, 920 Corporate Lane, Chesapeake, VA 23320-3641, USA. Tel. +1 800 231 9673 Fax +1 804 548 4088

See Us At NAB Booth 15748

Circle 61 On Reader Service Card

Interactivity in the Here and Now

While Most Firms Are Talking a lot About Interactivity, Few Are Actually Delivering It

by James Careless

TORONTO

In North America, the hype surrounding the "information superhighway" is everywhere. Promises abound of broadband networks with virtually limitless capacity and set-top technology that will turn every household into an interactive multimedia showcase. And above all are the opportunities to make money, money, and more money.

Unfortunately, to date most of these promises are just that: promises with apparently no payoff close at hand.

Still, there are a handful of systems ready for installation right now that provide interactivity, or at least the illusion of it.

UP AND RUNNING

For 230,000 subscribers in the province of Quebec, Canada, for example, two-way interactive television is not just a promise, it's a reality. For the past four years, cable company Videotron has been successfully installing its own in-house "Videoway" technology in subscribers' homes here, as well as selected territories in the U.S. and U.K.

In the home, Videoway consists of a set-top data terminal, a remote control unit and an optional peripheral unit capable of scanning credit and debit cards for on-screen purchases, plus a coupon printer for promotional offers.

For users, this equipment offers many features, the first being "interactive television." Using Videoway, viewers can select a hockey game, for example, and decide which of four camera shots they want to use to view the action, switching between them at will.

To the user, it appears that Videoway is actively switching shots in response to remote control commands. In reality, says Pierre Herbert, Videotron's senior vice president of marketing, the cable company is feeding four different live feeds to the set-top box via four separate channels. The remote control simply switches seamlessly from one to another on command.

In the same way, when watching the evening news, "you could end up watching international news, or sports news, or local news," Herbert said. "It's your choice."

In this regard, Videoway's "two-way interactivity" is actually simulated, as it is for users who download video games from the system.

However, the network is capable of allowing subscribers to perform other truly interactive tasks.

For instance, Videoway subscribers can send simple e-mail to other system users. They can also shop at home by selecting items off the screen via the remote control and paying for them using Videoway's credit/debit card reader. Merchants can also issue coupons to customers at home using the set-top printer. In addition, the data terminal can be configured as a high-speed modem for two-way PC data transmission via cable.

Most of all, what makes Videotron's Videoway broadband technology stand out is the simple fact that it has been up and running successfully for four years. Certainly the graphics it provides are not the most sophisticated, nor are many of Videoway's "interactive" functions. However, the system is available now, and it works.

To the user, it appears that Videoway is actively switching shots in response to remote control commands.

BANDWIDTH RESTRICTIONS

When it comes to making the "information highway" a reality, one obstacle looms larger than all the rest: bandwidth. Audio/video digital transmission requires vast amounts of bandwidth, which is why companies such as General Instrument (GI) and Scientific Atlanta (SA) are concentrating on the equipment capable of providing it.

For instance, under the name "Broadband Telecommunications Architecture," GI is currently offering a complete end-to-end broadband system featuring the CFT 2200 set-top box. The system provides "full two-way interactivity," said Tom Lynch, GI's vice president of terrestrial distribution systems.

"Subscribers can compete against other subscribers with video games, talk to one other on the telephone or communicate with on-line services using their computers," Lynch said.

GI has been selling such systems to U.S. cable operators like Tele-Communications Inc. and Time Warner for a year now.

"Most of them are being installed and engineered for 750 MHz bandpass," said Robert Young, GI's director of distribution services. These networks provide "full channel loading for 80 (analog) channels and 200 MHz digital."

Scientific Atlanta is also emphasizing the importance of boosting broadband carriage capacity, said company spokesperson Bob Brobst.

"Without that added bandwidth, you do not have interactivity," Brobst said. "So we are laying the groundwork with all this 750 MHz architecture to have interactivity in terms of traditional games and shopping and all that, but also telephony."

The centerpiece of SA's broadband product strategy is its 8600X set-top converter, properly known as a "Home Communications Terminal" (HCT).

Like GI's CFT 2200, the 8600X's technology is analog, not digital. But despite this, Brobst insists the 8600X is a truly interactive component. He says it is "a common misconception, that you need digital for any kind of interactivity."

In its current configuration, the 8600X offers a wide range of functions. In addition to handling both near-video-on-demand (NVOD) and pay-per-view (PPV), plus the ability to operate connected VCRs, the 8600X features an onboard electronic TV program guide.

This text-only guide "is not a passive scrolling device," Brobst said, but is "really interactive in terms of point and click," using the four-way directional arrows on the remote to move the cursor to choose selected items.

VIRTUAL CHANNELS

Another noteworthy feature is "virtual channels," a method of providing additional channels to subscribers without using any extra bandwidth. The 8600X does this by extracting data services, such as news, sports and weather, in which the signals have been 'piggybacked' on the vertical blanking interval of existing channels. In this way, SA estimates that most cable systems can provide 100 or more virtual channels using the 8600X.

The 8600X is also at the heart of SA's "Press Movies" approach to NVOD/PPV delivery. In this system, cable operators store MPEG-compressed movies on PC server hard disks. The movies are then converted to analog signals and transmitted to customers on a fixed schedule.

Finally, the 8600X is designed to be upgradable to digital video compression (DVC) — the ultimate technical goal for cable operators in North America — by linking the unit with a digital docking station. By offering this configuration, SA is making it possible for cable companies to upgrade their set-top boxes now, while DVC is just economically out of reach, without making the inevitable transition to digital unnecessarily costly.

The success of Videotron, General Instrument and Scientific Atlanta in rolling out commercial broadband products and services offers some hope to engineers in the television industry. While we are still a long way off from achieving the true potential of the information highway, the necessary technology is finally starting to become a reality. ■

A SIGNAL OF STRENGTH

Reduced RF Antennas
FM PENETRATOR Antennas
Slot Antennas
UHF Panel Antennas
FM Bandpass Combiners & Filters
Hybrids
Harmonic Filters
Rigid Transmission Line & Components
TV Intermod Filters

THOUSANDS OF BROADCASTERS rely on JAMPRO's attention to pattern requirements, antenna gain, tower constraints, and budget. From concept to completion, JAMPRO's dedication to detail and quality has made us a world leader in the broadcast industry.

JUHD BROADBAND UHF ANTENNA
- Horizontally polarized
- Varying levels of vertical polarization available
- UHF Band IV & V
- Multiplexing capabilities
- Custom directional patterns available
- Also supports wireless cable applications

JAMPRO ANTENNAS, INC.
Coverage That Won't Quit
JAMPRO ANTENNAS, INC., 6340 Sky Creek Drive
Sacramento, California, 95828 USA
(916) 383-1177, Fax (916) 383-1182.

SENDING POWER.

YOU'LL ALSO FIND THE SAME quality in our complete line of passive RF components. JAMPRO knows how to integrate the equipment you need – hybrids, slot antennas, harmonic filters, TV channel combiners, MMDS filters, UHF inter digital combiners, directional couplers, TV intermod filters, patch panels, and more.

JAMPRO RF SYSTEMS, INC.
When You Want More Than Just An Antenna.
JAMPRO RF SYSTEMS, INC., P.O. Box 293296
Sacramento, California, 95828 USA
Phone (916) 383-7844, FAX (916) 383-1182

Look beyond the ordinary with JAMPRO

See Us At NAB Booth 16617 Circle 4 On Reader Service Card

The Math Behind the Modulator

by Brian Flowers

ENGINEERING CORNER

The modem performs an important role in digital television satellite links. It transforms the baseband data signal into an IF (Intermediate Frequency) modulated carrier and vice versa. In addition, it introduces FEC (Forward Error Correction), it buffers the received signal to cope with the Doppler effect, and it recovers the clock reference.

Actually for TV signals, we should refer to modulators and demodulators separately, because TV signals are normally unidirectional. Telecommunication circuits, on the other hand, are invariably duplex, hence the derivation "modem" for a modulator/demodulator combination.

The Eurovision satellite network requires about twice as many demodulators as modulators, so each earthstation can be equipped with two modems and two demodulators, providing two transmit chains and four receive chains.

PUT TO THE TEST

We have recently tested a new modem, conforming to EBU requirements, namely the SDM-9000 from EFDATA Corp. in the U.S. This modem has the advantage that it can handle up to four chosen data-rates between 6 Mbps and 52 Mbps. Modulation can be QPSK, 8PSK or 16 QAM, with various FEC ratios. The EBU requirement is 8 Mbps and 34 Mbps using QPSK modulation with 4/3 FEC.

QPSK (Quadrature Phase Shift Key) modulation varies the carrier phase in 90 degree steps. Clearly there are four phases available in 360 degrees, so each phase or symbol represents a combination of two bits (i.e.; 00, 01, 10, and 11). 8PSK uses eight phases, so it transmits three bits per symbol (i.e.; 000, 001, 010, 011, 100, 101, 110 and 111). 16 QAM transmits four bits per symbol using phase modulation and amplitude modulation, with 16 possible combinations.

QPSK is normally chosen for digital TV links because it represents the best compromise between required RF bandwidth and ruggedness. The relationship between symbol rate and composite data rate is as follows:

$$SR = \frac{CDR \times FECR}{B/S}$$

where:
- SR = Symbol Rate
- CDR = Composite Data Rate, (i.e. basic data rate plus overhead data rate)
- FECR = Forward Error Correction Ratio
- B/S = Bits/Symbol for the chosen modulation system

The precise data rate of so-called 34 Mbps signals is 34.368 Mbps, to which must be added 96 kbps overhead data rate, giving a composite data rate of 34.464 Mbps. Hence for 34 Mbps transmission using QPSK modulation with 4/3 FEC:

$$SR = \frac{34.464 \text{ Mbps} \times 4/3}{2} = 23 \text{ M symbols/s, appx.}$$

The nominal RF bandwidth is equal to the symbol-rate, and the required channel-spacing within a transponder to avoid crosstalk between adjacent channels is 1.3 x RF bandwidth. Hence the required minimum channel-spacing is 23 x 1.3 = 30 MHz approximately.

Some modems under development are able to adapt their operating rates to cope with varying conditions on the transmission path. For example, FLASH TV, a European transmission system for HDTV back-haul, utilizes 2 x 34 Mbps with 8PSK. It is designed to fall back to the more rugged QPSK if the satellite link suffers too much rain-fade. The HDTV signal then utilizes only 34 Mbps, providing a graceful bit-rate reduction rather than a catastrophic loss of signal.

Overhead framing is a feature of satellite TV modems derived from the world of telecommunications. An additional 96 kbps is added to the bit-stream, specifically for use between earthstations. With a duplex connection, this provides communication between the earthstations to monitor the performance of the link and take corrective action if necessary. For example, it provides a means to continuously monitor the BER (Bit Error Ratio) of the link. The SDM-9000 overhead framing provides two 32 kbps audio channels, one 8 kbps data channel and four backward alarms that can signal demodulator reception problems back to the modulator in the case of a duplex connection.

EFDATA Corp.'s SDM-9000 satellite modem

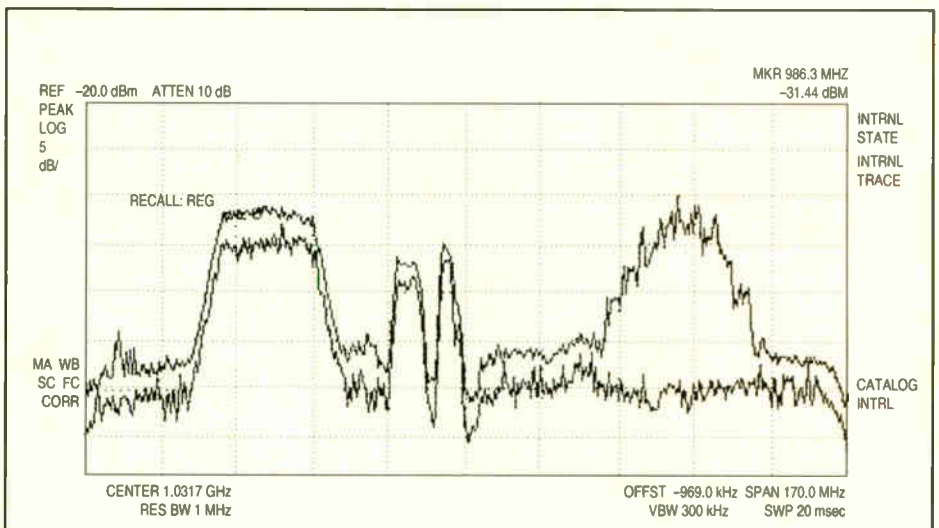


Figure 1.

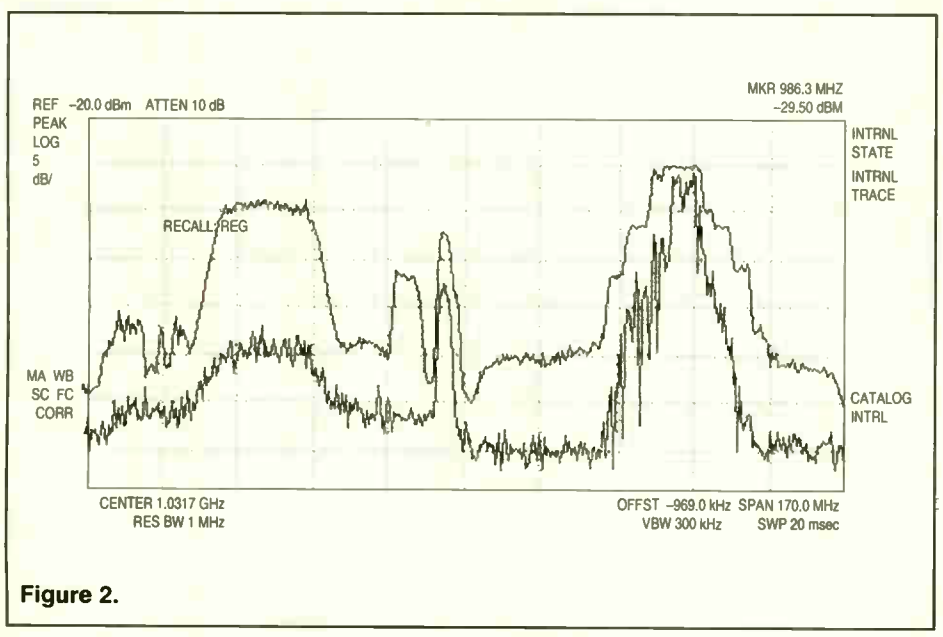


Figure 2.

DATA IN MOTION

An essential feature of a digital TV satellite modem is the data buffer. It should have a capacity of about ±32 msec, which is necessary to ensure a correct bit rate from the demodulator despite small frequency changes due to the Doppler effect. This is caused by movement of the satellite relative to the earth. In the words of my colleague, Bill Potter, "geostationary satellites are not bolted to the sky!" They move over a 24-hour cycle relative to the earth, and the relative motion is fast enough to produce noticeable Doppler frequency shift. You can observe this quite easily by transmitting a PAL or NTSC vision signal to a geostationary satellite and displaying the return signal on a vectorscope that is phase-locked to the transmitted color burst. The return chrominance signal's vector display will revolve slowly due to the Doppler effect.

An SDM-9000 modem was installed at the Swiss PTT's Eurovision earthstation, which has a 7.6m dish. A 34 Mbps ETSI 300.174 digital TV signal was then sent from the Eurovision Control Centre via the modem to one of the EBU-leased transponders of Eutelsat II/F4. The return signal was received back at the Eurovision Control Centre via the modem and decoded to PAL and 270 Mbps, so picture quality could be monitored. Its RF spectrum was also monitored using a 3.7m dish at EBU headquarters to feed a spectrum analyzer.

Figures 1 and 2 show the resulting spectrum, with nominal EIRP (70 dBW) in Figure 1 and 48 dBW in Figure 2, this being the lowest EIRP producing an unblemished picture back from the satellite. The 34 Mbps spectrum can be seen on the left of the two displays, with an 8 Mbps vision signal and a Euroradio 2 Mbps signal going from left to right in Figure 1, and one 2-Mbps signal plus an analog TV signal going from left to right in Figure 2.

The orthogonal transponder carried one analog TV signal during the tests, and this was offset in frequency with respect to the 34 Mbps signal so there was very little cross-polar interference. This explains the more-than-adequate link margin of 22 dB. This figure would be approximately halved with fully loaded transponders in both polarizations.

The SDM-9000 modem is a compact unit (the modulator and demodulator are combined in a 2U/19-inch unit) with user-friendly comprehensive diagnostic facilities. The availability of up to four data rates will be appreciated where data-rate flexibility is required. ■

For further information contact:

EFDATA Corp.
2105 West 5th Place
Tempe, Arizona, 85281, USA
Telephone: +1-602-968-0447
FAX: +1-602-921-9012
Reader Service 96

Brian Flowers is head of service and project manager for the European Broadcasting Union's new Eurovision Control Center in Geneva. He studied engineering at the University of Southhampton and served for two years in the Royal Air Force before joining the BBC. In 1962, he was assigned to the EBU's control center in Brussels and has since worked at numerous levels of responsibility for the center. He is a member of the Royal Television Society.

Light!

t ignition in the world.
A new generation of electronics.

1 Sachtler's new solid state ignitors work quickly and quietly now in all Sachtler daylight systems.

2 **Reporter 200 DI** – introducing the latest reporter daylight from Sachtler: more light output from 200 watts than ever.

3 New electronic ballasts for Sachtler's reporter daylights: **Batronic 1** for 125 W and 200 W, **Batronic 2** for 125 W, 200 W and 270 W. The Batronics automatically sense which one of these fixtures is connected and will power it accordingly. Four LEDs indicate how much running time remains. A switch allows selecting the proper dimmer range for HMI and MSR bulbs.

4 Sachtler **Belt Pack**, the well proven NiCad battery powers the whole range of Sachtler reporter daylights. Available in two sizes for 30 and 45 minutes of full light output from a Reporter 200 DI. Shaped to fit the human body and forming a compact unit with the Batronic.

5 The **Speedcharger**, controlled by its microprocessor, senses the state of the battery and charges it speedily and safely.

6 **Netronic 2:** The all new mains powered electronic ballast for continuous operation of all Sachtler Reporter fixtures.

The most sophisticated reporter daylight system on the market today. By Sachtler.

アミック サハトラー株式会社
Japan
Amic Sachtler Corp.
東京都世田谷区三軒茶屋
1－2－21　〒154
電話 (03)3413－1212
Fax (03)3413-0888

U.S.A.:
sachtler®
corporation of America
New York office:
55, North Main Street
Freeport, N.Y. 11520
Phone (516) 8 67-49 00
Fax (516) 6 23-68 44

Eastern Europe:
Sachtler
Vertriebsgesellschaft m.b.H.
Germany
Segelfliegerdamm 67
12487 Berlin
Telephone (0 30) 6 36 43 11
Telefax (0 30) 6 36 34 66

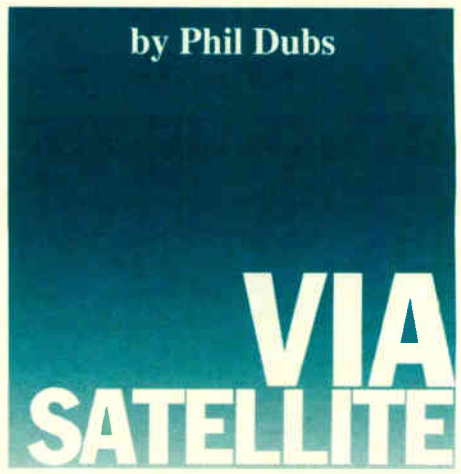
Headquarters:
Sachtler AG
Germany, Gutenbergstraße 5
85716 Unterschleissheim
bei München
Telephone (0 89) 32 158 200
Telefax (0 89) 32 158 227
Telex 5 215 340 sac d

sachtler
Support & Lighting

Circle 64 On Reader Service Card

Satellite Terms from A to Z

by Phil Dubs



During a recent conversation with a fellow engineer, I mentioned that we had problems with our affiliates not having the proper LHCP feed, a LNB that was not PLL, and that many of their antennas did not have the correct FD at the feed. I knew I was in trouble when his eyes glazed over and he took on a rather blank stare.

So I repeated my statement filling in the acronyms with real words. "We have problems with our affiliates not having the proper Left Hand Circular Polarized feed, a Low Noise Block downconverter that was not Phase Locked Looped, and that many of their antennas didn't have the correct Focal Distance at the feed."

This made more sense to him, but it made me realize that our industry has become very obsessed with acronyms. Although acronyms were once the mainstay of the military and telephone companies, they have now given our discussions in satellite communications a whole new sound.

To assist those new to the industry, and maybe even a few who have been around awhile, I have put together my top 86 satellite acronyms. I think you will find some "commonly" known; such as AM and FM. But I am sure you will find a few acronyms that you have heard but did not really know the correct meaning.

▼▼▼

AGC — Automatic gain control, a circuit that provides for a fixed output, compensating for varying input levels.

AM — Amplitude modulation, also known as Ancient Modulation, not a modulation scheme used in satellite communications.

APS — Antenna Positioning System, a mechanical/electronic system used in pointing the antenna at the satellite.

BER — Bit error rate; digital circuits performance is often measured as a BER, or the probability of a digital bit being received correctly.

BO — Backoff of the power amplifier, given as a negative number, an amount of power reduced to avoid saturating the input to a satellite transponder.

BPSK — Binary phase-shift keying, a form of phase modulation in which two phases represent binary levels.

CDMA — Code division multiple access, a spread spectrum scheme transmitting on a bandwidth much larger than needed but at a much lower level.

CONUS — Continental United States (contiguous 48 states)

C/N — Carrier-to-noise ratio, a value expressed in dB; good satellite links have a C/N of 10 db or more.

CW — Continuous wave, a signal at specific frequency that does not vary.

dB — decibel, used in various satellite expressions, provides for an easy way to write and understand both very small and very large ratios.

dBi — Antenna gain in decibels, relative to an isotropic antenna.

DBS — Direct Broadcast Satellite, also known as DTH (Direct to Home) or TVRO.

DC — Direct current, the stuff you get from a battery.

DSBSC — Double sideband suppressed carrier, an outmoded modulation scheme (see AM).

▼▼▼

EHF — Extremely high frequency, 30 to 300 GHz

EIRP — Effective isotropic radiated power, stated as dBi when referring to the effective gain of an antenna.

EOL — End of life, in regard to a satellite's useful lifetime.

f/D — Focal distance to diameter ratio, the ratio of feedhorn distance to the center of the antenna divided by the diameter of the antenna.

FDM — Frequency division multiplex, a simple approach to multiplexing in which each signal is assigned a specific frequency and bandwidth.

FDMA — Frequency division multiple access; simply put — putting more than one signal through a transponder at a time.

FEC — Forward error correction, used with a digital signal to send the correction information before the actual signal data is sent.

FM — Frequency modulation, a scheme in which the signal modulates the frequency of the carrier.

FSK — Frequency shift keying, in which binary levels are expressed with a shift in frequency.

FSS — Fixed satellite service, a satellite service in which the ground station is at a fixed location.

GEO — Geostationary or geosynchronous orbit, in which the satellite is stationary in respect to the earth.

GHz —Gigahertz (1,000 MHz)

GMT — Greenwich Mean Time (like in England)

G/T — The ratio of antenna gain (G) to the antenna system noise (T); a figure of merit, the higher the better; typical G/T specs are in the 20s and 30s dBi/K.

Hemi — Hemispheric beam, when describing the footprint of a satellite transponder.

HF — High frequency, 3 to 30 MHz

(continued on page 18)

TV BROADCASTING
by abe

CLESSIDRA TREVIGLIO

PRODUCTS :
• Tv transposers and transmitters for the VHF and UHF bands from 1W to 10 KW - up to 1KW with solid-state technology.
• Microwave links - fixed, mobile , E. N. G. - from 2GHz to 14GHz.
• Antennas : - Panels and complete arrays - Parabolic.

SPECIFICATIONS :
Standard product characteristics comform to practically all recognised international technical specs.

PRICES:
Our price levels are unbelievably low in comparison with the quality of our products.

DELIVERY:
Fast delivery of standard products is also a standard !

Visit us - we are just a 20-minute drive from Milan's Linate International Airport - or send us immediately your request by fax (+39-0363-50756) or telex (352829 ABETEL I) or mail, alternatively simply call us on +39-363-52550/351007, and WE WILL SEND YOU OUR 1994 CATALOGUE TOGETHER WITH OUR PRICE LIST.

abe®
ADVANCED BROADCASTING ELECTRONICS

ABE ELETTRONICA S.p.A. - Via Galileo Galilei, 1 - 24043 CARAVAGGIO (BG) - ITALY - Telephone +39-363-52550/351007 - Telex 352829 ABETEL i - FAX +39-0363-50756

Circle 121 On Reader Service Card

SONY AND ANTON/BAUER ARE MAKING HISTORY...

Unpredictable shooting interruptions that occur with primitive "low battery" indicators are now history. Through a special InterActive™ circuit in Sony camcorders, such as the new BVW-D600 Betacam SP DSP camcorder, actual remaining battery capacity is transmitted to the viewfinder from the Anton/Bauer Digital battery's fuel computer. During operation, this highly accurate fuel gauge is displayed in the viewfinder and constantly updates remaining battery capacity to the cameraman.

Short runtimes, cumbersome battery belts and battery change disruptions are history. The Anton/Bauer InterActive battery and charger system deliver the high level of performance, reliability, and versatility demanded by the Sony Digital 1000 camcorders. A single high capacity Digital Propac™ battery perfectly balances the camera on the shoulder and powers camera, recorder *and Ultralight* for 2 hours.

High wattage on-camera lights, wasted battery power and "interrogation room" interviews are history. The advanced low light sensitivity of the BVW-D600 is enhanced dramatically by the Studio Quality Ultralight 2. Automatique™, an exclusive control circuit standard on all new Sony camcorders equipped with an Anton/Bauer Gold Mount™, synchronizes the on/off function of the Anton/Bauer Ultralight™ with the VTR stop/start button. The Ultralight's photometric design matches ambient light to transform a shadow filled scene to a studio image.

These history making advances are possible only with the Anton/Bauer InterActive system, part of the innovative technology and creative solutions in the BVW-D600.

anton bauer *The worldwide standard*

The BVW-D600 Betacam SP DSP camcorder, and the DVW-700 the world's first Digital Betacam camcorder, feature InterActive™ viewfinder, Ultralight Automatique and Sony's exclusive Hyper-HAD™ sensor with OCL (On-Chip-Lens) technology.

See Us At NAB Booth 11210

For your FREE "Video Battery Handbook"
call (in U.S. only) 1-800-422-3473 or fax (203) 929-9935

Betacam, Betacam SP and Hyper-HAD are trademarks of Sony.
InterActive, Ultralight, Gold Mount and Automatique are trademarks of Anton/Bauer

InterActive viewfinder and Ultralight Automatique are also standard features on Sony BVW 400A and UVW-100 camcorders.
Your Sony representative can provide you with details on Anton/Bauer InterActive Systems for all Sony products.

Circle 6 On Reader Service Card

Tracking the State of Our Art

by John Watkinson

VIDEO WATCH

In this article I have taken a possibly controversial look at a few contrasting subjects in order to see where the state of the art lies and where it is going.

What is possible today has gone beyond what many people grasp, and one has to avoid using words like obvious because the obvious is often missed. The art of making advanced products is to use technology to bring down the cost of the possible. But sometimes the possible turns out to be quite easy because the physical principles which allow it simply had been overlooked.

We have come a long way from the days when television meant PAL, SECAM or NTSC. As far as the viewing public is concerned, these systems do the job reasonably well, provided that standards or codes of practice are upheld so that the picture quality reaching the transmitter is reasonably close to what the format allows.

Casual observation in Europe, Russia and the United States reveals to me that the best adherents to quality standards in broadcast material are Europe and Russia, with standards in the United States a long way behind. Watching the technical quality of much U.S television off-air reveals a regrettable excess of corner cutting and neglected maintenance.

This year's NAB could be an opportunity to check whether I am biased or close to the mark. Why not find out for yourself what NTSC is capable of by looking at some D-2 or D-3 demonstration material at the show, and comparing the quality subjectively with the TV set in your home or hotel room?

Having performed such a simple test myself at trade shows in Montreux, Amsterdam, Brighton, Moscow, Washington and Las Vegas, I can assure you that the last two come off worst. Small wonder that there is pressure to create a high definition (HD) system for the United States. However, if a future HD system is implemented in the U.S. with the same lack of rigor as is used with NTSC today, I expect the results on screen would be no better than a rigorous implementation of NTSC. In which case, why bother with HD when it would be much cheaper to keep the existing format and make it work properly?

There is now quite a lot of HD hardware around, and the collection of material shot on HD is growing, along with the demand for down-convertors to allow the material to be delivered in existing formats. Viewing down-converted HD material on a good standard definition (SD) monitor gives results which are appreciably better than SD material on the same monitor. Why is this? Well, the combination of the HD camera and the down-convertor is actually an oversampling camera. An SD camera cannot reach the resolution that the format theoretically allows because of aperture effect. In an HD camera, the aperture effect is still there, but it occurs at twice the resolution, so the camera aperture effect is absent from the down-converted material, which can reach closer to the theoretical resolution limit.

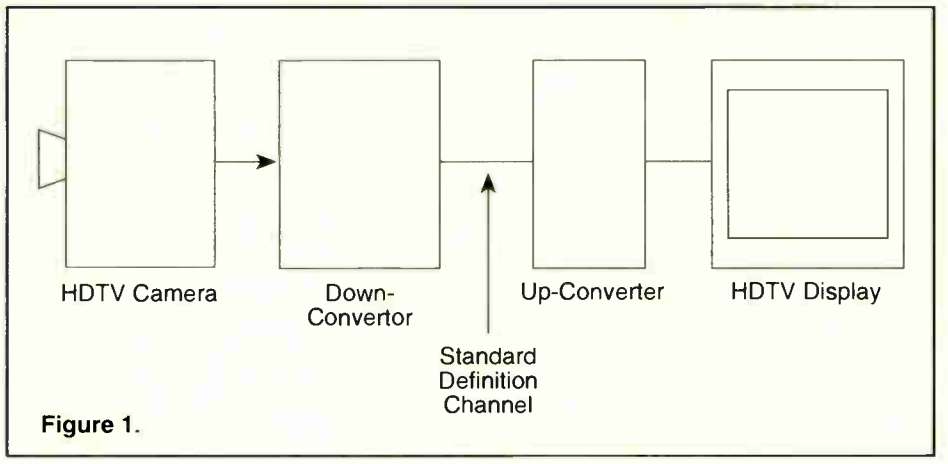


Figure 1.

DISPLAY EFFECTS

Naturally, displays also have an aperture effect as well, and this can be overcome by up-converting an SD signal for display on an HD monitor. Again the result is better than viewing the same material on an SD monitor. Once more the display and up-convertor together form an oversampling display, pushing the aperture effect of the display beyond the resolution in the SD signal.

The really spectacular result comes when these two processes are combined. As Figure 1 shows, an HD camera feeds a down-convertor to produce an SDTV signal that is distributed along existing channels. At the receiving end, the SDTV signal is upconverted for display. Theory predicts that the perceived quality will be indistinguishable from HDTV, and practice bears this out. I know this to be true because I have seen it. If you have not seen it, you are missing out.

There are two morals here (God, I hate moralizing): First, the line standards or formats used for production and transmission need not be the same and can advantageously be different. Second, there is no need for a great increase in the number of lines transmitted, provided a greater number are used in production and display. Thus the problem of transmitting HDTV goes away.

In this digital age, it seems to be incredible to be discussing a new analog format, but that is exactly what PALPlus is. PALPlus has just started transmission in Europe and is a 16:9 aspect ratio transmission which is electrically compatible with traditional PAL receivers. This compatibility is achieved by transmitting 16:9 material in a 4:3 frame with black bars top and bottom, which is exactly what you see on a normal PAL set, hence the alternative name of PALMinus: it is PAL, minus the top and bottom of the picture. If you have a PALPlus TV set, the few remaining active lines fill the screen height, and as you might expect, the vertical resolution could be impaired. PALPlus gets around this by sending a helper signal in the black bars which is invisibly encoded so that it does not show up on a 4:3 set.

TRANSMISSION EQUALS

As PALPlus is PAL-compatible, it uses the same transmission bandwidth and needs the same taboo channel structure to prevent interference. As a result, it delivers no improvement in transmission efficiency and occupies spectrum space which could carry several digital channels of equivalent quality. The real snag is that the helper signal system of PALPlus is patented and, if you are not a European manufacturer, getting a license is tricky. However, it is perfectly possible to build a 16:9 TV set which just displays the active lines. It is simply a normal PAL set with an interpolator and a different tube. The picture is softer, but you do not need a license.

My concern is that the public will not realize the difference and will end up with inferior pictures and blame it on the standard. We have a tradition of doing that in Europe, pioneered by BSB, which broadcasts technically excellent pictures in component form. Unfortunately, most viewers had decoders that convert the component signal back to composite so it could connect to the antenna socket of a conventional TV. We also have a tradition of devising TV standards in a way which can be loopholed. The patent-busting PAL TV set simply decoded every other line of the PAL signal as if it were NTSC. Technically inferior, but no license was needed.

The subject of compression has been uppermost in the minds of a lot of people for a couple of years now. Partly, the attraction must be the gee-whiz effect of new technology, but much of the attraction must be the perception that compression is some kind of answer to a prayer, a technology that gets a quart into a pint pot or delivers ten pound's worth for five.

Unfortunately, this is a simplistic view. The reality is much different. Now that some of the glamour of compression is fading, people are starting to realize that compression is a technology to be used wisely for specific purposes.

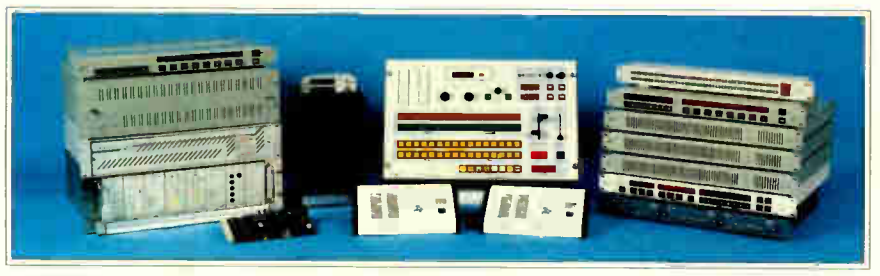
We can draw some parallels from existing analog video, which uses simple types of compression. Interlace is a form of compression. Bandwidth is halved in comparison to a progressive system. Interlace is a compromise because it allows resolution up to the number of lines in a frame, but not in the presence of motion. And it allows motion portrayal up to the field rate, but not in the presence of vertical resolution.

Interlace twitter and motion aliasing are interlace artifacts. Figure 2 shows that the finest video comes as GBR: three full bandwidth signals. This is too expensive for most purposes, so color-difference working is used instead. A luminance signal is produced with full bandwidth, but the color difference signals can have the bandwidth reduced to as little as one quarter.

This makes little difference to the viewer, because the resolution of the human eye to color detail is restricted in comparison with brightness resolution. Thus, the use of color difference signals is a form of perceptive coding, which is subjectively lossless. However, while excessive reduction in color difference bandwidth may be invisible to the eye, it also reduces the precision of chroma

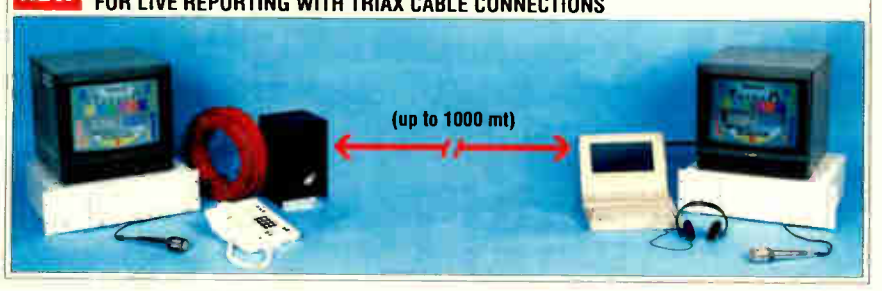
(continued on page 27)

SETEL DESIGNS AND MANUFACTURES



• AUDIO AND VIDEO ROUTING SWITCHERS
• AUDIO AND VIDEO DISTRIBUTORS
• CONFERENCING SYSTEM
• MASTER CONTROLS
• AUDIO MIXERS
• IF AGC
• IF SWITCHERS
• 4-WIRE INTERCOMS
• TALK/LISTEN CONSOLES
• VIDEO GRAPHICS MATRICES
• VCA's with remote control
• LINE AMPLIFIER AND DECOUPLERS

NEW BIDIRECTIONAL MULTICHANNEL DIGITAL SYSTEMS FOR LIVE REPORTING WITH TRIAX CABLE CONNECTIONS



DESIGN AND TURNKEY supply of TV STATION INSTALLATIONS
DESIGN AND TURNKEY supply of OB VEHICLE INSTALLATIONS

SETEL SpA – SOCIETÀ DI ELETTRONICA PER TELECOMUNICAZIONI
79, via Torino – 10040 ORUENTO (TO) – ITALY
Telefono +39 (0)11-9341166, 3 linee r.a. – telefax +39 (0)11-9941155

SETEL SpA WELCOMES EUROPEAN AND WORLDWIDE PARTNERSHIP

VISUAL GRAFIKA - TO

Circle 110 On Reader Service Card

The Future of non-linear editing

We do not tell you how to edit. From off-line systems for professional film and video editors to near on-line systems with stunning multi-camera abilities, Lightworks build systems for today's top editors. We do not make computers, we make complete editing solutions.

Lightworks

- ❑ Simple, precise, tactile non-linear editing
- ❑ Unique Lightworks console
- ❑ Flexible, free-form user interface
- ❑ DVE and Keyer Option

Heavyworks One

- ❑ High end off-line editing
- ❑ Multi-camera 'on the-fly'
- ❑ High Resolution pictures
- ❑ Outstanding audio capabilities

Digistation

- ❑ Digistise from Telecine or tape to disk
- ❑ Emulate VTR for playback
- ❑ Media interchange with "other formats"
- ❑ Networking options

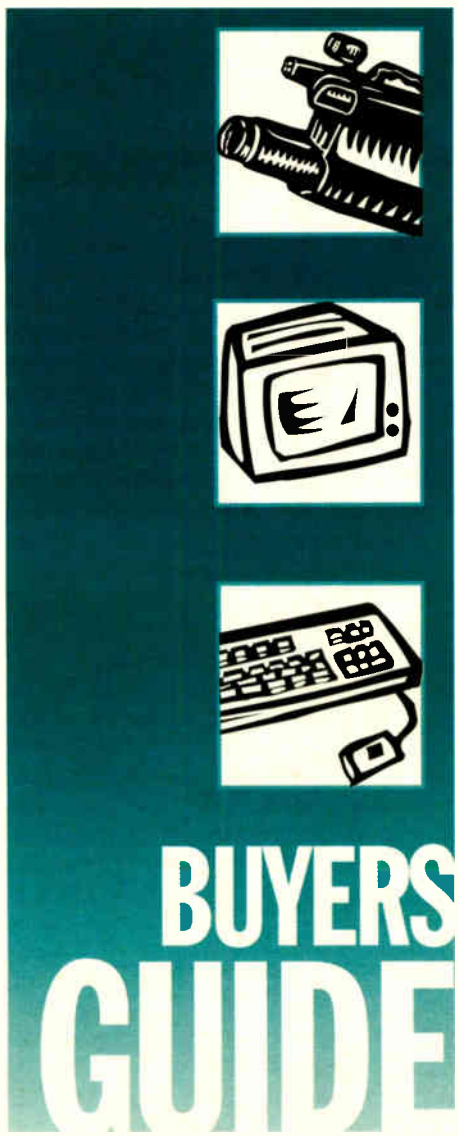
LIGHTWORKS

Lightworks Editing Systems Ltd
(Head Office)
38 Soho Square
London W1V 6LE
England
Tel: + 44 (1) 71 494 3084
Fax: + 44 (1) 71 437 3570

Lightworks USA
6762 Lexington Avenue
Suite no.2
Hollywood
CA 90038 USA
Tel: + (1) 213 465 2002
Fax: + (1) 213 463 1209

Lightworks USA
133 5th Avenue
6th Floor
New York
NY 10003 USA
Tel: +(1) 212 677 9775
Fax: +(1) 212 677 9773

Circle 17 On Reader Service Card



USER REPORT

Hamlet Boosts Kuwaiti Upgrade

by Mahmoud Abdulnabi Al-Sayyid
Director/News & Political Programs
Ministry of Information

SALMIYAH, Kuwait

Our graphics department needed considerable reconstruction recently, including the installation of peripheral equipment for measuring the signal levels for transmission.

Our experience in projects of this nature indicated to us that level measurement equipment would be the last item on anyone's list of new products. However, our old studios contained old-fashioned CRT waveform and vectorscope products that provided measurement and monitoring under existing operating practices but were deficient in their clarity, over-engineered and not user-friendly enough for our needs.

For example, our graphics operators had some degree of experience using the CTR measuring devices. These were situated in a position as convenient as possible, providing the clearest possible view. However, the angle of view, brightness of display and ambient light levels always made operational assessment difficult.

AIR QUALITY

It is an important issue to maintain technical parameters while providing material for transmission. We required a more efficient and flexible method of monitoring without compromising the importance of "within tolerance" transmission monitoring. So it was with great interest that we investigated the potential of the video scope method of television signal measurement and monitoring.

Clue Media, representing Hamlet products at that time, introduced us to the Hamlet on-screen, in-picture waveform and vectorscope units. It very quickly became apparent that our search for an alternative to the old CRT method had been achieved for us by an inventive company in England whose acclaim includes a current agreement to license Tektronix for its patented products.

Because our operators are not engineers, the equipment we wanted had to be easy to drive and to understand. By acquiring the Hamlet Video Scope, the veneer of mystique relating to the "CRT engineering units" had been swept away. The Video Scope puts test and monitoring within the grasp of all, for everyone to use and understand.

An important issue with the Hamlet Video Scope is that although it is a full broadcast device, it is not over-engineered. Rather, it is a very intuitive device. The main operational controls are all instantly available and clearly detailed without the need for menu-driven complications involving multiple choice or multiple button-pressing to achieve a simple function change. In operational environments, this is essential to make life as easy as possible.

We chose the 301WV Hamlet Video Scope because it was quite clear it was capable of a lot more than we actually required, and therefore was a very good investment. The quality is excellent and the cost is very low in comparison to the bulky, expensive alternatives.

The higher-priced 304WV Video Scope was a possible choice for us. It is a full-functioned YUV/composite unit with more technical facilities, such as line select and SCH absolute readouts, bow-tie measuring, five-function set-up memory, simultaneously combined YUV and composite operation with multicolored trace and graticule displays. But all these modes were not required in the areas we were concerned with. The 303WV, although technically superior to the 301, was not chosen because it is only a composite unit.

ANALOG REQUIREMENTS

Our choice, the 301WV, is a one-rack-unit device, like the 303 and 304. It can handle nearly all requirements in the analog domain from just the one device. These include PAL, NTSC composite, component YUV, RGB and YC, providing waveforms and vectors in all these standards, plus the new HFT (hands-free timing) facility.

The 301 is also available with an audio option for linear PPM VU color bar graphics and polar display of the stereo image. We did not choose the audio option add-on card, but it does provide the component vectors, and we have been told that the unit is easily retrofittable.

Powered from either mains or 12VDC, the Hamlet Video Scope 301WV can be conveniently rack-mounted and remote controlled. If placed right in front of the user, it is no problem to transmit the combined trace and display signal to any monitor or LCD for more convenient study. The output can also be recorded for later examination.

The small-screen displays, which can be placed at either top or bottom of the display plus the mix facility, further enable flexible monitoring. This mode is regularly used in our studio. The large screens are, of course, essential for real absolute analysis.

The unit's probe input can be of real value in which first line maintenance is required. The high impedance probe input found on the front of the Video Scope allows the unit to be used like an oscilloscope. The probe trace display is inserted into the reference input, which supplies the stable synchronization signal. The probe trace can then be easily investigated. When used in this mode, the unit may be re-calibrated to show either smaller or greater signal levels.

We have recently discovered that the probe input may be converted to act as another composite input. In this mode, the unit has the capacity to provide four composite inputs or one component and one composite set of inputs.

Recently back from the Middle East Broadcast Show, I saw the new half-rack products, which include Hamlet's 302WVR

(continued on page 33)

TEST EQUIPMENT

BUYERS GUIDE calendar

APRIL

Mobile, Remote
& Satellite Gear

•

MAY

Studio Cameras
& Accessories

•

JUNE

Time Base Correctors
& Frame Synchronizers

•

REPRINTS: Reprints of all articles in this issue are available. Call or write Regan Deatherage, P.O. Box 1214, Falls Church, VA USA 22041. Phone: +1(703)998-7600; FAX: +1(703)998-2966.

Circle 94 On Reader Service Card

USER REPORT

Philips Turns to ShibaSoku

by Victor G. DeGutis
Manager
Philips CE

EL PASO, Texas

The passage of the NAFTA (North American Free Trade Agreement) in January 1994 led Philips Consumer Electronics Corp. in the U.S. to re-evaluate its warehousing and distribution procedures. The company decided to locate central warehousing in El Paso, Texas, importing products from Pacific Rim countries and televisions assembled in Mexico.

Warehousing in El Paso resulted in the establishment of a product assessment lab on site. This lab has added to the efficiency of the distribution system by limiting the amount of time (in transportation) and money (in delayed sale of product) required to send product samples to the main evaluation center 1,700 miles away.

To facilitate product quality evaluation, a central signal system was established to make color television product assessment possible. This system facilitates the distribution of local TV signals to five test stations, allowing the generation of test patterns to meet specific needs.

THE EARLY DAYS

In the early days of television, an "Indian Head" monoscope test pattern was used as the evaluation basis. Now, we use the Shibasoku Company's Model TG21A1 test signal generator, with a monoscope pattern board, which does the work previously accomplished by the monoscope but with additional features.

The monoscope pattern consists of a peripheral 50 percent gray pattern, which allows the evaluator to observe the gray scale tracking. In other words, if the white appears "white" at a given color temperature, the gray should appear gray at a lower luminance level.

ShibaSoku's operating instruction manual provides sufficient technical information to facilitate the training of semi-skilled employees in evaluating color television video performance.

Among the TG21A1's features is a number 30 in the center of the display, which allows technicians to check the focus of its central area, plus the number 30 appears in the corners for "corner focus" evaluation. The unit can test for convergence, symmetry and resolution presentation.

Test patterns are used to determine horizontal and vertical overscan, and out-of-specification deviations are reported back to the production facilities. By turning the color burst on or off, luminance channel performance can be determined.

In addition, this ShibaSoku model carries a dozen additional switchable video test signals that operate independently and separately from the monoscope presentation. These standard signals include the SMPTE color pattern, multiburst of six frequencies, the 2T pulse and bar, matrix and the familiar crosshatch or convergence pattern.

The TG21A1, with the TG21A1002 monoscope pattern, is used to feed two TV modulators, and the selectable video output provides the signal input for a third modulator.

SIGNAL SELECTION

In the future, the GP-IB port may be used to vary the selectable signals automatically. However, manual selection of the video signal is sufficient for our purposes.

When the unit was ordered, we considered the possibility of checking PAL color receivers for marketing in Latin America. We decided that purchasing the PAL features with the EBU pattern intact was more economical than having this feature added in the future.

The local 32-channel cable system provides real-time color television signals, which we use for a generalized customer- oriented evaluation of receivers. The TG21A1 unit adds a monoscope signal and a choice of 12 other signal sources all in one package, making more in-depth performance evaluations possible. These evaluations can be accomplished by semi-skilled workers who have been provided with specific training regarding the characteristics of the test signal generator. ■

Editor's note: Vic DeGutis is the manager of Philips Consumer Electronics Corp.'s Product Assessment group in El Paso, Texas. He has worked in color TV design, development and production.

The opinions expressed above are the author's alone. For further information, contact Shibasoku Co. in Japan (Telephone: +81-429-95-3301; FAX: +81-429-96-3419), or circle ***Reader Service 14.***

INTRODUCING THE PAG MC124
The ULTIMATE in charging technology

Whenever or wherever you are on location the new PAG MC124 represents the very latest in battery control technology. The charger is designed to provide workshop facilities for the management of any mix of Ni-Cd batteries in the range 4.8V to 14.4V, 1Ah to 7Ah.

The PAG MC124 features include an LCD display which indicates the number of cells operating and the charging current loaded for any battery under process; an 'Autoranging' charge facility; a serial port for connection to a PC and a 'Widerange' input supply, for use world wide. The PAG MC124 can also be powered from a 12V DC supply via the PAG Vehicle Battery-Power Converter.

Although PAG MC124 is a stand alone unit it can be controlled from a PC via PAG CMS (Charger Management Software). PAG CMS operates in an easy to use 'Windows' environment. Test results and superb high resolution graphs are available on-screen in real time, and as hard copy.

PAG MC124's battery control system is upgradeable to accommodate future developments in battery technology.

PAG have taken battery management into a new dimension, once again demonstrating the ability to design for the needs of tomorrows cameramen - today.

PAG™
ADVANCED BATTERY SYSTEMS
PAG Ltd. 565 Kingston Road, London SW20 8SA.
Tel: +44 0181-543 3131 Fax: +44 0181-540 4116.

Circle 73 On Reader Service Card

It's astonishing that a full-grown, 6 meter boa constrictor can fit a 36 kg. calf in its stomach.

It's even more astonishing that the new RTS ADAM™ Intercom can easily hold several hundred people in its system.

Introducing the ADAM digital intercom system, the most advanced system ever designed to fit your needs. With the ADAM intercom system, effective communication is possible with up to 256 users within a single 7 rack unit frame. So whether you're adding on or just starting out, its expansion capabilities will leave you room to grow. And the ADAM intercom system's advanced digital audio technology won't *constrict* your budget. Features include CD quality sound for both inputs and outputs and individual level adjustment at each crosspoint. In addition, the ADAM intercom system is backward compatible, fitting in perfectly with your existing RTS/Telex keypanels. When you're ready to replace or upgrade your current intercom, get the ADAM intercom system. It's one system that's easy to *swallow*.

Contact Telex for information on other sound products:
• smaller intercoms • wireless intercoms • wired & wireless microphones
headsets • audio cassette duplicators.

RTS Intercom Systems. Exactly what you'd expect from a sound company like Telex.

RTS BY TELEX

9600 Aldrich Avenue South • Minneapolis, Minnesota 55420 USA • 612-884-4051 Fax 612-884-0043
UK 44-908-690880 Fax 44-908-694020 • Canada 416-431-4975 Fax 416-431-4588 • Singapore 65-746-8760 Fax 65-746-1206

See Us At NAB Booth 18827

Circle 24 On Reader Service Card

USER REPORT

Vistek Keeps Meridian on Top

by Roger Pearce
News Operations Manager
Meridian Broadcasting

KENT, U.K.

Meridian Broadcasting is part of the ITV network in Britain. Our franchise covers the south and southeast of England, including most of the area from the suburbs of London to the south coast.

Our strength is in our regional programming, in particular, our award-winning news service that feeds the region via regional news centers.

In 1994, we built a state-of-the-art news center in Maidstone, Kent, for our southeast region. Across the board, our budget called for cost-effective solutions without compromising technical performance.

The critical vision paths are in the component analog domain. PAL monitoring would be needed for secondary inputs and for transmitter checks. When it came to choosing our monitors, we were basically looking for no-frills, stable and high quality units that would deliver reliable monitoring at a reasonable price.

LONG HISTORY

Vistek has a good track record in the manufacture of broadcast equipment and was well known to us as a reliable supplier. With a view to minimizing familiarization and maintenance time, we were keen to get as many monitors from the same manufacturer as possible.

After considering other suppliers, we decided that the Vistek range offered the quality, choice and prices we were looking for. Our general Grade 2 color monitoring is provided by the GM 7237 14-inch unit. This had only just come onto the market at the time of our order and seemed ideal for general purpose monitoring in edit suites and control rooms.

The 7237 offers very similar features to the Grade 1 GM 7537 but with a lower grade tube (and price). Technical performance has been impressive with a perfect reliability record.

As we move toward a future with more all-color monitor stacks, it is crucial that color balance is stable. Vistek has created a Dark Current Stabilization (DCS) system to compensate for drift in the gun emission currents during warm-up and with aging tubes. Two other important factors for us were geometry and size stability: both have been good.

Rotary encoders are used throughout the Vistek range for front panel adjustments, such as brightness and saturation. Other settings, such as black level, gain, preset contrast and brightness, are stored as binary values in battery-backed RAM. These values are recalled at power-up and fed to multiple DACs to provide analog control voltages.

For line-up, we looked at the analyzer probe option but decided that our mainly monochrome stacks did not warrant the extra expense. Stability would be essential, but our experience has been good so far.

Another factor in our decision to buy the GM 7237 was that input format was very flexible. Plug-in input modules are used to provide the required system configuration. We will therefore be able to change to digital formats in the future at minimum cost.

Vistek has created a Dark Current Stabilization (DCS) system to compensate for drift in the gun emission currents during warm-up and with aging tubes.

COST BALANCING

In our production control room, we chose GM 8223 monochrome monitors for secondary monitoring. These provide basic features at a reasonable price. Tube phosphors are consistent and closely match the primary color monitors. It is always difficult to balance cost against the grade of a tube, but these Grade 2 monitors have turned out to be a good choice.

The primary color monitors in the production stack are 20-inch GM 7251s. We were particularly looking for accuracy and consistency, and so far our monitors have provided both to a high technical standard. Grade 1 monitoring positions in graphics and engineering use GM 7537 14-inch and GM 7551 20-inch monitors.

In addition to the digitally adjustable presets, Vistek provides conventional rotary potentiometers for primary controls, such as brightness, saturation and hue/phase. We have found this to be a useful provision for engineering checks and equipment maintenance. Both provide accurate and stable viewing with a wide selection of features available from the front panel.

The Vistek range of monitors has neatly fitted our requirements, offering keen pricing and comprehensive specifications backed up by an excellent reliability record. Meridian is a leader in providing efficient, high quality news resources, and as a consequence we demand the finest standards of reliability and stability from our suppliers. This enables maintenance back-up to be kept to a minimum.

Vistek has always been keen to fulfill our needs and to develop a good relationship with us as a customer. ■

Editor's note: Roger Pearce has worked in the broadcast industry for more than 20 years. In addition to Meridian, Roger has been employed at such U.K. broadcasters as TVS Television and Grampian.

The opinions expressed above are the author's alone. For further information on Vistek's line of monitors, contact the company in the U.K. (Telephone: +44-628-531-221; FAX: +44-628-530-980), or circle ***Reader Service 60.***

CONTINUED FROM PAGE 30

Hamlet Puts Kuwait TV On The Level

Video Scope and 503AR Stereo Scope. The 503AR is strictly an audio device with four channels of PPM/VU color bar graphics and polar displays. So it is not required for a graphics studio.

The 302WVR certainly caught my eye, providing four composite or one component operation with the flexibility of adding another composite. Some of the nice new features include store and recall of up to eight function set-up memories, which makes parameter studies quick and easy. There is also instant return to black level, center position on the waveform and vectorscope, HFT hands-free timing, chop mode on all inputs and full screen, half and quarter size display combinations.

With its small size, this unit would be very useful either in a studio, sitting on top of a monitor or in the field. It also includes two audio inputs with displays of PPM or VU bar graphics on the vectorscope display.

The Middle East market is very difficult to get into, but it is clear that the inventive nature of the Hamlet Video Scope products have caught the imagination of many, and I understand that among other current users, Bahrain Television has three units that are used in editing suites recently installed by BTS. ■

Editor's note: Mahmoud Abdulnabi Al-Sayyid is responsible for news and political programming for the Kuwaiti Ministry of Information.

The opinions expressed above are the author's alone. For further information on the Video Scope line of products, contact Hamlet in the U.K. (Telephone: +44-494-775-850; FAX: +44-494-791-283), or circle Reader Service 37.

High-end graphics : now, the best comes from Getris Images

Multilayering, Real-Time, Computer Based, Creative Freedom

GETRIS IMAGES Official Supplier of LOUIS VUITTON CUP
CHALLENGER RACES FOR THE AMERICA'S CUP
International Headquarters - France - Tel. 33 76 90 97 77 - Fax : 33 76 90 72 34

Circle 50 On Reader Service Card

USER REPORT

Film Maker Relies on Multidyne

by Robin Miller
Engineering Consultant
Film Maker Inc.

PHILADELPHIA, Pennsylvania

My first experience with Multidyne signal generators was while engineering a U.S. President's speech to a joint session of Congress. It was the NBC network's turn to feed the pool, and any member could access our sources via a remote control 10 x 10 switcher.

With seven cameras inside the Capitol and a 45-foot truck outside, our dilemma was assuring the world in advance that they would get a good signal. Beyond televising zero defects, we had to also assure that this signal would be the feed they wanted.

PEACE OF MIND

Any remote producer can tell you that there is little peace of mind at the remote site until "Goodnight" is sent. Receiving stations, networks, carriers and international clients can be the powerless victims of an unlabeled feed.

Every remote should assure stations receiving feeds that they will broadcast the intended program without airing "Due to technical difficulties..." This only results in lost viewers.

For this President's historic speech, we used multiple Multidyne generators so that every feed had its own bars, tone and descriptive ID. Why? In the end, to save trouble.

The typical alternative would have tied up our producers' telephone lines with dozens of client stations reporting various problems.

On a simple remote, a typical truck's bar generator has ID capability. However, the demand for international and other multiple feeds has spawned battery-operated "Swiss-army knife" test generators with programmable messages and tones. It is not enough to have 12 characters of ID.

I have come to rely on Multidyne's TS12 in both portable and rack-mounted form. It offers high signal quality assurance in either 8 bit or 10 bit versions. In addition, the TS12 features 32 character ID and audio channel identification and synchronization verification with picture, which today can arrive by a delayed path through one or more frame syncs.

If remote broadcasts remained simple, the truck's one SSG with ID would suffice. However, multiple "split" feeds to several clients who share remote facilities have become more and more the norm. For these, multiple test and ID sources are needed with one for each feed. Carriers as well as television trucks need to provide sources, seeing as it is cheap insurance.

MULTIDYNE'S SOLUTION

The Multidyne TS12 is the solution to remote peace of mind. The TS12 has 12 standard video test signals and 16 programmable messages (battery-backed) for remotes, production and general maintenance. It is available in four flavors: battery-handheld and rackmount in either eight or 10 bits of video precision, plus several options. All have separate continuous black burst output, which can serve as a master genlock reference.

For digital recording and transmission, both compressed and uncompressed, Multidyne offers the new 95-100 ramp, which allows accurate signal-to-noise and quantizing signal-to-noise measurements with a VM-700A. For on-air, sinX/X allows spectral analysis. Also, up to a 14-second audio ID can prevent airing the right picture with the wrong sound.

Today's TS12 is physically tough, electrically stable and ergonomically usable without having to study a manual. While the rack-mount version's panel looks uncomplicated, it is not only beautiful to engineers, but accountants as well. Producers and managers who appreciate the benefits of avoiding transmission troubles will value it also.

For proof of the unit's performance, we ran it through a Hewlett-Packard 54602B scope using BenchLink software. The TS12 offers excellent signal standards that exceed anything you are likely to calibrate with them.

The readouts we got for magnified horizontal interval are textbook RS-170A. Also, multipulse signals have a flat response and no group delay is present at sc frequency.

The NTC7 composite showed an undistorted 2T that was exactly twice T (125 nsec). The unit also provides excellent reproduction of multiburst.

Today's TS12 is physically tough,

electrically stable and ergonomically usable . . .

The TS12 is available in either 8-bit or 10-bit versions, portable or rack-mountable.

Also available is a useful 5 MHz sweep with markers at 1, 2, 3 and 4 MHz. We also have the NCT7 combination and composite lines as VITS on every selection except black burst. They are also added along with readable ID in the vertical interval of video that was passed through the rack-mount version.

With the 10-bit TS12's quantizing signal-to-noise of -84dB, the new ramp function allows accurate digital recording or transmission performance using a slightly varying reference rather than an artificially quiet, single table lookup at ØIRE (usually of line 12). The sin X function provides an accompanying Fast Fourier spectrum that is flat and homogenous in the "infinite" frequency components that sinX/X generates.

FUTURE REMOTE SCENARIO

More channels, more program providers and more carriers can mean more possibilities for the wrong patch cord or router crosspoint selection at the wrong time.

Consider the telecom room at a busy venue. Often it is a mess of wires in a steel cabinet near where the truck will park (next to the dumpster). Long before the expensive truck arrives to send bars and tone, the carrier sets up one or more paths to the world with a test/ID generator feeding each.

Teleconferences, Distance Learning, and other "occasional networks" can leave a lone Multidyne TS12 at the origination or "demarc" point to feed both visual and audible (spoken by the TS12) because it switches automatically to test/ID if no video is input to it after six seconds. Everyone along the transmission path can confirm this in an instant on his or her own. During the event, ID can appear in the vertical interval for instant confirmation.

In addition to their TS line, Multidyne will introduce fiber-optic devices, GV compatible DAs, and small routers at NAB. However, if they just made good test/ID generators for your money, peace of mind would not be so remote. ■

Editor's note: Robin Miller is a broadcast marketing engineering consultant and an award-winning producer and director.

The opinions expressed above are the author's alone. For further information, contact Multidyne in the U.S. (Telephone: +1-516-671-7278; FAX: +1-516-628-1496), or circle ***Reader Service 99.***

ELIMINATE PODIUM CLUTTER.
PB2X8 Pressbox/Microphone Distribution System
MICROAMP SERIES

Eliminate the usual press conference microphone clutter with just a single or a back-up pair of microphones.
Feed each of eight transformer isolated channels from either input or both Mic/Line inputs mixed.
Drive a high level XLR and a medium or low level TRS line simultaneously from each output.
Use as a 2X8 DA, stereo 1X4 DA or two input mixer.
Studio grade performance, field proven ruggedness.

• Rack or desk mount
• Two low noise Mic/Line inputs
• Phantom power, low cut filter
• Loop thru expansion inputs
• Calibrated test oscillator
• Switchable bargraph VU meter
• XLR, 1/4" and 3.5mm TRS jacks
• Headphone output

CALL OR WRITE FOR A FREE DETAILED BROCHURE.

AUDIO TECHNOLOGIES INCORPORATED
328 Maple Ave., Horsham, PA 19044, USA
(215) 443-0330 FAX: (215) 443-0394

See Us At NAB Booth 16602 & 16702
Circle 5 On Reader Service Card

Character Building

Aston have built a reputation on quality, versatility and reliability. Add to that our latest innovative designs, and you're looking at the most exciting range of character generators available today!

Already the industry workhorse, Motif redefines today's broadcast standard for affordable typography, whilst Motif ESP adds an extra static plane to give your presentations a versatile new dimension. And now there's the new Ethos - Aston's most powerful character generator ever - featuring full dual channel, amazing speed, and text animation that will blow your mind! With the File Server to manage your captions and graphics, it's time you took another look at Aston.

The name behind the headlines

Aston Electronic Designs Limited
123/127 Deepcut Bridge Road, Deepcut,
Camberley, Surrey GU16 6SD, England
Tel: +44 (0) 1252 836221 Fax: +44 (0) 1252 837923

Circle 108 On Reader Service Card

USER REPORT

Magni Takes Impact to the Limit

by Doug Hembruff
President
Impact Televideo Productions

ONTARIO, Canada

I recently had an opportunity to use the WVM-710 Automated Video Signal Monitor from Magni Systems in our editing suite at Impact Televideo Productions. This full-featured waveform/vectorscope/auto-measurement device is one rack-unit high, displays on a standard monitor screen and simplifies signal measurement so that users can concentrate on creative content.

Magni has incorporated so many features into this little scope that I find it difficult to do justice within the length limitations of this article. True to form, Magni has managed to keep the WVM-710 at a list price substantially less than most other scopes with similar features.

The Magni WVM-710 should appeal to a wide range of users, but the largest market seems to be editing suite operators who want to spend their time creatively, not with one eye always on the scope.

ON-SCREEN WARNINGS

To this end, the WVM-710 has several user-definable limit ranges. It offers on-screen pop-up warnings over the video picture, or a full-screen waveform that instantly shows red on any part of the signal that goes out of limit. The only thing it does not do is reach out and slap you if you are not paying attention.

Remote scoping is another popular application. With a modem pair over telephone lines or RS-232 cable and "Logbook" Event Manager software, TV stations can spot-check an antenna site. Editing suites with VTRs in another room can check the output without worries of signal loss over long cable runs.

In addition, the high resolution 10-bit rasterized video scope display has built-in graticules for accuracy. The waveform and/or vectorscope display can be full or 1/4 screen.

Plus, all displays have a choice of black opaque background or semi-transparent over the video picture. When there is a problem, several out-of-specification "icons" (picture guard) can automatically pop up over video.

On full-screen, you can superimpose the vectorscope over the waveform in a different user-definable color, as well as add a stereo audio meter. In addition, the video screen outputs for the scope are composite or Y/C, and are separate from the loop-through outputs. When using any of the auto detect features, quality control of transfers from videotape to non-linear systems can be more easily maintained by non-technical persons.

There is a "Venetian Blind" split-screen-type display that alternates the picture between channel "A" and external reference at 32-line intervals. These two signals will horizontally offset each other if video signal timing does not match the reference signal. This allows quick and easy matching of timing, luma, chroma and hue to the reference signal without having to know how to read a scope.

There are also two sets of screens that measure 16 video parameters using numeric displays and a two-colored bar graph showing whether they are in or out of acceptable range. A menu allows the user to adjust a minimum and maximum range of acceptability. These 16 measurements are luma amplitude, chroma amplitude, chroma phase, setup, sync level, burst amplitude, peak video, horizontal reference timing, SC/H phase, color frame, luma noise level, chroma/luma/gain, chroma/luma delay, differential phase, differential gain and pulse/bar.

The Magni WVM-710 stores six vectorscope readings for later recall.

For these parameters, as well as the waveform and vectorscope, it is possible to select the line to measure and whether it should be an even or odd field pair. There is also a VITC time code display with hours, minutes and seconds, but not frames.

The VITC can be selected from lines nine through 25. There are graticule marks that indicate proper horizontal blanking settings such as sync width/position, burst width/position and horizontal limits of the active picture.

CHOICE OF INPUTS

The Magni WVM-710 works with NTSC or PAL, and users can select two different inputs in loop-through mode (there are one component or RGB 15.75 kHz, two composite and one Y/C 3.58). Computer graphic artists or character generator operators would find the WVM-710 a handy tool to keep within legal limits because of the automatic warnings. Computer-generated video has a much greater chance of exceeding legal chroma video limits because 25 percent of the RGB pallet choices are not legal.

The optional "Logbook" software allows unattended signal monitoring and logging at specified polling intervals as often as one minute apart. Time stamp and storage of the waveform, vector, auto-measurement screens and other parameters are also captured.

Also, the Magni WVM-710 can store six scope readings for later recall. These can be sent directly to a printer without a computer because several standard printer drivers are built in. The logging or hard copies could be a real labor saver for broadcast stations that are required to keep regular records of video signal integrity.

It can also be a great diagnostic tool for an engineer to track down intermittent problems or compare to previous readings. Other applications for this automatic logging are overnight transmissions and quality checks on tape duplication using vertical interval test signals (VITS).

Among the many valuable menu settings is one that changes the internal reference from Crystal Lock to VCR Lock for better jitter-free images when scoping an unstable source, such as a VCR without time base correction.

The Magni WVM-710 also has some nice features that I did not expect to find. There is a VITC time code readout, a stereo audio display that indicates levels and phasing, a luma signal-to-noise measurement usually only found on extremely expensive scopes and a safe action (5 percent off each border), safe title (10 percent off each border) outline generator.

This versatile Magni WVM-710 automated video signal monitoring system is a "must have" scope for many production houses, TV stations and engineers. Magni maintains a toll-free customer support line along with a free BBS for software and bulletin updates. I also found Magni's instructional documentation to be much better than average. ■

Editor's note: Doug Hembruff is a corporate and broadcast video producer at Impact Televideo in London, Ontario. He performs beta testing and product evaluations, in addition to his technical writing. Doug is currently doing field production in Israel.

The opinions expressed above are the author's alone. For further information, contact Magni in the U.S. (Telephone: +1-503-626-8400 ext. 634; FAX: +1-503-626-6225), or circle ***Reader Service 39.***

After our initial breakthrough
the AAVS S310
DIGITAL VIDEO ANALYSER

What's new ?

Visit our booth #19623 at NAB. Discover how AAVS has found new solutions for your digital video testing requirements.

ABC Television	USA	Eurosport	France	RTBF	Belgium
Accom Inc.	USA	France 2	France	Sandar Electronics	Norway
ADC Telecom.	USA	France Telecom	France	Schule für Rundfunktechnik	Ger.
Alcatel	USA	GTN	USA	Sende Zentrum (Pro 7)	Ger.
ASTRA	Belgium	Hessischer Rundfunk	Ger.	SMA Video Inc.	USA
ATS Acquisition Corp.	USA	Hewlett Packard	UK	S.F.P.	France
BRT	Belgium	INA	France	Süddeutscher Rundfunk	Ger.
BTS Darmstadt	Ger.	Institut für Rundfunk	Ger.	SVT	Sweden
CBS TV Network	USA	Modern Videofilm	USA	Télédiffusion de France	France
CLT	Belgium	NBC Broadcasting	USA	TF1	France
Complete Post	USA	NDR	Ger.	The DI Group	USA
Di-tech	USA	Norweigen Telecom	Norway	Thomson	France
Dynatech/Quanta Corp.	USA	Pacific Bell	USA	Westdeutscher Rundfunk	Ger.
EBU Geneva	Switz.	Paramount Studios	USA	Western Images	USA
Editel	USA	Post Perfect	USA	ZDF	Ger.
Euronews	France	Public Broad. Sys.	USA		
European Parliament	Belgium	Rundfunk Betriebstechnik	Ger.		

All these companies have opted for the AAVS digital test solutions.
There is a reason. Visit our booth and find out !

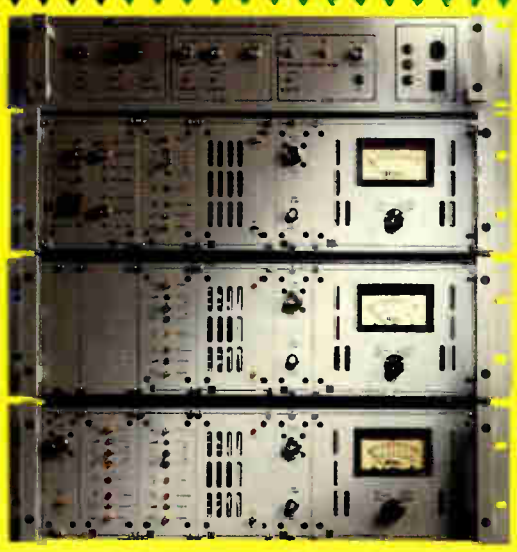
AAVS
The Name To Know In Digital Testing
222-226, rue de Rosny - 93100 Montreuil - France
Tel.: 33 (1) 48 57 21 64 Fax: 33 (1) 48 57 33 58

Circle 122 On Reader Service Card

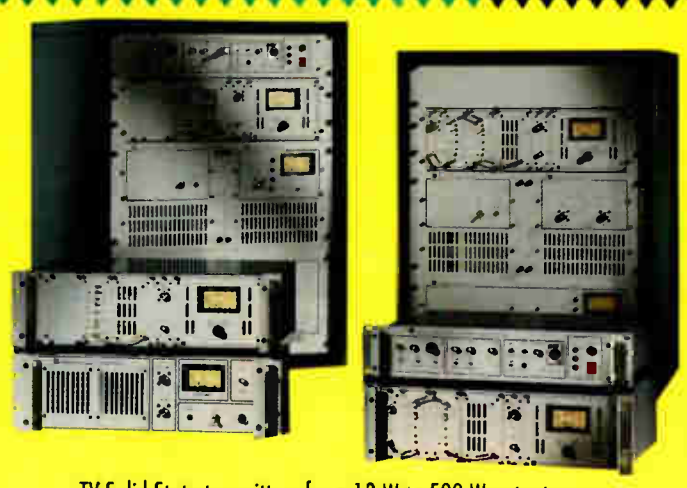
Facing the Future
Imagine a specialist in electronics, the type always surrounded by instruments and electrical circuits. Invite him to visit the C.R.S., a company that produces television transmitters...
...I was immediately struck by the incessant noise of the machinery. I started to think how strange it was: "Today electronics doesn't make any noise". Inside: lathers, milling machines and five NC machines. These robots mould bronze as if it were clay. Complicated mechanical pieces rapidly take shape under the implacable graver of the "electric" artist. I get it! The C.R.S. is a company of mechanics! Mistake! Only a few steps and I discover a highly complicated board for measurements. Video generators, network and spectrum analysers and everything anyone hooked on measurements would dream of. I'm confused now, mechanics or electronics? An elderly engineer smiles and calmly explains to me how the C.R.S. has managed to happily combine mechanical precision with electronics. For example they produce a solid state amplifier costing the same as a tube amplifier but simpler and more reliable. Its international patent places the C.R.S. at the forefront of this field. Although some time has passed it is always a pleasure to return to this "unusual" company where we talk about the past and the future. Times which do not coincide with those of other producers. The future of most companies is now in fact on the workbenches of the C.R.S., whereas the distant future "of the others" is already in the desk drawers of their designers.
CRS COAXIAL RADIO SYSTEMS
Circle 15 On Reader Service Card
COMUNICAZIONI VISIVE

We are a big family.

In the TV Broadcasting World.

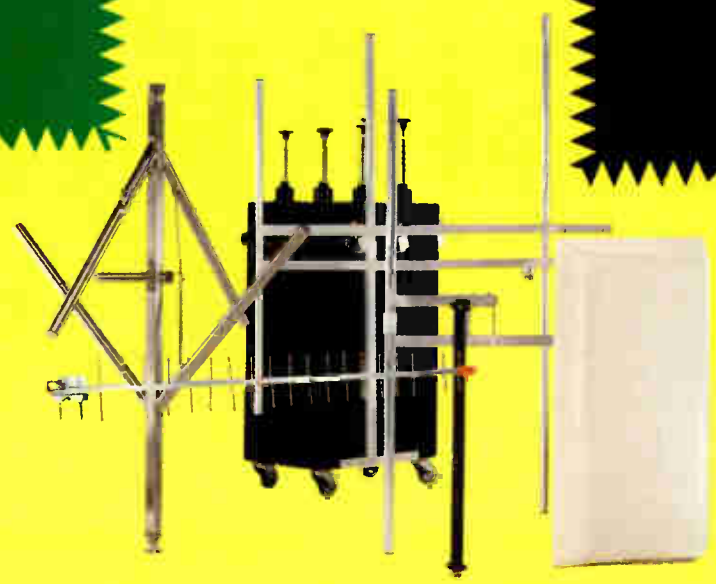


Multi Standard Audio/video TV Modulators, TV Converters and Transposers for I - III - IV/V Band up to 5 W output power.



TV Solid State trasmitters from 10 W to 500 W output power for I - III - IV/V Band.

TV Cavity Trasmitters from 1.000 W to 10.000 W output power for III - IV/V Band.



FM Omnidirectional and Directive Trasmitting Antennas, TV Panel Antennas, Splitters, FM & TV Combiners, Radio Link Antennas, Accessories.

Become one of the DB Elettronica family, a great international manufacturer of radio and television equipment present in more than 80 countries on all the continents with innovative procucts, fully integrated broadcast system and 24 hours worldwide spare parts & service

Circle 72 On Reader Service Card

DB

Elettronica Telecomunicazioni

Today DB Elettronica produces: FM and TV transmitter up to 20 kW, converters and transposers for any TV band, antennas parts and antenna systems. TV radio links.
The most strict international normatives are fully complied with.

DB Elettronica Telecomunicazioni S.p.A. - Via Lisbona, 38 - Zona Industriale Sud - I 35127 Camin - Padova - Italy - Tel. + 39 - 49 - 8700588 (3 line) - Fax + 39 - 49 - 8700747 - Telex 431683 DBE I

IMAGINE ASSOCIATI - PHILADELPHIA

USER REPORT

Tek Preserves Quality VTRs

by Attila Bitto
Sony Electronics Inc.

TEANECK, New Jersey

As service professionals for the Sony Customer Service and Engineering Center, we want the machines we refurbish to fully meet our specifications when they leave the facility.

For Sony's studio-quality Betacam SP VTRs, this means testing several dozen video and audio parameters. In fact, because these tape decks provide both metal and oxide operation, each parameter must be tested twice — once for each primary operating mode.

AUTOMATED TESTS

Here at the center, we have automated the parameter test process. Using a Tektronix VM700A Video Measurement Set, driven by a Windows-based software package developed here, we have reduced the time needed for full video and audio parameter verification from hours to minutes. Best of all, because the process is fully automated, we can count on consistent, reliable results every time.

Located just outside New York City, the Teaneck facility is a high-volume regional service center that supports many of the nation's leading broadcast and production studios. We are the second largest of Sony's five U.S. service centers, with 12,000 units coming through each year to be tested, repaired or rebuilt.

The VM700A was the logical choice to help us increase the consistency of our VTR testing. Built to monitor and measure video signals in real time, it is a full-featured system combining the functions of a digital waveform monitor, digital vectorscope, noise measurement set and data logger. Both numeric and graphic displays are available for a host of standard measurements such as DGDP, luminance to chrominance delay, K-Factor and so on.

Options extend the instrument's versatility and enable it to measure audio, component analog, teletext and even cameras. At Sony, we use the NTSC, component and audio options. In addition to final testing, we use the VM700A for spot diagnostics on incoming tape decks.

The VM700A is designed to interface readily to an external controller, and we have taken full advantage of this capability. Our software runs under Windows on an Intel i486-based Compaq computer that connects to the VM700A, the device under test, a Tektronix ASG100 Audio Signal Generator, a routing switcher, a signal generator and a printer. Under software control, the VTR rolls to a specific segment of tape where the VM700A makes its measurement(s) and logs the results and prints a report.

The Tektronix VM700A combines waveform and vectorscope functions with a noise measurement set and data logger.

UTILIZING PROGRAMMABILITY

We also make extensive use of the VM700A's programmability to minimize test cycle time and increase our assurance of quality. For example, the VM700A's Function mode allows us to measure non-FCC signals — a feature that lets us check the custom signals used on our factory alignment tapes.

By allowing us to specify where a parameter is measured along a line of video, we are able to perform "standard" tests on virtually any signal containing the correct elements. Another example of the VM700A's programmability is the ability to specify the number of samples taken, which allows us to optimize the speed and accuracy of the averaged results.

Building on this flexibility, we have developed multiplexed video signals that contain color bars, multiburst, linearity and other parameters in one signal. We can record a minute or two of that signal and configure the VM700A to make the proper measurements on the appropriate signals where they appear on the line.

Then we multiplex the signal so that the pattern repeats several times, and use the VM700A's Block mode, which averages the samples throughout a field of video. Measuring this way provides an additional check on the RF signal envelope.

Our automated test system has been so successful that we are expanding its use. Beginning this year, all five U.S. service centers will use VM700A measurement sets with our Windows-based control application. ■

Editor's note: Attila Bitto has been involved with Sony customer service for 18 years.

The opinions expressed above are the author's alone. For further information, contact Tektronix in the U.S. (Telephone: +1-503-627-4697; FAX: +1-503-627-5801), or circle ***Reader Service 95****.*

BUYERS BRIEFS

Leader Instruments Corporation announces the release of Model 953, an advanced FM, VHF, UHF, CATV level meter called the CATV Spectrum Meter. Model 953 features both analog bargraph and spectrum displays with digital readouts on an LCD screen with frequency coverage from five to 1030 MHz. It contains all U.S. broadcast and cable channel formats, and can also be programmed for customized channel schemes for each local cable operator.

In addition, auto search and auto ranging sets up optimum measuring conditions for any situation. Up to 50 setup programs may be easily tailored and stored to meet the needs of individual systems.

For more information, circle **Reader Service 59**.

Link introduces a new product to its 700 series. The Link IEC-787 is a one-input video inserter, which recovers signals in the vertical blanking interval. This includes Closed Caption data (Line 21), the Ghost Cancellation Reference signal (Line 19), and others.

Using front panel switches, any of the Lines 10 through 21 may be selected for insertion by the IEC-787. Odd and even fields are handled separately. Also, the keyer employs the same phase-linear circuit used by the LINK Closed Caption equipment to provide clean insertion. In addition, differential input configuration is standard on both video inputs, but single-ended configuration can be selected by an internal jumper. A switchable Monitor output allows the user to view either of the video inputs ahead of the keyer.

For more information, circle **Reader Service 58**.

Leitch Incorporated has introduced a simple and inexpensive solution to add EDH into multiple transmission paths. The technique is to incorporate on board EDH circuitry in a serial distribution amplifier.

The EDH-6800 distribution amplifier may be used anywhere where a standard serial DA can be used. It has the same equalization and reclocking features, plus the ability to insert an EDH signal into all eight outputs.

Use of the EDH-6800 DA's in critical path lengths throughout the digital television studio complex can alert any bit error problems developing within the system.

For more information circle **Reader Service 49**.

The Video Window by **ComSonics Inc.** is a digital video multimeter designed to meet today's NTSC and PAL formats. This hand-held meter can carry out 40 separate test functions, including the three major ones used worldwide — Differential Gain, Differential Phase, and Chrominance/Luminance Delay.

All test results can be viewed on Video Window's alpha-numeric backlit screen. Also available is an optional printer/PC interface which can provide additional in-depth study and analysis at the office, lab, or headend.

Some of the more commonly utilized measurements possible with Video Window are: Sync Analysis, Y R B Components, Color Match, Vectorscope (Phase and Gain-Chroma/Luma, Noise Measurement), Run Status, Waveform Monitoring, and Camera Shading.

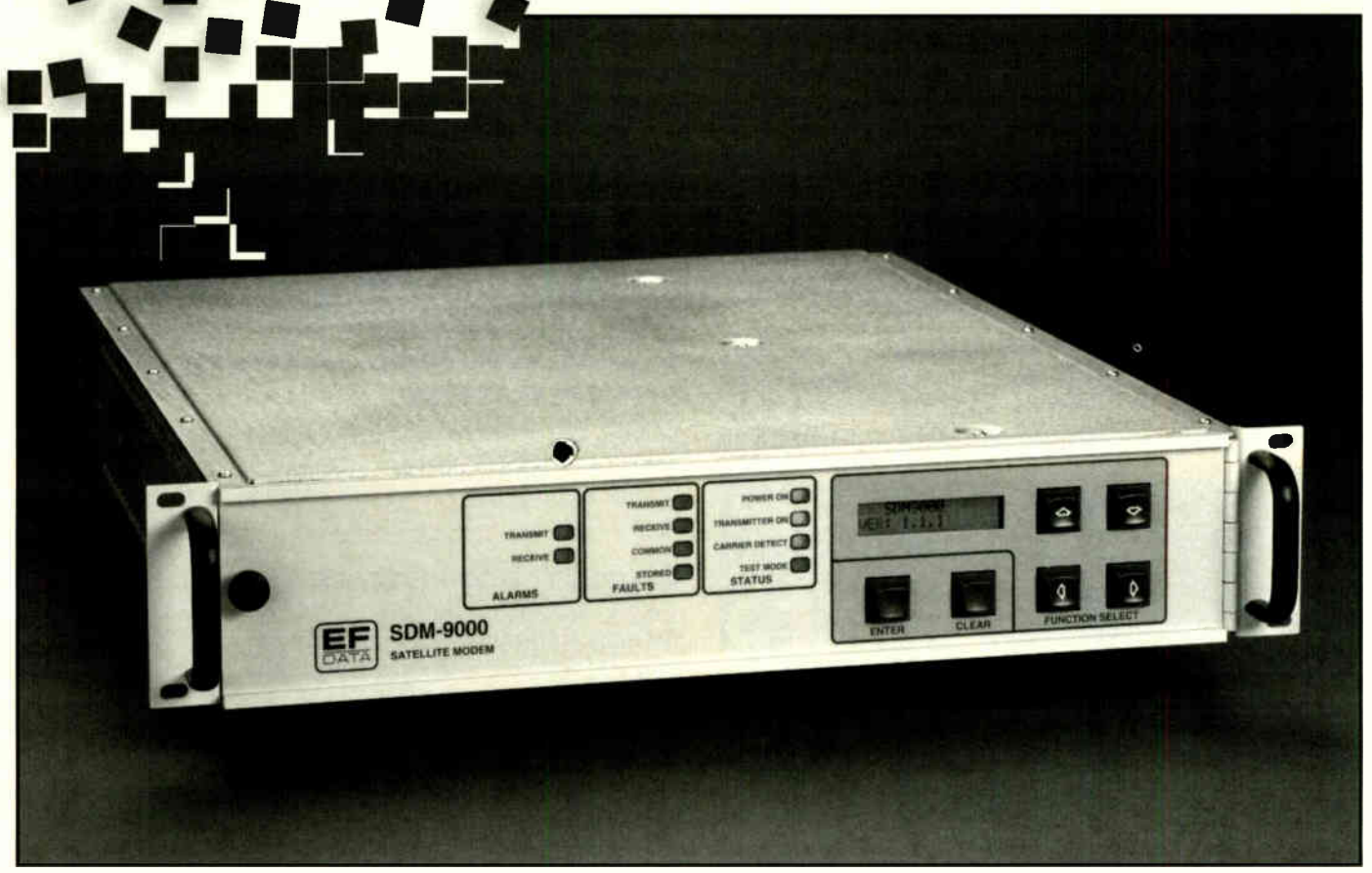
For more information circle **Reader Service 81**.

GPS MASTER CLOCK/TIME CODE GENERATOR
-Worldwide Time-
Locked to the Atomic Clock in the Global Positioning Satellite System, you can have time, date and time code within nanoseconds of UTC, any where in the world!!
ES-185 $2495.00

STANDARD FEATURES INCLUDE:
• SMPTE/EBU, ESE, IRIG-B & ASCII Time Code Outputs
• 1PPS Output • 6 Satellite Tracking • Battery Back-up
• GPS Locked Indicator • Automatic Daylight Savings Time Correction
• Time Zone Offset • Antenna • AND MORE!!
OPTIONAL FEATURES INCLUDE:
• Parallel BCD Output • 1 KPPS • 10 MHz Output • 220 VAC • 12 VDC
• Video Inserter • Video Sync-Generator
3 YEAR WARRANTY
ESE 142 SIERRA STREET, EL SEGUNDO, CA 90245
(310) 322-2136 FAX: (310) 322-8127
See Us At NAB Booth 13606 Circle 82 On Reader Service Card

Digital Television by Satellite ?

The Answer is...



...EFData's SDM-9000

- **High Speed Data Rates,** 8 MBPS to 56 MBPS
- **Multiple Modulation,** QPSK, 8PSK, 16QAM
- **Applications, DIGITAL** TV, IDR, Fiber Restoral
- **Bandwidth Efficiency,** Through Higher Order Modulation
- **Fiber Performance via Satellite,** With optional Reed-Solomon

CALIFORNIA MICROWAVE

EFData is a California Microwave Subsidiary

Contact EFData's European Representative
L-TEQ Limited
0276 686 566
+44 276 686 566
FAX 0276 686 550

EF DATA

EFData Corporation
2105 West 5th Place
Tempe, Arizona 85281 U.S.A.
Telephone (602) 968-0447
Fax (602) 921-9012

Circle 113 On Reader Service Card

USER REPORT

Philips Is the Star at Pisces

by Robert B. Peirce
Vice President
Pisces Productions

BOSTON, Massachusetts

Pisces Productions is an all-digital, full service post production house in the city of Boston. Since its construction in 1994, Pisces has taken full advantage of all component digital technology.

In the Pisces facility, computer, video and audio equipment have been integrated so that pictures and sounds can be networked between edit suites and computer rooms at will. Graphics accomplished on SGI Indigos, Macs and PCs can be shared, and video can immediately be passed to computers for printing or other purposes. In fact, some clients actually leave with their edits on computer disks rather than videotape.

DIGITALLY SOPHISTICATED

Despite this level of digital sophistication, analog video still plays an important role, while quality control demands accurate monitoring. For this purpose, we chose the Philips TV Test Model PM5662 waveform/vectorscope for our more critical applications. It was chosen mainly because it has two major monitoring functions in one instrument, and it is "operator friendly" for simple switching between waveform and vectorscope operation. It also includes direct SCH monitoring.

The most active use of one of the Model PM5662s is at the graphics camera position. A steady flow of paper, film, slides and other elements is placed beneath its lens, and CCU manipulation is constantly needed to get optimum pictures.

The monitor is used with external sync (house black burst) so that genlock and timing can be checked. The "A" side of the scope is fed by the camera control unit NTSC out, while the "B" side is patchable and any source can be routed to it. This is often used to feed back a composed and keyed picture to help the operator place art under the lens.

At the upper right of the waveform monitor control panel is the rotary switch, which allows easy switching between the two signals. Meanwhile, the video output feeds the picture monitor. At the top of the panel, two LED-illuminated buttons give the choice of waveform or vector operation. Beneath these buttons are selections for various filters that can be applied. There is no magic — the filters are the same as those found on most systems, but their employment is simple.

When monitoring a waveform in the flat position, the entire waveform with chroma is displayed. However, when the LUM button is pressed, the waveform is split into a right half with full bandwidth and a left half with luminance only. Luminance levels can be set easily while still keeping an eye on maximum chroma. A separate filter is on its own selector button to display chroma only. This is helpful when diagnosing differential gain errors.

When using the vectorscope mode, the selectors allow either standard vectors or a special differential phase mode. A useful feature is the settings for the waveform and vector modes, which are held separately and make shifting back and forth between them easy. Plus, setups are kept as you want them.

The horizontal time base is always calibrated, so when blanking measurements must be made (a frequent occurrence here), the "X-MAG" button gives an immediate display, and tic marks along the baseline are accurate to one microsecond.

SCH PHASE CAPABILITIES

The SCH Phase is indicated by a dot on the outer circle when using the vector mode. When the burst is aligned on the horizontal line left of the center, the SCH dot should appear on the same line to the extreme left. A calibrated scale indicates the error in degrees from standard.

In an all-component digital plant, SCH would not seem to be important. In fact, some of the digital equipment is remarkably sensitive to SCH phase, so it is always a good idea to keep it correct. This scope makes it simple to set and provides a constant visual reminder of the current condition. For those not needing SCH information, a version of the monitor is available without this capability.

When the time base knob is rotated toward the left, a one-line display is selected from one or the other field, or both fields together. The actual line selected is chosen digitally with three numeric switches, which specify a line from 001 to, in our case, 525. This makes it easy to look at a particular horizontal portion of a picture, thus avoiding trying to spin a knob to find the location. For instance, it is an easy way to see if video actually starts on line 20 or 21, just by dialing the number.

The display is bright and sharp, in part aided by a front panel focus knob. There is sufficient brightness whether using a full display or a one-line setup. Scale illumination is a distinctive red, making it easy to read.

One thing I have noticed, however, is that ambient room illumination tends to reflect in the display, somewhat obscuring critical information. Sometimes a shade is required when making very careful measurements.

A feature for our future is a front panel-mounted probe jack. It is designed for a x10 probe and will be very useful in detailed troubleshooting when equipment fails. On the other hand, I am concerned that because it is limited to 10 volts DC plus signal, some care may be needed when testing failed circuits. A faulty component could easily put 12 V where you least expect it.

Incidentally, the same caution exists for the regular A and B inputs, because they are limited to a total level of an 8 volt signal plus DC.

For all of the above reasons, we are thoroughly pleased with the Philips waveform/vector monitor. It is an easy-to-use piece of test equipment that makes you feel equally at home, whether you are an beginning operator or a skilled engineer. This is an important condition if true quality control is to be enforced. ■

Editor's note: Robert Peirce has more than 20 years' experience in both commercial and public broadcasting, as well as in cable television, studio production and post production. Currently, he is a manager of the Boston Chapter of the SMPTE.

The opinions expressed above are the author's alone. For further information, contact Philips TV Test Equipment in Europe (Telephone: +45-32885-911; FAX: +45-434323-90), or circle ***Reader Service 135.***

BUYERS BRIEF

The VM771 Video Master by **FM Systems Inc.** is a baseband video processor that stabilizes video levels, clamps out low frequency interference, and automatically corrects Luminance-to Chrominance Inequality.

The VM771 input level operating range is 0.5 to 2.0 Volts peak-to-peak. Within this input range the VM771 will control sync level, white level, output video level, luminance-to-chrominance and back porch clamping at the output.

In addition, this Video Master insures constant standard video signals even though video from a multitude of variable level sources are used. This helps to insure correct CATV Scrambler operation and video recording levels.

For more information circle **Reader Service 120.**

The First Two Names in Digital Audio for Video...

Circle 36 On Reader Service Card

USER REPORT

Condor Flies High with H-P

Quality Advisor Helps Post Facility Correct Illegal Colors Without Clipping

by Ab Weber
Director of Engineering
Condor Broadcast

AMSTERDAM

Condor Broadcast is a high-end facilities house that is primarily engaged in post-production of television commercials. We recently purchased two Hewlett-Packard Quality Advisors.

The Hewlett-Packard Quality Advisor

The reason we looked into the HP Quality Advisor is because of the problems we were having with illegal colors. Traditional methods of monitoring with a waveform monitor were not being used carefully by our editors and interfered with their need to concentrate on the program.

LEGAL TROUBLE

Illegal colors were causing two problems: the subcarrier was either going below -200 mV, which might disturb the synchronization of the picture, or the subcarrier was going above 800 mV causing it to go into clip.

This clipping can cause a color change which is unacceptable for commercials. If the color of a product changes between post-production and the final broadcast, there will almost certainly be a claim for a free rebroadcast of the commercial. One such claim can be more expensive than the cost of a Quality Advisor, and it certainly would not help our reputation as a high end post production facility.

We decided to buy two HP Quality Advisors, one for each of our Henry suites. The units are connected between the Henry output and the monitor/recorder

The Quality Advisor can operate in two modes. It can display the illegal colors as an overlay on the picture using a separate monitor, or it can automatically correct the illegal colors by reducing saturation, not clipping. We chose to use the automatic correction so that the editors can concentrate on the creative, not the technical.

In this way, the producer is simply limited to making only legal colors. Any illegal colors that would be produced by the Henry are now automatically corrected before recording. It is a much safer and more convenient way of keeping colors legal than constantly checking a waveform monitor/vectorscope through a digital/analog converter and encoder. The editors concentrate only on the program and do not waste time with the technical aspects of the video. Also, there are no more discussions with producers about why colors cannot be as saturated as they can be on the Henry.

GOOD ADVICE

The Quality Advisor also has a number of other features that make it an attractive addition to our facility. It gives us the ability to see 4:2:2 digital video in 10-bit or 8-bit YCrCb format, and pixel values may also be displayed in RGB, composite magnitude or phase formats.

It also allows us to retain contrast in the video by using soft and hard color limits with an adjustable gain slope, and it has a preset function to customize settings at the touch of a button. There is also a nine-pin mouse port for use with a component monitor.

In all, we have found the Quality Advisor to be a valuable piece of equipment at our facility. ■

Editor's note: Ab Weber has worked at Condor for the past five years, having formerly worked at Ampex and RTL Holland. He is a member of the Dutch Guild for TV Engineers.

The opinions expressed above are the author's alone. For further information on the Quality Advisor, contact Hewlett-Packard in the U.S. (Telephone: +1-408-553-3891; FAX: +1-408-553-3905), or circle ***Reader Service 45.***

Circle 69 On Reader Service Card

BUYERS BRIEFS

Tally Display Corp.'s interactive display system can be interfaced with virtually any routing switcher to provide automatic and instantaneous source identification and tally status. The system provides source error detection and status on a system-wide basis.

The system offers nine different display modes, as well as 18, 13 and dual nine-character, one-piece display modules for different system applications. Each display module contains an advanced microprocessor and a digital clock that can read time code.

All source identification, status indication and messages are user programmable and automatically updated.

For more information circle **Reader Service 68.**

Tentel introduces the all new TSH-B8 to its family of test instruments. The TSH-B8 is a multifunction SP reference plane gauge, which is not available on any factory gauges. It operates with the large SP machines, and can be used to measure the heights of the small cassette mounting posts. Also, it can be used to measure the heights and perpendicularity of the reel tables relative to the cassette reference plane.

The special indicator included with the TSH-B8, is calibrated directly in tenths of millimeters. The measurements performed with this new gauge prevent tape oxide shedding, which causes video drop outs and other problems.

For more information, circle **Reader Service 66.**

Wohler's Multiple Source Metering System is used for monitoring and testing the quality of broadcast audio signals in TV facilities. Available in one and two rack units, the system features from one to 20 audio sources that can be monitored in a one 19" rack space.

In addition, the system displays from one to 10 AES/EBU stereo channels. Also, eight user-selectable display modes from standard PPM and VU to PPM over VU, and six more useful modes are provided. Other features include an expanded scale mode for precise level setting and a range of 90dB.

For further information, circle **Reader Service 34.**

The **Videotek** VTM-100 is a single-rack unit, menu-driven, rasterizing waveform monitor/vectorscope featuring stereo audio level indication.

All functions are selected from a drop-down menu system, accessible via the unit's joystick, or by mouse or remote control.

Limits can be set to user requirements, and portions of waveforms that exceed levels are displayed in a different color.

For further information, circle **Reader Service 65.**

USER REPORT

Dorrough Keeps WFRV in Form

by Dan Ullmer
Chief Engineer
WFRV-TV

GREEN BAY, Wisconsin

For years I have been watching for a cost-effective and easy-to-use alternative to the standard video waveform monitor. At WFRV, many of our operators do not understand how to read the video waveform monitor well. And others are too busy keeping up with everything else to interpret a standard waveform display as often as they should.

In addition, waveform monitors are expensive. I have tried two video display-type waveform monitors in which the display is viewed on a video monitor. These have the advantage of being less expensive, but are just as difficult to interpret. Also, seeing is very difficult when viewing the white flag in the VITS signal for peak white.

THE SOLUTION

I have recently acquired the Dorrough Electronics composite video luminance meter model VM-40. Fortunately, this product offers a unique solution to the problem. Instead of a video display, it uses 40 bright LEDs to display the information in a clear and interpretive manner. Therefore, it should not take more than five minutes to train any operator.

It costs only US$750, can be read even at a 20-foot distance, and has no front knobs or controls needing adjustment. A built-in alarm feature with contact closures can be set up to alert the operator or engineer if critical video setups are violated, plus the unit is small and can mount easily above a video monitor.

Another great feature is the capability of setting up the unit to display the white flag in the VITS (vertical interval timing signal). The white flag is a test signal representing the intended 100 percent white level. When the VM-40 video meter is set up to include the VITS signal with an internal dip switch setting, the white flag will light a steady bright LED, which clearly shows the intended video level. Setting up the correct level is very easy using this flag signal.

This feature eliminates the mistake some operators make when they incorrectly increase the video level during those dark network soap operas. This procedure of using the white flag takes all the guess-work out. You may not like the levels they are sending you, but at least you know it is what they intended.

A good idea is to provide the graphic artist with these meters to keep their levels on track. Camera iris levels, edit benches, ENG vans, transmitter video alarm and STL/TSL monitoring are just a few other suggestions.

HOW IT WORKS

The unit works by separating the video into its component parts and sampling it for various level information. This information is analyzed by a microcomputer, interpreted and fed to a display consisting of a color-coded 40-segment LED bar graph.

Sync level, average video level and peak level are all clearly visible. And two separate LEDs indicate if there is proper sync and if setup level is between 4 IRE and 7.5 IRE. The display is very simple and uncluttered, presenting the desired information in a very straight-forward manner.

The Dorrough VM-40 video meter can be just the right tool for many video level monitoring applications where price, high visibility and easy interpretation are important. The unit is not designed to replace waveform monitors in technical positions, but to augment them or provide signal monitoring to less expert operators.

One feature that it needs is a chroma level meter, but I understand that the factory is working on a design. If it is laid out as well as the VM-40 video meter, it will be an effective product and a great complement to the unit. ■

Editor's note: Dan Ullmer started his career as an audio/visual technician at Northeast Wisconsin Technical College in 1976. In 1981, he entered television broadcasting at WFRV as an operations engineer and worked his way up as an ENG engineer, studio technical supervisor, manager of engineering, and finally chief engineer.

The opinions expressed above are the author's alone. For further information, contact Dorrough Electronics in the U.S. (Telephone: +1-818-998-2824; FAX: +1-818-998-1507), or circle ***Reader Service 21.***

USER REPORT

AAVS Is Sound Support At France 3 Normandie

by Norbert Chalaux
Technical Manager
France 3 Normandie

ROUEN, France

France 3 Normandie is a French regional channel that features broadcasts from our national network. We operate two stations; one in Rouen and another in Caen.

We offer daily information broadcasts from 12:00 to 12:45 p.m., regional news from 7:07 to 7:31 p.m. and full image reporting from 7:55 to 7:58 p.m.

We are equipped with a videocopy system comprised of an MA12 audio monitor plus associated equipment from Audio Visuel Systèmes (AVS). In fact, AVS has supplied almost all the equipment for our videocopy operations, and the entire package is installed in a single 19-inch rack.

The MA12 is coupled to an AVS 8 audio input selector type S194 controlled by an AVS video selector type S193C.

The reason I selected AVS was the fact that the company provided good sound quality and could integrate its systems in a very small space.

From the very start, AVS designed its system to fit in a 19-inch rack, and that includes a 20-segment bargraph and a volume selector on the front panel. The bargraph has three operating modes: VU-meter, peak meter or high resolution VU-meter, all selectable from the front panel.

My selection was also influenced by its wooden package, which enables high quality acoustics. AVS also protects the sound quality coming from the loudspeakers through the use of magnetic shielding, a limiter and the unit's 10W amplifier.

Included in the MA12 features are stereo signal-phase monitoring and either front panel control or remote control, including the ability to lower the volume or cut it off completely.

In all, we have found AVS to provide a superior product backed by a solid service and support system. ■

Editor's Note: Norbert Chalaux began working at France 3 Normandie in 1975 following professional training at the Institut National de l'Audiovisuel, the French TV and broadcast organization. He began his career as a video technician and in a short time was promoted to technical manager responsible for maintenance.

For further information on the MA12, contact AAVS in France (Telephone: +33-4857-2164; FAX: +33-4857-3358), or circle ***Reader Service 83.***

Graham-Patten

D/ESAM®

Our Emmy® Award winning D/ESAM® mixers and control protocols set industry standards.

To learn more, contact Graham-Patten and discover for yourself why discriminating professionals throughout the world choose Graham-Patten D/ESAM® Mixers.

Graham-Patten Systems... committed to your future.

GPS

GRAHAM-PATTEN SYSTEMS, INC.
P.O. Box 1960, Grass Valley, CA 95945 USA
Telephone: +1 (916) 273-8412
Toll free in the USA: (800) 422-6662
Facsimile: +1 (916) 273-7458

Graham-Patten products are sold and serviced through a worldwide network of distributors and representatives.

D/ESAM® is a registered trademark of Graham-Patten Systems, Inc.
EMMY® is a registered trademark of the Academy of Television Arts and Sciences.
© 1995 Graham-Patten Systems, Inc.

See the entire array of Graham-Patten products at NAB Booth #11454

Circle 36 On Reader Service Card

Quality *is* Affordable

SVHS 625

PROFESSIONAL S

The BR-S800E/BR-S500E Editing VCRs and RM-G800U Edit Controller offer high performance, low cost S-VHS editing; joining the world-standard JVC professional camcorder, monitor and 22 Series S-VHS line-up.

This editing system is easy to understand, fast to operate and dependable. In concert with extremely creative desktop video systems, the 800 Series is the cost-effective professional option. The system fits right into the demands of traditional video editing with industry standard interfaces and features.

Edit your own program. CTL time code, *recorded after shooting*, makes inserting shots from any original tape frame-accurate without wasting a master audio track. Dial up edit points by exact frame number or set while viewing. Visible search is a super-fast 32x thanks to heavy-duty tapes drives inspired by the 22 Series. Edit on Audio tracks 1 and 2 together or separately. Audio tracks 3 and 4 are CD quality Hi-fi tracks.

The edit controller can trigger a second playback vcr and desktop switcher for A/B effect transitions between two source tapes. You can integrate with the top-range 22 Series via plug-in expander cards for RS-422 control, parallel control, digital noise reduction, and VITC/LTC time code, or even with an entry-level vcr like the BR-S368E.

Build your own application. Tailor-make your own business video application by plugging in your computer with the RS-232C card.

RM-G800U

GY-X2E

BM-1400PN

JVC professional products are not only well-accepted —they set new standards for performance.

For distributors in countries not listed below, please contact:

VICTOR COMPANY OF JAPAN, LTD. (JVC),
International Professional Products Marketing Division 2969-2 Ishikawa-cho, Hachioji-shi, Tokyo 192 Fax: (country code 81)-426-60-7569

JVC PROFESSIONAL PRODUCTS (U.K.) LTD. Ullswater House, Kendal Avenue, London W3 0XA, England Tel: 081-896-6000
JVC PROFESSIONAL PRODUCTS GMBH Grüner Weg 10, D-61169 Friedberg/Hessen, Germany Tel: 0-60-31/6-05-0
JVC PROFESSIONAL PRODUCTS ITALIA S.p.A. Via Mario Pannunzio 4, 20156 Milano, Italy Tel: 02-33402704
JVC VIDEO FRANCE S.A. 102, Boulevard Héloïse, 95104 Argenteuil, CEDEX, France Tel: (01)39-96-33-33
JVC SVENSKA AB Veddestavägen 15 S-175 62 Järfälla-Stockholm, Sweden Tel: 46-8-795-04-00
JVC DANMARK A/S Helgeshoj Allé 30 DK-2630 Tåstrup, Denmark Tel: 42-998811
JVC NORGE A/S Postboks 1202, Postterminalen 3103, Tonsberg, Norway Tel: 0333-65200
JVC BELGIUM S.A./N.V. Rue de la Petite Ile 3, Klein-Eilandstraat, Bruxelles 1070 Brussel, Belgium Tel: 02-529-42-11
JVC ESPAÑA S.A. Avda Graells 35, 08190 Sant Cugat del Valles, Barcelona, Spain Tel: 03-6749061
JVC PROFESSIONAL PRODUCTS COMPANY 41 Slater Drive, Elmwood Park, New Jersey 07407, U.S.A. Tel: 201-794-3900
JVC CANADA INC. 21 Finchdene Square, Scarborough, Ontario M1X1A7, Canada Tel: 416-293-1311
JVC SHANGHAI SYSTEM DEVELOPMENT ENGINEERING CO., LTD. 640 Lu Jia Bang Road, Shanghai, China Tel: 021-318-5975

Circle 44 On Reader Service Card

JVC
PROFESSIONAL

Apple Initiates Mac Licensing 47

DP/Max Makes Its Mark at ACME 47

Desktop Systems Keep Evolving 50

Animators Captured By Motion 54

COMPUTER VIDEO

BRIDGING THE GAP

MARCH 1995

PRODUCTION VALUES

Video Invades Presentation Market

Specialty Productions Are On the Rise As Manufacturers Compete for Attention

by Frank Kelly

Visit any convention center in a major city and you will likely find a trade show or industry-specific exhibition in progress. They always feature row after row of product exhibits from various companies hawking their wares. These companies go to great lengths (and expense) to make sure their products are noticed in the din and confusion. It is not unheard of to spend US$50,000 or more on booth design alone, not to mention the expense associated with renting display space from the promoters of the event. The glitz factor is substantial, at times employing professional exhibit "performers" and sophisticated video walls and computer multimedia displays.

All this effort and expense is put forth in the hope that bewildered attendees sporting name tags and clutching free samples will break away from the pack long enough to gather product brochures or other logo-embossed gizmos. Any tactic is fair game in this battle for attention.

It only takes a single bad showing to make a company keenly aware of how effectively video and computer technology can be used in this fiercely competitive arena. The stakes are high if you consider that trade show pre-orders are often the guide for further product development.

PRODUCTION SPECIALS

This exhibit frenzy has created an opportunity for video professionals who "specialize" in productions for use in trade shows. This new breed should be well versed in both computer and video technology.

Not too many years ago, trade show presentation was a field dominated by the slide show, and this concept has been extended recently to include computer displays that shuffle stills and play sound files. Today, slides are quickly being replaced by polished video productions displaying a combination of computer and video techniques specifically designed to grab people's attention.

I have coined the phrase "concept video" to refer to this category of production. It is more descriptive than calling it a "loop tape" — a term widely used to describe how a video is replayed continuously. Concept videos differ greatly from the traditional loop in that they offer the opportunity to break away from the methods usually associated with standard linear production formats.

Traditionally, scripting calls for the creation of a beginning, middle and end to tell the story of a product. However, there is a fundamental flaw in this methodology when producing a video for a trade show: people rarely watch the production from beginning to end. Writing and producing the concept video is an entirely different process that calls for scripting all salient points of interest into a series of successive "middles." This allows for presentation in abbreviated form of factual material that can be quickly absorbed.

With skillful writing, you can repackage the primary points of interest in a number of ways and use alternate visuals for their respective video elements. For this to be effective, rapid-fire edits and brief narratives are a must. Anyone paying close attention to the entire production will see the similarities between each segment.

Also, other elements need to be inserted between these middles. I find that testimonials are quite useful and, when properly edited, they can have the effect of counterbalancing the "high tech" aspect of the production.

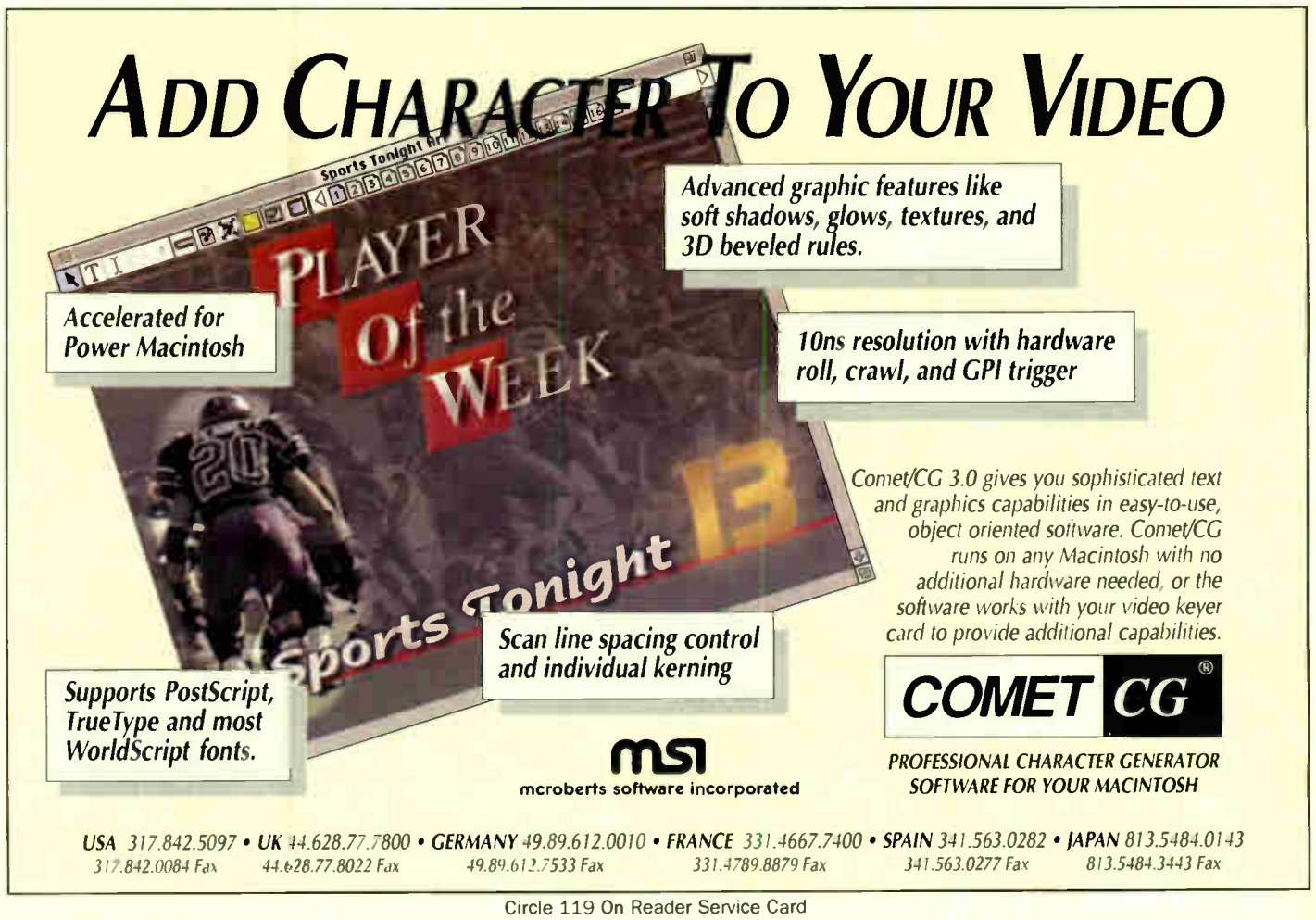
In many respects, this format is similar to the classic slide show. Usually, a script is written for a narration that, once recorded, is used as a guideline to insert corresponding visual elements. But unlike the slide show or its computer-generated counterparts, the concept video usually integrates computer and video technologies in new and innovative ways. Three-dimensional modeling and animation are used to convey ideas or products that do not yet exist in the real world or are too expensive or difficult to capture with conventional video acquisition.

MAKING MODELS

While this is certainly not a new production method, there are recent technological advances that make modeling and animation software easier to grasp and much more affordable than ever before.

Just about anyone can buy off-the-shelf software that will allow them to create 3-D animations of the client's logo. NewTek

(continued on page 46)



Circle 119 On Reader Service Card

CONTINUED FROM PAGE 45

Presentation Market Matures

(**Reader Service 57**) has recently released the multi-platform version of its LightWave 3D software. Another example is Crystal Graphics' TOPAS Professional version 5.1 (**Reader Service 29**), which includes matched perspective and interactive lighting for rotoscoping 3-D animated objects that appear to interact realistically with pre-produced video backgrounds.

Throw in the Personal Animation Recorder from Digital Processing Systems (**Reader Service 90**) and those animations can be played out to video directly from a hard disk. These and other options are making experimentation and innovation more likely.

Generally speaking, the use of animation is fast becoming a standard component for trade show videos. However, at times the only materials available will be still photos. I cannot stress the importance of creating some kind of movement with these still elements. This is where a good copy stand camera and access to either a motion control rig or DVE (Digital Video Effects device) can pay big dividends.

Slides that contain text or diagrams do not usually transfer well to video when shot from projected screens or captured with transfer devices that contain their own CCDs. I have found it is best to have prints made from the slides and shoot the prints from a copy stand.

To make the best use of still images with a copy stand, you should invest in the appropriate lens. I highly recommend Century Optics (**Reader Service 104**) and its diopter series for existing lenses. I have a camera with a Canon 15x1 lens that was designed for location work. I was able to dramatically increase its zoom range in close-ups with one of these attachments.

Several methods can be used to add movement to still images, such as using slow zooms and pans with the camera, or using a DVE to accomplish digitally many of the same effects that would normally require a motion control camera rig.

It is important to remember that these elements will usually be on-screen for only a few seconds and perhaps re-used in multiple segments. Several versions of each camera movement, with different pacing, should be captured to tape for later editing. Make an exact duplicate of this work reel for A/B-roll effects.

CRAZY WITH EFFECTS

In almost every other production format, I am firmly against the use of DVE moves unless absolutely necessary — they distract from the message being delivered. However, a trade show concept video is a dramatic departure from this philosophy. In fact, it is practically a license to go crazy with effects.

Visual impact is vitally important to attract attention from people passing by a trade show stand. After all, this is not "Masterpiece Theatre." Your imagery has to compete with a tremendous amount of visual stimulus. Big fonts, flashy effects and background music with a fast tempo and a "non-descript" beginning and end are the order of the day.

Not too many years ago, trade show presentation was a field dominated by the slide show...

The final step is to create the work dub for the show itself. Remember the concept of several middles? Here is where it really pays off.

Let's say that you have created three separate two-minute segments that are similar in content but different in execution. Take some other elements that complement the main concept (such as testimonials or multiple versions of animated logo graphics) and insert them in somewhat random order in between the three segments. Make at least three different groupings, and then edit this sequence so that there are no gaps between the individual segments. Then insert the looped music bed on one of your audio tracks. Your final tape that goes to the show itself should be a short length that will recycle in automatic playback units quickly. (A brief pause in the playback sequence every 15 minutes or so is acceptable.)

While budgets for these kinds of productions are always dictated by the amount of work involved, it is important to remember that the usual cost to produce such an effort should be tempered with the knowledge that it will probably require frequent updates. Bid your work based on that principle and you will find clients more than willing to plan ahead for future productions on a regular basis. ■

Frank Kelly is the owner and operator of Spot Ad Productions in San Jose, California, a production company for commercials and industrial projects.

The Agile Omni Global VU option gives you one touch access to all satellite formats.

More channels, more signals, more frequencies — life in the down link is becoming more complex every day.

What you need is something to simplify your life.

What you need is the Global VU Model CAM830 Control Access Monitor from Standard Communications.

Direct or remote control.
Used in conjunction with the Agile Omni receiver, the Global VU gives you simplified access to all satellite formats from easy front-panel controls or from a PC comfortably situated on your desk, miles away.

Directly or using the straightforward Windows -based software, the CAM830 lets you add or modify formats, then scan them by RF frequency and/or audio subcarrier. It gives you complete control over all three audio subcarrier demodulators, as well as international video features such as PAL, SECAM and NTSC. It gives you control of video and audio output levels with individual channel memory.

And we're just getting started.

Spectrum analysis.
Want to really see what's going on? The Global VU gives you a screen-filling display of the RF spectrum for each satellite on your remote PC. It also gives you a real-time look at the C/N ratio without any time-consuming precalibration.

And there's more. As a field retrofit or optional add-on, the CAM830 gives your Agile Omni more easy-to-use control than you may have ever thought possible. To get the full story fast, including complete specifications, fax Standard today at 800/722-2329 (California and International numbers, 310/532-0397) and we'll fax it right back to you.

Be a know-it-all. Get your hands on a Global VU.

The Right Technology for Right Now.

Standard Communications
SATELLITE & BROADBAND
PRODUCTS DIVISION

P.O. Box 92151
Los Angeles, CA 90009-2151
310/532-5300 ext. 280
Toll Free 800/745-2445
Fax: 800/722-2329 (Toll Free)
310/532-0397 (CA & Int'l Only)

Knows all. Tells all.

Circle 114 On Reader Service Card

Apple Initiates Mac Licensing

by Tony Reveaux

CUPERTINO, California

For many months this summer, rumors flew that Apple Computer was in financial trouble and might be bought out by AT&T or a Japanese firm or possibly even go out of business. Recent news is much more promising, however.

Instead of a platform-specific dead end, Apple is opting for a collaborative alliance with IBM and Motorola and is allowing the licensing of the Macintosh operating system (OS) to other manufacturers. This evolution will have widespread benefits for users on both sides of the Apple/IBM picket fence, especially in multimedia and digital video.

Apple's groundwork for this collaboration has been its RISC-based Mac OS. Also, IBM — reeling from the Intel threat — has warmed up considerably to the idea. Its goal is to forge a Common Hardware Platform (CHP) where "... users can have one computer and yet take advantage of tens of thousands of applications designed for different operating systems."

The high-performance Peripheral Component Interface (PCI) bus planned for next year will have a large impact on a joint IBM/Mac operating system, said Jim Gable, product line manager for Power Macintosh.

"In multimedia, you are doing so many things that require large bandwidth across I/O devices, and so we need digital video cards that can move data at vastly faster speeds than we can on NuBus today," he said. "(With the PCI) you will be able to do capture and printing to tape at a higher quality without such expensive cards."

In addition, a manufacturer of PCI expansion cards can easily configure it to run in Macintosh or PC mode, so there will no longer be such a great chasm between the two sides of the market.

Right now, Power Macintosh is about 25 percent of Apple's sales, and Gable expects that a year from now it will be at least 50 and perhaps even closer to 75 percent. The goal for 1994 was to establish the RISC PowerPC — to show its compatibility, demo plenty of native applications and create confidence that it could feel just like a Macintosh.

So far, 600,000 PowerPC units have been sold, making Apple the largest-selling vendor of RISC-based personal computers.

"In 1995, our big chore is to make PowerPC much more high-volume and move it to our lower price points and to PowerBooks," Gable said. "We are the first to take the RISC chip, which used to be in workstations, and move it to a PC but make it something that you can still recognize as easy to use. Mac OS has really laid the groundwork for open licensing where other people can sell Macintosh computers."

Apple, IBM and Motorola plan to collaborate with other vendors on porting their operating systems to the new CHP platform, which will include scalable designs for the PCI bus, a system boot that works independently of the operating systems, and industry-standard components and I/O systems for compatibility.

Initially the CHP platform will support Mac OS, OS/2 for the PowerPC, AIX, Microsoft Windows NT and Novell. It will do so with both a Mac system ROM and a PC ROM BIOS. ■

USER REPORT

DP/Max Makes Its Mark at ACME Photo

by Tim Davies
Editor/Designer
ACME Photo Video

SYDNEY, Australia

The DP/Max graphics workstation from Dynatech was the unsung hero of a recent 30-second Mitsubishi DIVA commercial that ACME Photo Video post-produced for the Japanese market.

ACME's client list includes virtually all of our region's top agencies, including Saatchi & Saatchi, McCann Erickson, Lintas, Young & Rubicam, with commissions from far flung offices, such as Tokyo, Singapore, Jakarta, Beijing, as well as the Australian capital cities.

ONE AND ONLY

For the DIVA project, it is my belief that the DP/Max is the only graphics workstation that could have achieved the desired effects at one time because of the multiple variety of software options it offers. In fact, I have found the DP/Max to be the most complete graphics, animation and effects tool I have experienced.

In my opinion, the DP/Max is a very under-rated device. We have yet to see a project come through our facility that the Max has not been able to handle. And now with the ability to fall back on Silicon Graphics Inc. as well, we are turning out some exciting stuff.

What made the DIVA commercial story board so interesting was that it depicted a temple with live-action futuristic people dressed in white gowns with stairs that extended higher and higher into infinity disappearing into clouds.

The live-action sequence was filmed with an ARRI SR16mm on the steps of Sydney Opera House with nine actors. Using locked-off reframing of the shot, they were multiplied into more than 40 people.

The set-up at ACME offers both on-line and off-line facilities in addition to Sony Betacam SP video and Arri 16mm film cameras. The off-line configuration includes three linear Betacam SP suites with Shotlister, as well as Avid and DVision non-linear suites.

In deciding how to handle post production for the DIVA spot, we chose the DP/Max to completely re-design the visual frame by rotoscoping the actors to execute the necessary compositing. We then had to drop out the Sydney skyline and replace it with perspex temple columns and matte in a new clouds background. The project was so complex that we logged nearly 80 hours in post production.

QUEST FOR PERFECTION

At ACME, we have something of an obsession with hi-tech equipment, and it has brought us a reputation for perfection. We would like to become world leaders in the highly specialized art of video-to-film transfers.

Utilizing Silicon Graphics hardware and image enhancement software designed in-house, we can take a television commercial finished on video and produce a 35mm film version for cinema release. The image quality product is as close to 35mm original as can be obtained from video. Tested against our competitors in the U.K. and U.S., our end results were found to be their equal.

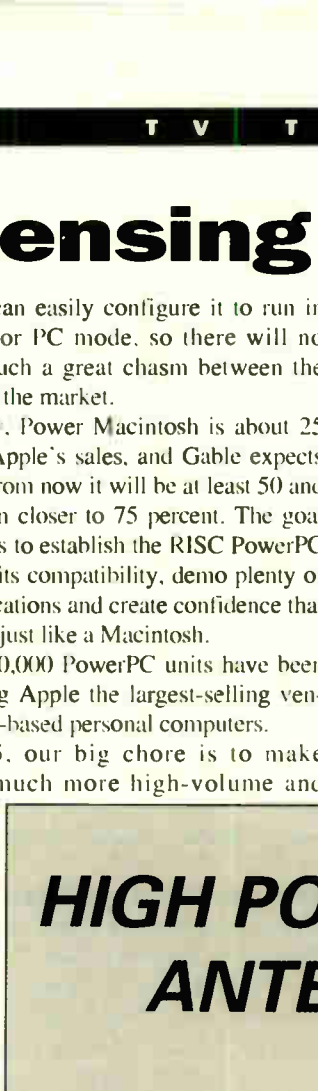
We decided to acquire the DP/Max after clients kept urging us to adopt more of a graphics-based animation system. We carefully examined other systems, but none had quite the range of software options as the DP/Max. We now look at ourselves as a special effects design suite, not an on-line edit suite. ■

Editor's note: After starting on the Paintbox at 16, Tim Davies worked his way up through the ranks to become senior graphics and FX artist at ACME in 1991.

The opinions expressed above are the author's alone. For further information on the DP/MAX, contact The Dynatech Group in the U.S. (Telephone: +1-801-328-8872; FAX: +1-801-328-3669); in Asia (Telephone: +852-868-1993; FAX: +852-525-8297); in Europe (Telephone: +44-635-521-939; FAX: +44-635-528-387), or circle ***Reader Service 103.***

HIGH POWER UHF ANTENNAS

* UTV-01/48 2x30 kW, Chs 15-21
* UTV-01/96 2x30 kW, Chs 27-33



Installed on top of the Central Television Tower, Beijing, P.R.C.

Whatever your broadcast requirement is we have the ideal solution

CSQ
Certificate No. 9110.SIR7

Call SIRA today

SIRA SISTEMI RADIO
20040 Caponago (Milano) Italy
Via Senatore Simonetta, 26
Tel. +39-2-95742605
Telex 341314 SIRANT I
Telefax +39-2-95742599

Circle 40 On Reader Service Card

ON GOOD TERMS

Selecting the Right Format

by John Spofford

Targa? PCX? TIFF and GIF? The sheer number of computer image formats is confusing. We have seen little standardization, and because most of today's facilities are multi-platform, there are literally dozens of image formats to deal with.

ONE OR THE OTHER

2-D image formats fall into two broad categories: bitmaps (or raster graphics) and vector graphics. Bitmaps are pictures that are created with pixels (picture elements) or the tiny individual blocks of color that create an image on a computer screen. Bitmapped images are relatively easy to convert from one format to another, although an additional worry is whether the pixels are rectangles or squares.

Vector graphics, while displayed on the computer screen as a bitmap, are actually defined by the computer as a series of points, lines (vectors), angles and other mathematical relationships. Vector graphics are more complex than the computer screen suggests, making it difficult to translate to another vector or bitmapped image format. A hybrid type of graphics file, known as a metafile, has been developed to remedy this. Metafiles include bitmapped data in addition to their mathematical information, making vector graphics information portable between applications.

What follows are a few of the more common 2-D still image and animation formats. These tend to be the most "portable" formats — formats that are easily moved between different applications or computer platforms.

ALIAS — This is a 24-bit image format used by Alias Research for rendered images from Alias Animator, a high-end 3-D rendering package.

ANIM — ANIM OPT 5 is the most common Amiga animation format and is actually a series of Amiga IFF still images compressed into a single large file. ANIM OPT 7 and 8 are newer variations that take advantage of 32-bit memory in more advanced Amigas.

AVI (Audio/Video Interleaved) — AVI is the animation format of Microsoft's Video For Windows. Similar to Apple's QuickTime format, digitized or computer-generated video frames and synchronized audio are interleaved into a single computer file. AVI clips are played back on Windows-equipped PCs and are generally independent of screen resolution and palette.

BMP — BMP was created by Microsoft as a simple bitmap format for Microsoft Windows. The Windows bitmap format supports monochrome, 16 colors, 256 colors and 24-bit color. BMPs are actually a subset of the Windows DIB format and do not support image compression.

DIB (Microsoft Windows Device Independent Bitmap) — A DIB is able to handle up to 24 bits of data (16 million colors) independent of the computer's display card. DIB images support monochrome, 16 colors, 256 colors and 24-bit color.

EPS (Encapsulated PostScript) — PostScript is a typesetting and page description language defined and trademarked by Adobe Systems Inc. PostScript information is normally sent directly to a PostScript-compatible printer. An Encapsulated PostScript file is a postscript description in a portable format that can be loaded into another graphics software application.

FLI/FLC — Often referred to as "flicks," these animation files were created by AutoDesk for use on the PC. They are similar to the Amiga ANIM format and consist of a series of sequential images compressed into a single file.

FRAMESTORE — A 16 million color bitmap format developed by NewTek for the Video Toaster. A Framestore is the stored contents of a Video Toaster image buffer. The latest version of the Framestore format supports image compression.

HPGL (Hewlett Packard Graphics Language) — A vector-based image format most commonly associated with output to pen plotters.

GEM — A vector graphics metafile developed by Digital Research.

GIF (Graphics Interchange Format) — A popular bitmap format created by CompuServe. GIF supports color images with palettes ranging from two to 256 colors. There are currently two GIF subsets; 87a and 89a. GIF files, at least in their most generic forms, are extremely well supported across various personal computer and UNIX platforms.

ICO — The ICO format represents icons from Microsoft Windows. Icons are always 16-color bitmaps measuring 32 x 32 pixels.

IFF (Interchange File Format) — IFF is the standard Amiga bitmap image format. Established by Electronic Arts and Commodore in 1986, all Amiga graphics applications support IFF.

INFO — An infor file is an Amiga icon. It contains some information about the file it represents as well as bitmap data for the icon. The icon bitmap is typically two to 256 colors, with no size limitations.

JPEG (Joint Photographic Experts Group; common extensions are .JPG, .JPEG, .JFIF) — JPEG is a compression scheme designed to greatly reduce the size of 16 million color images and is capable of compression rates of 75:1 or greater. It achieves this by throwing away image data through "lossy compression."

LZW (Lempel, Ziv & Welch) — Not an image format but a method of image file compression. LZW encoding is a very efficient technique that analyzes color patterns within an image: If a pattern recurs, it is encoded in an extremely simple form.

MacPaint — A monochrome (black & white) bitmap format used by the original two-bitplane Macintosh paint program.

PICT (other common extensions, .PCT, .PIC) — Probably the most common Macintosh color bitmap format. Supports monochrome, 16 colors, 256 colors and 24-bit color.

PCX — The PCX format was originally developed by Zsoft Corp. for its various painting packages. PCX supports monochrome, 16 colors, 256 colors with gray palette, 256 colors and 24-bit color.

RLE (Run-Length Encoding) — Yet another method of image file compression. This type of encoding is very quick and yields good results when an image has many runs of the same color pixels. RLE compression is an option for DIB, Targa and TIFF image files.

SGI RGB — A bitmapped image format native to Silicon Graphics workstations.

SUNRASTER — An bitmapped image format developed by Sun MicroSystems for use in its line of UNIX workstations.

TGA, TARGA — The Targa format was originally developed for use with Truevision Targa/Vista graphics boards. There are several variations, including simple black & white and color-mapped images, as well as the more common 16/24/32-bit formats. Images may be either uncompressed or RLE encoded. The Targa file structure is relatively simple and is an extremely reliable format for transfer between different computer platforms.

TIFF (Tagged Image File Format) — A popular format used on both the Macintosh and PC platforms. The TIFF format is probably the most versatile in general use.

The well-known drawback to the TIFF format is its complexity. For example, TIFF files created by a PC will have a different byte order than those intended for a Mac. Better graphics packages will save a TIFF either way. Some graphics programs do not follow every detail of the specification and create TIFF files that are less than 100 percent compatible. TIFF supports image depths of 1, 8 and 24 bits. It handles monochrome, greyscale, pseudo-color, color mapped, true color RGB, CMY or CMYK.

QUICKTIME — QuickTime is Apple's animation standard for the Macintosh. With appropriate drivers, QuickTime can also be played on Windows-equipped PCs. Moving video and synchronized audio is interleaved into a portable computer file. QuickTime "Movies" are hardware independent and will play on any color-capable Macintosh. This technology is the basis of many Macintosh non-linear editing systems.

WMF (Windows Metafile Format) — A vector graphics metafile developed for Microsoft's Windows.

X — A bitmap format developed for X Windows. X Windows is a Graphic User Interface (GUI) developed for the UNIX operating system.

COLBY
DR-3000

The first
PORTABLE MPEG
Digital Video Recorder

BROADCAST QUALITY VIDEO
BY PHONE LINE or CELLULAR
FROM ANYWHERE in the WORLD
BY INMARSAT or ISDN
TO YOUR NEWSROOM
FULL MOTION VIDEO
& AUDIO STEREO

For more detailed information
Fax or mail the following coupon:

Name: _____
Organization: _____
Street: _____
Zip: _____ City: _____
State: _____
Ph: _____ Fax: _____

1994 NAB Show TOP 10
TV TECHNOLOGY

TO:
AV Advanced Video Technologies S.r.l.
Via Mosca 77 vll. 5
00142 ROMA Italia
Ph. ++39 6 51957381
Fx. ++39 6 51957295

Circle 33 On Reader Service Card

USER REPORT

Avid Fills Role at Tele-Cine

by David Pollard
Head of Post Production
The Tele-Cine Cell Group

LONDON

The Tele-Cine Cell Group was one of the first companies in Europe to purchase Avid Technology's Media Recorder Telecine digitizing station shortly after its launch last September.

Our aim was to make Tele-Cine a one-stop shop for post production. We already had a collection of Avid equipment, namely four Film Composers and a top-of-the-line Avid AudioVision. We are also a beta test site for the Open Media Framework (OMF) interchange. You could say that the addition of Avid's Media Recorder Telecine was the final brick in the wall in terms of equipment.

Media Recorder Telecine is a digitizing station that resides in the telecine bay to capture film dailies directly to disk during film-to-tape transfer. It automates and speeds up the process of moving from telecine to off-line editing by eliminating the additional step of digitizing material to hard disk after transferring film to tape. Once the telecine process is complete, we can immediately deliver drives containing Avid Media Composer or Film Composer bins and media files to our clients, allowing editors working on Avid systems to begin editing as soon as the transfer has been completed.

Tele-Cine offers a family of compatible, disk-based systems that streamlines the film transfer process and the logging of dailies. We also provide true 24 frames-per-second editing, pre-visualization of effects and frame-accurate cut lists. Our goal is to provide digital solutions to seamlessly integrate the entire post production process for projects such as feature films and television programs.

During the telecine transfer process, Media Recorder Telecine automatically reads, captures and stores to disk all information used to describe the relationship between the actual film negative and the frames that exist on videotape, including film edgecode, videotape timecode, audio timecode and the film's pulldown indication. In addition, it automatically builds film bins and organizes information during digitizing, resulting in faster, more accurate and less labor-intensive editing preparation.

During the digitizing process, Media Recorder Telecine decodes up to three lines of Vertical Interval Time Code (VITC), a new proposal presented to SMPTE last Fall by Aaton and Evertz. VITC contains information on two timecodes, a full keynumber and user-bit data. Media Recorder Telecine also supports LTC and, in addition to timecode, the unit supports all frame rates, as well as all Avid video resolutions.

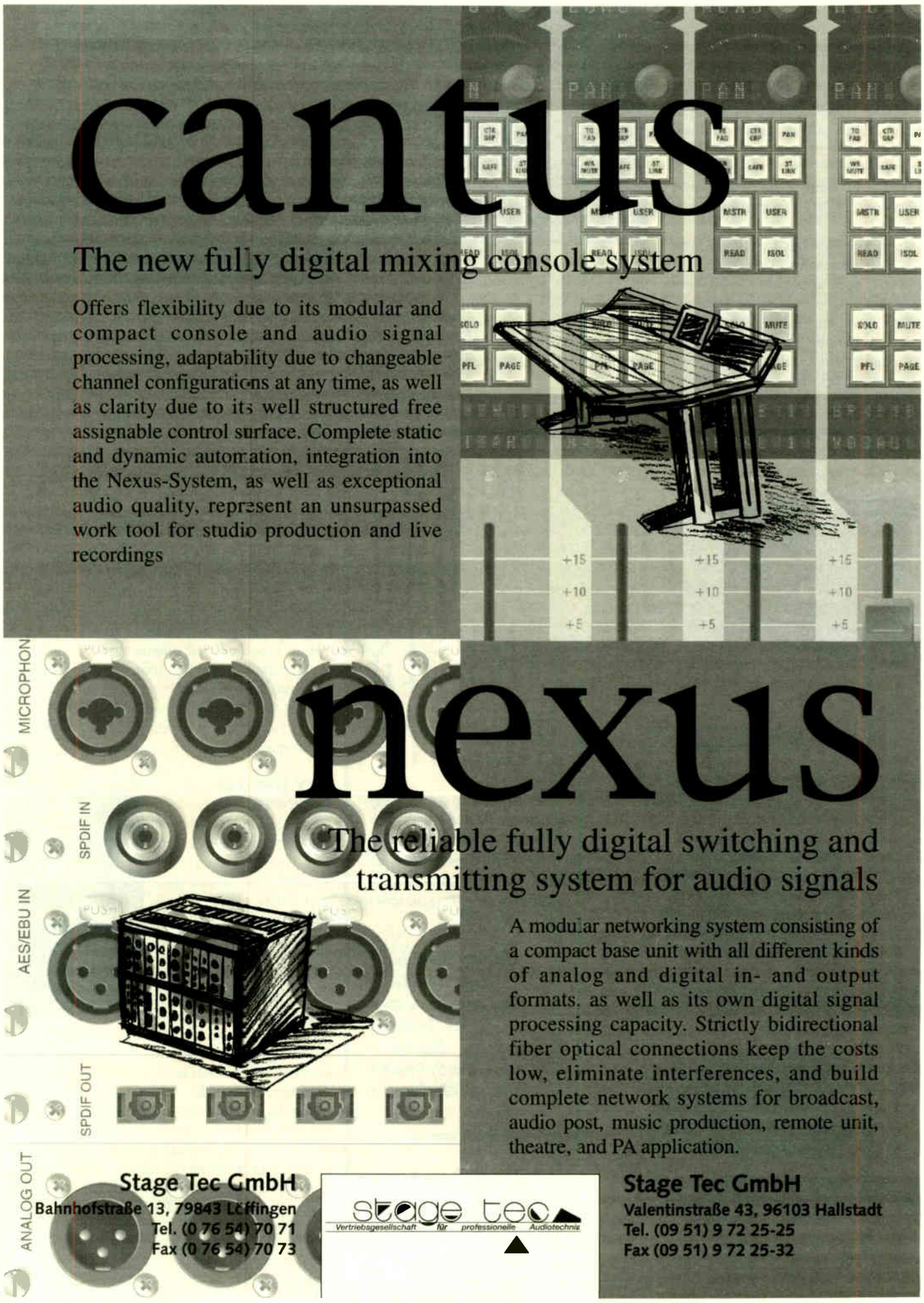
Burn-in functionality is available for all six fields of information and is stored in the system's database for future list generation. All settings can be saved in user files to allow quick access to different configurations. The system can operate in either slave mode or master mode. When operating in slave mode, the telecine edit controller controls the digitizing process. When operating in master control, the Media Recorder controls the digitizing process.

Media Recorder Telecine includes a Macintosh Quadra 950 with 29 MB of RAM, a 230 MB internal hard drive, a 17-inch, two-stage monitor for viewing the digitizing process and controlling settings, an audio A-D/D-A converter, an audio co-processor (SA4), a video slave driver, a NuVista Plus video interface card, and Avid Enhancement board, documentation (user and hardware guides), and the Avid Media Reader for reading timecode. Storage and additional video monitors are supplied by the user.

We are now looking at networking our entire range of post production systems using the OMF interchange and Avid's networking architecture. This will enable us to offer a totally integrated professional post production solution where customers can telecine to digital tape and disk simultaneously, edit on Film Composer, track-lay in AudioVision and dub in our AMS Logic theaters, moving digital files between each process over a network. ■

Editor's note: David Pollard is responsible for The Tele-Cine Group's post production systems.

The opinions expressed above are the author's alone. For further information on the Telecine Recorder, contact Avid in the U.K. (Telephone: +44-753-655-999; FAX: +44-753-654-999), or circle ***Reader Service 71.***



Circle 53 On Reader Service Card

IN POINTS

Desktop Systems Keep Evolving

by Bryce Button

It is that time of year again, when everything seems glossy and new. Thoughts of faster and better systems keep you up at night and keep your accountant nervous. It is also a time when people as fearless and foolish as myself try to predict the movements in the non-linear cosmos for the next 12 months — knowing full well that a year down the road these very utterances are apt to produce much laughter and tears.

FUTURE SHOCK

Here then are my thoughts on what to expect in what again is due to be a great year of change. I will also throw in highlights from a few of the many vendors competing for a line in your operating budget spreadsheet.

I will start with some of the larger issues that will more than likely affect the industry as a whole.

The steep drop in hard disk storage prices, with a corresponding increase in storage size, is sure to continue throughout 1995. This will have two major impacts. The ability to store high(er) resolution video on disk will be less of a financial obstacle. This, in turn, will let vendors feel more comfortable offering less compressed (and higher quality) images to the market at the price points we have become accustomed to — if not even lower.

Quantel's Clipbox can provide central storage for multiple non-linear on-line suites.

Further, the recent improvements of operating systems providing more disk partitions will allow more storage to be added to standalone and networked systems.

This increase in storage demand will, in turn, lead to the further development, acquisition and acceptance of media file servers. Coupled with the growth of networked servers, expect to see a greater push by vendors for file-compatibility frameworks as witnessed by Avid's OMF (Open Media Framework) and ImMIX's MFE (Media File Exchange).

Numerous proprietary compression schemes will continue to irritate those who feel that what is really needed is simply no compression at all. Macintosh-based non-linear editors, who live and die by video compression, will benefit greatly from the PowerMac's change to PCI bus from NuBus technology. With three to four times the raw throughput of NuBus, the PCI's advantages are obvious.

Hard disks will not replace tape in 1995 (or any time soon). The transportability of tape and its continued use as an archival format will allow the videotape format wars to continue in parallel with developments made in digital acquisition to disk.

KEY DIGITAL EFFECTS

3-D DVEs will become the norm in the desktop non-linear market. Vendors have discovered that these features are better handled by outboard hardware integrated into their systems instead of suffering the current nightmare of rendering with software substitutes. Expect to hear the name Pinnacle Systems a lot, as numerous vendors build bridges to the Alladin Media Printer **(Reader Service 25)**.

Development of multi-stream video for use with desktop systems will slowly bring results, allowing effects beyond a couple of layers to be achieved without resorting to further compression and rendering time.

Though the point is fiercely debated, I feel 1995 will be a tough year for mid-sized facilities. The difficulty of achieving short-term amortization, while saddled with long-term capital commitments from linear equipment, is likely to keep pushing the production market to its extremes. Clients with the budgets and time restraints that keep the bigger houses busy will continue to do so. Boutique houses and freelancers with lower overhead are likely to keep up with the low-cost offerings from desktop digital vendors. The net effect is to increase personal income for employees at both big and small facilities, drawing talent away from the middle.

The maturation of media servers in the last few months, from vendors as diverse as BTS, Quantel and Avid will result in a much larger switchover in broadcast facilities to random access digital systems. The ability of digital cart systems to change a lineup at a moment's notice, without the sort of hardware wear and tear issues intrinsic to tape-based systems, will prove a big attraction.

I expect to see stronger audio features integrated into desktop systems. ImMIX now offers manual mix-down on the fly with its version 1.3 software. Avid's merger with Digidesign, well-known for its digital audio editing software, is also sure to have a positive impact on Media Composer owners. Quantel's Editbox now offers 16 tracks of audio, and Nightsuite, from Amtel Systems, boasts Sadie, a system capable of 24-bit audio resolution.

The 16- to 24-month development cycle, common to this industry, suggests that we can expect news from Silicon Graphics sometime this year. This should have the effect of lowering cost barriers of Unix-based graphics workstations. You can expect Hewlett-Packard and Sun Microsystems to follow suit and make more aggressive runs at this market in the coming months.

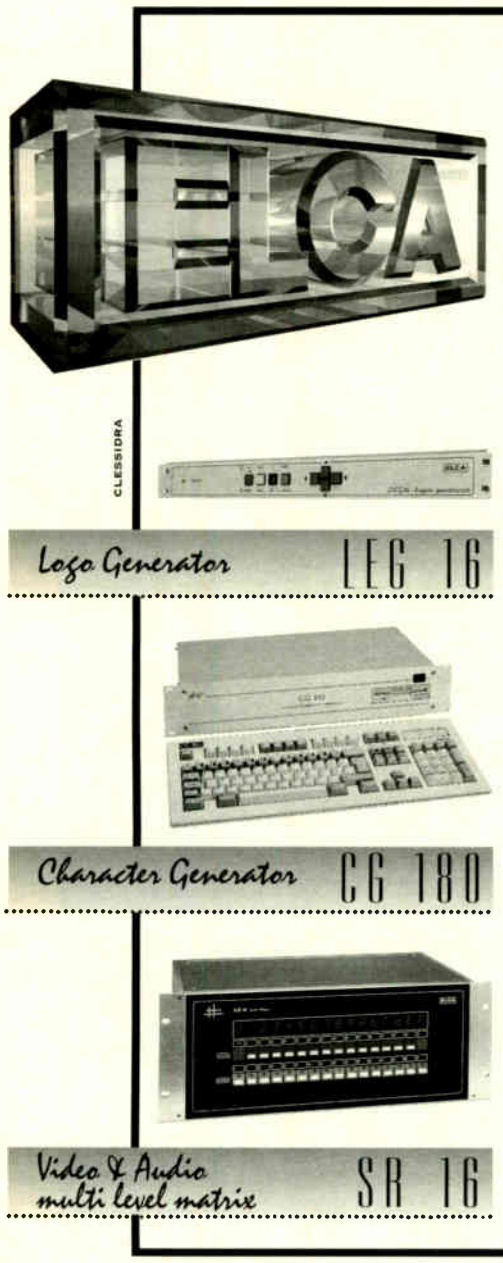
Lastly, component I/O looks to be a definite option in any system worth its salt this year, with many systems bypassing the need for transcoders. Component video is a feature that certainly helps any compressed image look its best.

The steep drop in hard disk storage prices, with a corresponding increase in storage size, is sure to continue throughout 1995.

Now that we have looked at some of the larger themes at play, and realizing that nobody has a monopoly on the truth, I will now take a closer look at some specific vendor offerings. However, there are two things to keep in mind: I have not been able to include everybody I would like in this wrap-up, and it has to be realized that many vendors are not about to reveal specific details until this month's NAB show. With that in mind, onward ho.

Avid Technology **(Reader Service 107)** makes its first run at the PC market, announcing Media Suite Pro for Windows

50 COMPUTER VIDEO



ELCA s.r.l. • via E. Jenner,4 • 24047 Treviglio (BG) ITALY
Tel.39-363-303885 / 44763 • Fax 39-363-301951

Circle 22 On Reader Service Card

95, Microsoft's promised 32-bit operating system. This will add to its offerings for both the Mac and Indigo platforms. The high-speed AvidNet and MediaServer products will aid those searching for a fully integrated digital facility — whether in a small boutique or a large broadcast setting.

Avid's family of broadcast products continues to grow with the acquisition of BASYS News and SofTECH Systems Inc., offering greater capabilities in newsroom automation. You can expect to see higher image resolutions and a gradual shift of the Macintosh products to the RISC-based PowerMac.

TouchVision Systems (**Reader Service 116**) is well into development of a new generation of PC-based products and may well have announced new releases by the time this goes to press. With an installed base of over 3,000 units, the company is experiencing rapid growth centered upon its D-Vision products for both desktop and multimedia applications.

Quantel (**Reader Service 84**) continues to push into the traditional on-line market with the transcoders. Version 1.3 allows uncompressed graphic files to be alpha-keyed over two channels of video in real time.

Though the point is fiercely debated, I feel 1995 will be a rough year for mid-sized facilities.

belief that all compression degrades images and lossless compression schemes often require more data storage than uncompressed pictures. Quantel's approach, using uncompressed CCIR-601 with the Editbox, makes it an attractive offering for higher-end facilities. Using its Clipbox technology, Quantel can achieve central shared storage for multiple non-linear on-line suites.

Matrox Video Products Group (**Reader Service 100**) plans to release System 3.0 for its Personal Producer product, adding non-linear capabilities with an unlimited number of video, audio and graphic layers in "near real time." Picture quality is expected to be competitive with the best systems, most of which now claim "near-Betacam quality."

For its Matrox Studio product, a Super F/X option has been made available, including Flying graphic keys and interfacing with Pinnacle's Alladin.

ImMIX (**Reader Service 130**) has released version 1.3 for its VideoCube and is now offering component I/O (R-Y, B-Y, Y), enabling direct interfacing to Betacam SP without outboard

BATCH CAPTURING

The Media 100 from Data Translation (**Reader Service 46**) now has support for batch capturing from time-coded sources and offers higher image quality, bringing the product up to facility level. The company has also announced a 25 percent price reduction for its Media 100 (version 2.0), placing the price point under US$9,000. This is within the price range for supposed "lower-end" QuickTime-based products — a trend that should echo throughout the industry.

Night Suite (**Reader Service 70**) promises CCIR-601 on a machine that can cut both video and film projects. With a strong interface and a price point that begs the question "How?" this machine will get a lot of inspection when it finally hits the streets.

Lastly, NewTek Inc. (**Reader Service 111**) is finally shipping its Flyer editor in quantity. Initial delivery was to a few thousand Video Toaster enthusiasts who pre-ordered and paid a deposit for their units. The Flyer only works in conjunction with a Video Toaster, which, of course, only works on the Amiga platform. The future of the Amiga has yet to be resolved, Commodore having been out of business for some 10 months. NewTek has made other platform plans, but for those we will have to wait for NAB.

There you have it. Just a sliver of what this year promises. Make sure you shop hard and long. Once you are committed to a buying decision, however, you may rest well in the knowledge that the choice will be even more difficult next year. ■

Bryce Button is a non-linear editor working in the U.S. He has worked in non-linear from the first beta site days in New York City, while employed at Dennis Hayes and Associates. He is currently head of non-linear post production at Telemation in Denver, Colorado. He may be reached on Compuserve @ 72633,1603. Comments and differing opinions are accepted.

10 KW UHF TV TRANSMITTER

LINEAR
Perfection & Quality

pubblicità BELOTTI

* MODULATORS
* TRANSPOSERS
* SOLID STATE AMPLIFIERS
* TUBES AMPLIFIERS
* MICRO WAVE LINKS
* PASSIVE COMPONENTS

TV AMPLIFIER
1-5-10-Kw

LINEAR
COSTRUZIONI APPARECCHIATURE ELETTRONICHE

LINEAR s.r.l. - Via del Lavoro Artigiano, 13/15 - 25032 CHIARI (BS) ITALY
Tel. + 39-30 711643 - Fax + 39-30 7000634

AMERICAN DISTRIBUTOR:
CONTINENTAL ELECTRONIC WSH CORP 1620 West 32 ND Place
33012 HIALEAH FL (USA) Tel. 305-8221421 - Fax 305-3628717

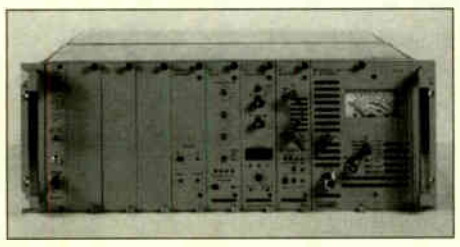
Circle 8 On Reader Service Card

MARKETPLACE

HIGHLIGHTING THE LATEST PRODUCTS AVAILABLE TO PROFESSIONALS IN THE VIDEO INDUSTRY.

FM EXCITER

The T242 synthesized FM exciter from Itelco operates in the 87.5 to 108 MHz band and features seven plug-in ports, each of which can have a different function.



All operating commands are located on the front panel, and the transmission frequency can be either locally or remotely selected from 10 presets.

Also available is an automatic level circuit (ALC) that keeps output power within +/- 0.5 dB referred to nominal output power.

For further information, contact the company in Italy at telephone: +39-763-316265; FAX: +39-763-316239, or circle **Reader Service 3.**

PRESENTATION AUTOMATION

Abit Ltd. has available the Present It automation system that interfaces with airtime sales and scheduling systems for complete on-air management.

The system uses Motorola 680N0 multiprocessors running Microsoft Windows and is linked by Ethernet using a proprietary real-time protocol.

Present It controls all broadcast devices on the market and features upgradeable, open architecture technology to guard against becoming obsolete.

For further information, contact the company in the U.K. at telephone: +44-71-281-3815; FAX: +44-71-281-3815, or circle **Reader Service 132**

TELECINE

Rank Cintel's Ursa Gold post production telecine features all-digital technology and full EMC certification to prevent interference from other systems.

Ursa Gold maintains 4:4:4 signal processing throughout, with outputs available in 4:4:4, 4:2:2:4 (8- and 10-bit), as well as analog component (YCrCb) and RGB.

Initial quantization is at 14-bit depth, allowing true digital gamma and aperture correction.

For further information, contact the company in the U.K. at telephone: +44-920-463939; FAX: +44-920-460803, or circle **Reader Service 30.**

DESKTOP VIDEO

Data Translation has released Ver. 2.0 of its Media 100 digital video system, now running native on Macintosh platforms.

The new version allows picture quality up to 80 kilobits per frame for NTSC and 90 kb per frame for PAL. In addition, there is a new HDR option allowing quality up to 150 kb NTSC and 180 kb PAL.

The system also features a Trim Mode that allows for greater fine-tuning of edits.

For further information, contact the company in the U.S. at telephone: +1-508-460-1600; FAX: +1-508-481-8627, or circle **Reader Service 129.**

COMPONENT MIXER

The DVN-400 D-1 mixer from For-A Corp. features 16/32-bit processing, 10 serial digital inputs and three key layers.

The unit features "one function, one button" operation and custom-designed ASICs for greater signal quality.

The device's four aux busses can be used for input selection to external DVEs, color correctors or other devices.

For further information, contact the company in Japan at telephone: +81-3446-3936; FAX: +81-3446-4452, or circle **Reader Service 105.**

INTERFACES

Thomson Broadcast has a line of interface products available for transferring signals across a range of formats.

The TTV 7770 and 7771 series of 16:9/4:3 interfaces are designed to allow existing cameras to produce in either format. The units are attached to the output of camera control systems.

In addition, the Evolution series of interfaces include distribution amps, pre-selectors and digital/analog converters, all of which can be contained in a 3RU frame.

For further information, contact the company in France at telephone: +33-3420-7000, or circle **Reader Service 76.**

INTERCOM SYSTEM

The DOS 3000 all-digital intercom interface system from Drake Electronics offers a range of new features designed for greater operability.

For example, the system's remote panels can be located anywhere in the world, regardless of the location of the matrix. Telephone interfaces include new DTFM dialing facilities both into and out of the system.

In addition, new control software is contained in a Windows-based package.

For further information, contact the company in the U.K. at telephone: +44-707-333856; FAX: +44-707-371266, or circle **Reader Service 20.**

WIDESCREEN SOFTWARE

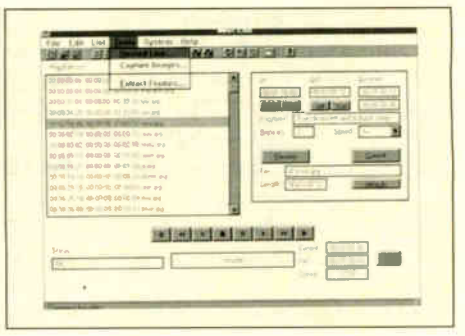
Pinnacle Systems has released new software for the Prizm digital video workstation that supports the 16:9 screen format for easier manipulation of theatrical releases.

The software also contains new refractor shapes, such as cylinders, exploding tiles, magnifying glass effects and meltdowns.

For further information, contact the company in the U.S. at telephone: +1-408-720-9669; FAX: +408-720-9674, or circle **Reader Service 7.**

ANIMATION RECORDER

The Matrox Animation Express (MAX) system from Matrox allows 3-D animations to be played back directly from hard disk in real time.



The system also eliminates frame-by-frame recording, as well as mechanical glitches, skipped frames and tape dropouts.

Full CCIR-601 video is supported in NTSC or PAL, while real-time capture to disk simplifies rotoscoping.

For further information, contact the company in Canada at telephone: +1-514-685-2630; FAX: +1-514-685-2853, or circle **Reader Service 16.**

DAT RECORDER

Sony's PCM-7030 and 7050 DAT recorders now feature Ver. 5 software designed to enhance the units' audio-for-video abilities.

Upgrades include comprehensive system set-ups for use in conjunction with Sony's BVE series of video editors.

In addition, the units can now issue a machine ID via their nine-pine interfaces to aid interfacing with other devices.

Error rate output is available through RS-422 interfaces.

For further information, contact the company in Europe at telephone: +44-1256-483646; FAX: +44-1256-812232, or circle **Reader Service 54.**

STANDARDS CONVERTER

The Cyrus Prime standards converter from AVS Broadcast features four-field, four-line linear conversion and an upgradeable motion compensation processor.

All inputs and outputs are 10-bit and interfaces are available to all main I/O formats.

The system also features bi-directional conversion between PAL, NTSC, NTSC 4.43 and SECAM.

For further information, contact the company in the U.K. at telephone: +44-81-391-5678; FAX: +44-81-391-5409, or circle **Reader Service 126.**

CONVERTER LENSES

Fujinon has introduced switchable "Ratio Converter" lenses for 16:9/4:3 operation.

Fitted inside select 2/3-inch hand-held lenses, the Ratio Converter compensates for the comparative loss in field angle performance when a camera is switched from widescreen to normal aspect ratio.

The unit also compensates in both 1x and 2x extender positions.

For further information, contact Fujinon in Japan at telephone: +81-48-668-2152; FAX: +81-48-651-8517, or circle **Reader Service 123.**

Send new product press releases along with black and white photographs to: **Marketplace Editor, P.O. Box 1214, Falls Church, VA 22041**

You can spend millions on ads, public relations and big trade show productions convincing the world you've created the first truly practical pro video disk recorder.

Or, you can build it.

The **Pro*file***™ Professional
Video Disk Recorder from Tektronix.
Hundreds now playing worldwide.
On display at NAB booth 16528.

Tektronix

©1995 Tektronix, Inc. All rights reserved. Profile™ is a trademark of Tektronix. TVG-138

Circle 89 On Reader Service Card

SPECIAL REPORT

Animators Captured by Motion

by Daniel Rappaport

Motion capture is quickly becoming one of the hottest things to hit the graphics and animation industry since morphing. An increasing number of high-profile film- and video-based 3-D computer animation projects have received attention for incorporating motion capture technology. And some in the animation community contend that these projects would have been impossible without motion capture techniques.

To some animation observers, motion capture is a stunning development in an industry known for being on the technical edge. Others, however, view motion capture as a new, highly problematic and very controversial technique for 3-D computer animation. To them, motion capture introduces more problems than it solves.

In essence, depending on who you talk to, motion capture will either solve all your problems or spawn swarms of new, unforeseen and previously un-encountered new problems.

As it is most commonly conceived, motion capture consists of the following: the bodies of "actors" performing desired behavior sampled at repeated intervals. A variable number of points on the actors' bodies may be of interest, and the resulting data sets of these points are recorded as digital data. These data sets can then be applied as motion to 3-D models via custom or off-the-shelf animation packages. Often, varying degrees of post processing or editing of the data may be necessary as well.

DISNEY IN MOTION

Is the concept of motion capture all that recent? Actually, no. It is not well known, but Disney experimented with such techniques years ago, albeit for possible use in their theme parks with robotic figures such as Abraham Lincoln or Mark Twain. It was thought that it would be much easier to exhibit life-like (translation: human-like) motion in theme-park robots if the motion were actually copied from real humans.

Also, do not forget that there have been other cases of creating motion for mechanical forms (chiefly for non-human forms in movies). This might involve one or more people simultaneously manipulating hand-operated controls for real-time, on-camera performances (e.g., joysticks). Such tried-and-true methods often include puppeteering, but are not confined to applications made famous by the Muppets. Puppeteering techniques are now being used with computer animation, which could be construed as a form of motion capture.

Which brings to mind the question, exactly what is meant by "motion capture?" To the minds of many, motion capture consists solely of sampling human body motion in toto in order to imbue human-like animated forms with human-like motion. However, with current technology it is difficult to capture the entire range of human motion simultaneously.

For example, you might be interested in capturing kicking and punching motions to animate a karate character. The mechanisms suitable for capturing kicking and punching motions may not be suited for capturing facial expression; consequently, such a karate character application might utilize a variety of technologies in recorded multiple "takes."

While some animators shun the term motion capture, it has become such a buzz phrase it may be difficult to achieve widespread and universal agreement on the terminology. Others term the collection of previously discussed techniques by other names (performance animation or physically-based motion sampling).

INDUSTRIAL USE

A lot of attention has been given to the growing ranks of film- and video-based animation projects that have employed motion capture. However, there are many industries other than "traditional" film- and video-based 3-D computer animation that are also potentially well-suited to motion capture and thus are driving motion capture technology. These applications include virtual reality (VR), biomedical applications, networked games, military simulations, video games and CD-ROMs.

Why are these industries so interested in motion capture and why does the interest from CD-ROM game developers exceed, perhaps, the interest of film and video producers?

Part of the interest from many CD-ROM developers can be attributed to the branching nature of their plots or stories. At least in traditional film and video, production is confined to what appears on screen. However, CD-ROM games often employ numerous decision points throughout a game's progress, with different actions chosen by the user resulting in the presentation of different scenes. Consequently, a 15-minute CD-ROM experience may require much more animation than a 15-minute video because that 15-minute experience may only represent a few threads of a complex story line.

Given all these claims due motion capture, the buzz is not surprising. But does it really deliver? At this point, it is hard to say, as there has been less awareness of the pros and cons of motion capture. ■

Daniel Rappaport is a free-lance animator, programmer, producer and writer specializing in virtual reality, multimedia, visualization and human/machine interaction.

Mier
COMUNICACIONES

- Solid State (1 - 500 W).
- Compact and Reduced Design (19" Rack Format).
- Micro-Processor Controlled Parameters, visualized on LCD Screen, and possibility to telecommand via Modem and RS-232.
- Extensive use of Circuits for Protection (Adaptive Polarization, Lightning, Thermal, etc).
- SMT Mounting.
- Outstanding Price/Performance.

Introducing the most innovative family of TV transmitters and transposers on the market.

MIER COMUNICACIONES applies the know-how and technology, developed in advanced space programmes in designing and manufacturing the new family of LPTV Transmitters and Transposers.

More than 2.700 units in uninterrupted operation, as part of the most important TV Networks, guarantee the reliability of our equipment.

For more information, please contact:

Mier Comunicaciones, S.A.
Polígono Industrial Congost, Parc. 4-S
08530 LA GARRIGA Barcelona (Spain)
Tel. 34-3-871 75 00 Fax 34 -3-871 72 30

Circle 41 On Reader Service Card

MMDS Goes Over the Horizon

Wireless Cable Tests in Kuwait and Bahrain Are Conducted Using Single-Cell Configuration

by James K. Vines

WIRELESS CABLE

Editor's note: Wireless cable, also known as multichannel multipoint distribution services (MMDS), is rapidly gaining stature as the method of choice for providing broadband video services to large populations. Not only is it inexpensive to build and maintain, but it has proven itself to be fairly rugged in areas of the world beset by transmission impairments.

To address this growing trend, ***TV Technology*** *welcomes James K. Vines as a quarterly columnist. As a designer of wireless cable systems primarily in Northern Africa, Vines continuously tracks the latest developments and technological breakthroughs.*

We hope his insights will prove valuable to our readers interested in finding new ways to bring television to the public.

Over-the-horizon (OTH) delivery of wireless cable (MMDS) service is currently the sweeping trend in this new industry. Ordinary S-band 2.5-2.7 GHz MMDS uses translators to provide OTH service, but because S-band MMDS transmits in AM, multiple translation degrades video quality.

A new way to provide MMDS over-the-horizon is being tested in Kuwait and Bahrain. It operates in the Ku-band at 11.7-12.2 GHz. A full 500 MHz block of frequencies is transmitted in FM. Astroguide, a U.S. company based in LaSalle, Illinois, provided the components for both tests.

This new method can be single or multi-celled (see figures 1 and 2). Presently both tests are of single cell configuration. To carry the 500 MHz block to another cell, an 18 GHz repeater system would be used.

FAR AND WIDE

The terrain for the Kuwait and Bahrain test cells is virtually flat. The effective cellular service radii are 30 km. The signal — which is encoded — is radiated in horizontal and vertical polarization, with 28 channels (14H, 14V) planned.

Home receiving systems consist of a small Ku dish and 11.7-12.2 GHz LNB, mounting hardware, cable, and a receiver/decoder. Cost of the receiving system is about US$270.

In a centralized system, all programming would originate from one cell — whether off-satellite, taped or locally produced — and the programming could be carried to other cells. The cells could overlap or be widely separated, and the service could thus be shaped to correspond to the distribution of the population. If the repeater system were configured for two-way service, programming could originate from any cell for instant distribution to any or all others.

How feasible would such a Ku-band system be elsewhere? Cost is modest enough: about US$140,000 for a Ku cell headend including encoder, transmitter, enclosure and tower. With up to 32 PAL or SECAM channels, that is only US$5,000 per channel. Need a second cell? Add about US$80,000 per each 18 GHz repeater package, including tower and enclosure.

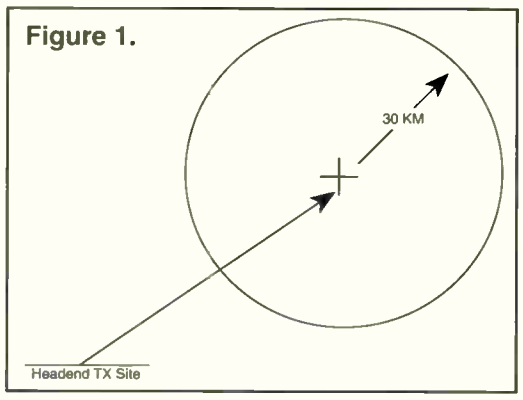
This is, in fact, less expensive than the older S-band technology. In Nigeria, where several S-band MMDS systems are operating, typically with six to eight channels, the cost of transmitters and transmitting antennas alone runs from $35,000 to over $150,000. Operators of these 6 and 8 channel systems have limited programming options for generating revenues.

As for climate considerations, the Kuwait and Bahrain test cells are adjacent to the Persian Gulf, where humidity is often high. Yet there are no problems with reception. In tropical rain forest climates, such as coastal West Africa, Southeast Asia and equatorial South America, there are annual rainy seasons that introduce a certain amount of interference. To compensate for rain fade, the 18 GHz repeater systems need to be built with either a greater number of shorter hops or with larger transmit and receive antennas. Also, the Ku cells' effective radii would be reduced for parts of each day during the rainy season.

LEAFY CONCERNS

Terrain, particularly the amount of foliage, is also a consideration. Terrain is seldom ideal, but in most cases it can be dealt with using the Ku/Ka configuration. In most large cities, Ku receive dishes can be placed just above roof level for line-of-site reception. In rural areas and small villages where there are more trees, prospective receive sites probably will have to be tested.

Figure 1.



In densely populated southern Nigeria, little of the original tropical rain forest remains. It has been largely replaced by a mix of palm agriculture and timber and rubber plantations. Compared to the original "high jungle" growth of up to 40 meters, much of today's commercial growth is 15 meters. There are also numerous open areas being cultivated with cassava, maize, yam and other staple crops.

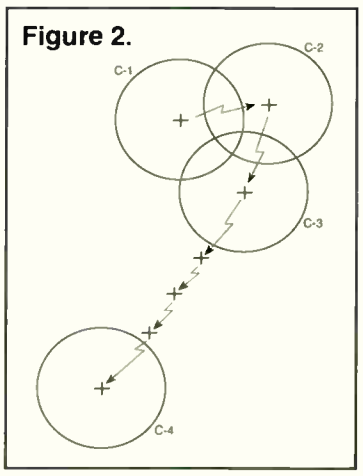
Ku service should perform well wherever the terrain is reasonably flat. This could include the coastal regions of Ecuador, Indonesia, India and the Philippines. Although much of these countries' terrains consist of dense jungles or mountains, the majority of their populations live along the coast.

For village and rural distribution, Ku service could be done in a single polarization, all free and largely advertiser-supported. Final delivery would be UHF with amplitude modulation. Anyone with a TV set and little more than a coat-hanger could receive the signal.

What about generating terrestrial interference that blocks reception of Ku satellite programming? Since Ku TVRO dishes throughout most of the Third World are relatively large, they tend to be located close to the ground. Thus, they are protected from terrestrial Ku transmission. Filtering would seldom be necessary.

The key to this type of service is the bandwidth. In the Ku range, bandwidth usage of a whopping 500 MHz amounts to just a fraction of the 12 GHz center frequency. Having so much bandwidth will allow Third World wireless entrepreneurs to delay buying digital compression equipment. They can wait for the cost of compression to come down, with corresponding increases in performance.

Figure 2.



And by transmitting in both the horizontal and vertical polarization, it is possible to offer 32 channels of PAL or SECAM programming with FM modulation. In fact, it is possible to transmit across the entire 10.95-11.75 GHz spectrum. With 1,800 MHz to play with, 115 channels of PAL or SECAM would be easy.

This, of course, brings us to another dilemma: where to find the programming. I believe one of the best ways to take advantage of these new channel capacities is to foster educational television.

Since the encoding can be tiered, there can be a mix of free or reduced-cost channels, and this is where six of seven channels of ed-TV would fit. Some or all of these channels' revenues would come from advertisements, but that would depend on whether the programming is provided on reduced-fee or free channels.

To really make wireless systems a success, a vigorously growing local or regional "host" economy is needed. It is essential that wireless cable operators develop a business strategy that has local economic stimulation as a key objective. Wireless cable entrepreneurs would do well to think of their "business" as an industry. Industries are infrastructural, and infrastructure improvements (beyond the usual roads and dams) are high on the list of almost all developing countries.

For more information contact:

Astroguide
Telephone: +1-815-224-2700
FAX: +1-815-224-2701
Reader Service 51.

James K. Vines holds U.S. and Canadian patents for satellite antenna design, and has been developing revenue predictions for Third World wireless cable clients. Vines can be contacted at his company, Findex Worldwide, at P.O. box 284, University Park, Illinois 60466; telephone/FAX: +1-708-534-0889.

KATHREIN Antennas

Check these Features

✓ 74 years experience • HDTV ready since the '70s
✓ Broadband for Multi-Channel Master antenna systems in TV & FM
✓ Standard or Custom Horizontal and Vertical Patterns as required
✓ Beam Tilt and Null Fill without extra cost on most models
✓ Hot-dip galvanized steel and passivated aluminum construction
✓ All feedpoints Fibreglass Radome protected
✓ Precision 50 ohm silver plated connectors on all ports
✓ Highest Quality at Competitive Prices

TENNAPLEX SYSTEMS LTD.
#1-21 Concourse Gate, Nepean, Ontario, Canada K2E 7S4 Tel. 613 226-5870 Fax 613 727-1247

Circle 97 On Reader Service Card

On the Road with an EIC

by Jon Hazell

The Mobile Engineer in Charge of Productions Needs A Basic Knowledge of the Television System

He is treated with careful deference. He is adept with mysterious tools and devices of unclear function. The depth and breadth of his knowledge of arcane subjects is unsurpassed. He is aloof and almost regal as he moves about the compound. He is calm and in possession of his faculties even when all those around him have abandoned theirs. But if you ask him a question at the wrong time he can be grumpy and abrupt. Who is this shaman, this modern-day Merlin? Why, he's the Engineer-in-Charge, of course!

He is present at all large mobile shoots. With the truck driver, he arrives first and leaves last. You can find him working through the lunch hour to get the director another monitor with burned-in time code. You can find him on the phone with a software engineer halfway across the country to resolve a problem with the DVE. You can find him showing a camera operator how to set the back focus of his lens. You can find him repairing broken headsets and mic cables. He is responsible for a wide range of functions.

Technically, he is responsible for keeping the whole show together. What are the duties of an EIC, and what type of person must he be in order to be effective at his job?

First and foremost, an EIC for mobile television productions has the responsibility to see that all technical operations run smoothly. To do this, he must have a solid understanding of all aspects of a television system: video, audio, data, communications, transmission, power. In addition to possessing the basic knowledge, he must be able to apply it in all sorts of difficult situations.

Specifically, he needs to be able to repair or bypass at a moment's notice any piece of equipment in his truck. If a DVE reboots itself five minutes before the show, he needs to know how to reset it. If a camera or its cable fails during the show, he must be able to rapidly identify the location of the problem and repair or replace the perpetrator. On a system level, if there are any problems with the truck or its connections, he must be able to track down the cause and fix it with an absolute minimum of disruption to the show.

A very important requirement of a competent EIC is to know where the quirks in a system are located. All technical systems develop personalities over time. Even a new piece of equipment has individual characteristics: a particular failure mode, a preference for operating in a certain temperature range, a tendency for settings to drift over time (or to remain unusually stable). When individual pieces of equipment are connected together in a system, individual characteristics add together into a discernable personality. A mobile truck, which spends a good deal of the time bouncing up and down the highway, enduring radical changes in temperature and humidity, and which is used by a different crew for each show, tends to have more personality than most other television systems.

While it is clear that an EIC needs to be a great engineer, that is only half of the story.

WARMING UP

The EIC needs to know the tendencies of the equipment in his truck. A certain character generator may not boot up correctly until it has warmed up for at least an hour. A switcher may occasionally die and need to be reset following a certain procedure. When a mysterious personality disorder occurs in the truck, the EIC needs to recognize it and give it the appropriate counseling.

While it is clear that an EIC needs to be a great engineer, that is only half of the story. He is also usually the truck company's representative on site. He needs to be adept at communicating with his customer's representative, the producer and the crew.

Difficult situations can arise on the road and occasionally tempers are lost. The EIC can never lose his. He must be able to listen through the anger to negotiate a satisfactory solution to the problem, if possible. He must also be able to tactfully say "no" when it is appropriate.

Life on the road is never easy, and it contributes to the stress experienced by a mobile truck EIC. Interminable hours, sleeping in hotels, eating restaurant food, working away from family and home for long stretches of time, all require a flexible personality. Flexibility is one of the main requirements of a successful EIC.

A COMPLETE PACKAGE

Being the Engineer-In-Charge of a mobile production is a heavy responsibility, with job requirements that many television engineers would find completely unattractive. The wide range of skills and personality traits needed to be a success is hard to find in one person, but for those with the ability and desire, there is no other job like it.

There can be tremendous personal satisfaction in using such a complex facility as a mobile truck to make high-quality television programs. You use your skills to adapt to the different situations you find at each site. You meet every challenge only to then pack it all up and drive away to another show in another location. There's always another challenge to meet tomorrow.

However, there is a special quiet time for the EIC in every successful mobile shoot. It happens after the show gets going and all the miscellaneous problems have been ironed out and before the end of the show when the hectic activity of the strike takes over everything.

It usually comes during the middle innings of baseball or the third quarter of a basketball game. It is a time to take stock. Everyone else is concentrating on the show. The equipment and the crew have fallen into a rhythm and everything is humming purposefully. It is a time when the EIC can stand back and feel the immense satisfaction of pulling it all together one more time. There's no feeling like it. ■

Jon Hazell is a staff engineer at MIRA/The Edit Suite, based in Portland, Oregon. The company handles a broad range of mobile production shoots and also maintains a production facility. Hazell may be reached c/o ***TV Technology.***

Prepare yourself for Success at NAB '95 ...

- Check out all the latest equipment
- Find new ideas to cut costs, boost sales
- Compare notes with other broadcasters, production & post-production pros
- Explore your multimedia options
- Learn about your digital future
- Uncover new marketing opportunities

Welcome International Delegates

NAB '95 offers a special welcome for the more than 15,000 international executives expected to attend. The U.S. Department of Commerce is working through some 250 U.S. Embassies and Consulates to help organize delegations for NAB '95.

Contact the commercial officer at your nearest U.S. Embassy for details. International delegates are provided with a special international business center that offers translation services, import/export counseling and other help designed to maximize the value of NAB '95.

U.S. Department of Commerce — U.S. and Foreign Commercial Service — International Trade Administration
Foreign Buyer Program

Registration Is Easy...

Call (+1) 301 694-5243 or fax to (+1) 301 694-5124. To learn more about the program or exhibits, call NAB: (+1) 202 775-4971 or fax to (+1) 202 429-5343, or contact your nearest U.S. Embassy, or call NAB's Fax-On-Demand at (+1) 301 216-1847 from the touch-tone handset of your fax machine and follow voice instructions. If you are interested in exhibiting, call Eric Udler at (+1) 429-5336 or fax him at (+1) 202 429-5343.

NAB95
APRIL 9-13, 1995
LAS VEGAS CONVENTION CENTER
LAS VEGAS, NV

EQUIPMENT EXCHANGE

TV Technology's Equipment Exchange provides a FREE listing service for all broadcast and pro-video end users. Brokers, dealers, manufacturers and other organizations who sell used equipment on an occasional basis can participate in the Equipment Exchange on a PAID basis. All free listings run at the discretion of the publisher.
Call 1-703-998-7600 for details.
Submit your free listings on your letterhead and state the make, model number, a brief description, sale price and complete contact information and mail it to:
TV Technology, PO Box 1214, Falls Church VA 22041

ANTENNAS

Want to Sell

SATELLITE ANTENNAS
Used Scientific Atlanta, Andrews, Vertex, RSI & others. 7 meter & up.
PTL Cable Service, Inc., USA
Ph: 407-747-3647 Fax: 407-575-4635

CAMERAS

Want to Sell

Hitachi FP-10 camera with Fujinon G6x20 fl:1.8/20-120mm lens, including rollaway hardcase, 4" studio viewfinder, mic holder, extender boards, AC power supply, Anton Bauer slimline battery, not a scratch, $1200. Adam, 804-868-4286.

Full-size consumer camcorder, need audio dub operational for voice-over pre-recorded tapes, not concerned about quality of video, price $100-250. H Levy, POB 2224, Walnut Creek CA 94595.

Panasonic WV-6000 camera with ENG style f1.6 10.5-126mm lens, viewfinder, mic, power cable, carrying case, Panasonic NV-B51 power supply, xlnt, $600; Panasonic WV-6000 cameras (3) with Vicon V10-150M teleconference lens, $100/ea, $800/all. J Dore, 408-553-2323.

Sony DXC 3000 with manual controls for zoom & focus, tripod mount Sony AC power supply, Sony Quick Chg with 5 batteries, PortaBrace, quick draw case, $3000. R Winwood, Video Taping Svcs, 48 Split Cedar Dr, Islandia NY 11722. 516-234-0508.

JVC X-1 S-VHS-C camcorder with custom Calzone hard case, tripod plate & manual, $3300. P Braddock, 603-436-3360.

Sony DXC325 incl Fujinon 12x lens, case, cable, tripod adapter, (2)-NP-1A, $3800; Panasonic F-500 DIGITAL with AG-7450 SVHS rcdr, incl Canon 12x lens, case, tripod adapter, $9000. Kelly, 318-234-1422.

Ikegami 730A with 12X Fujinon, studio finder, sports finder, AC power supply & hard shipping case, good condition, $1400; Sony BVU 100 with time code, PortaBrace cover, good condition, $500. Dick, RW Productions, Dearborn MI, 313-945-9292.

Sony M3A/DXC3000 CCU, mint cond, $400. Don, Classic Image Prod, 805-529-7586.

Panasonic AGDP800XL supercam, with 14x Fujinon lens, case, tripod plate, 2 Anton Bauer batteries & charger, $7570. Greg, 607-687-0545.

JVC KY-25 camera & JVC BR-S411U S-VHS back, Fujinon 16-1 lens (9.5 to 152mm), AC power supply, 2 Cine 60 14.4 volt/7 Ah battery belts (cells 1 year old, 1 belt fast charger, 2 belt power cables, Frezzolini Mini-Fill light, Sennheiser ME-40 cardioid mic, & PortaBrace soft "Carry-On" camera case, all excellent condition, no missing pixels in camera, $5500/package/BO. L Kaltenbach, 201-224-6063.

Panasonic WV-V3 3-tubes (3) w/PH15x78 Canon lenses, cases & batts, $1250/ea. J Nickerson, Illinivideo, 1007 Broadway, Highland IL 62249. 618-654-5583.

Sony VO-8800 3/4" SP port with very low hours, TC, PortaBrace case, battery charger & 4 NP1B batteries, $2800; JVC KY17U with 12x lens & Anton Bauer battery plate, excellent condition, $3000; JVC 410 S-VHS port recorder & stand alone adaptor, excellent condition, $1500. R Skotleski, 215-362-2924.

Panasonic AG2400, $300; WV3240 camera, $200; AG1950, $450. Jim, Star Video Prod, 912-924-4321.

Sony BVG-1000 LTC/VITC read/gens (2), $650/ea; Ikegami HC230 3 CCD camera with Fujinon 12x, power, CCU, $4500; Ikegami VA-230Vs (3) HC-230/SVHS docking adapter, $250/ea; BVU 800 with TC read/gen, $3250. M Hedler, 212-489-9310.

JVC GY-X2, 1 1/2 yrs old, 46 hrs on heads, lens, case, $6050. Todd 703-958-1659.

Sharp XC-800 II 3-tube camera with Canon 13x9 lens, AC power supply, tripod plate, shpg case, $1500. C Kappelman, AVC Video, POB 3725, Lawrence KS 66046. 913-841-0209.

Sony 5800, excellent condition, $2100; Sony 5600, $900; RM-500 25'remote ext cable & RF converter, $150. G Frei, NY Eye Surgery Ctr, 1101 Pelham Pkwy N, Bronx NY 10469. 718-519-1000.

Panasonic AG 460 2-chip, S-VHS with accessories, low hrs, $1650. R Diopinio, KHIZ-TV, 15605 Village Dr, Victorville CA 92392. 619-241-5888.

Amiga 2000HD w/86MB HDD, 8MB RAM, mouse, 2 internal FDD, Digiview Gold 4.0, many software titles, $1000. Adam, 804-868-4286.

CAMERA ACCESSORIES

Want to Sell

Sony BVW-35 PortaBrace, anvil hard case, approximately 1100 hrs, great condition, Best Offer. T Asher, Idle Minds Productions, 176 Woodland Ave, Lexington KY 40502. 606-281-1205.

Canon PH15x7B KTS 7-105mm teleconference lenses (2), $1600/ea; Sony CMA-8 camera power supply, $200; Sony RMM-1800 rack mount adapter, $50; Vicon remote camera mount & control systems (2+parts), $1300; 25' remote control cable assembly, lens control, genlock, $75; 50' remote control cable assy, camera 14 pin, lens control, genlock, pan/tilt control, $275; 100' pedestal control cable, $50; Panasonic NV-B51 power supply. $65. J Dore, 408-553-2323.

Miller 20 fluid head tripod with Bogen 3036 lens, $500; Anton Bauer propac 14 Magnum Logic with chrgr, $750; 250 Kings 2025-58-59 75 ohm BNC cable connections, $150/lot; NP38 12v gel 38AH batteries (2), $150/ea; Evertz E-2 serial I/Fs (3) for Sony type 5, $350/ea. M Hedler, 212-489-9310.

Panasonic WVRC37 camera remote cntrl unit, new, $625. Panasonic 32-pin camera cables (2), 25', new, $250/ea. M Feiler, 810-625-2421.

Ikegami 5000PS studio viewfinders (2) new in box, Best Offer; Ikegami 572 studio viewfinders, never used, Best Offer; J-Lab FOR 79E component, Ikegami camera adapters, Best Offer; BUHI, Kodak 200m slide projector lenses, all total length, Best Offer; Ikegami TA 79 camera remote cable to TA79, MA 79, Best Offer; J-Lab 79E component adapters (4), Best Offer; Cine 60 FC400 fast chargers, 5-pin XLR-20 units, Best Offer; Cine 60 BP90 single chargers, 20 units, Best Offer; P Goldberg, 718-224-3333.

Quickset 4-53021-8 tripod w/model 4-52304-8 head, xtra heavy duty, $500. Adam, 804-868-4286.

Sony CA-3A Betacam camera adaptor, $600. R O'Connor, R & B Prod, 729 Handwerg Dr, River Vale NJ 07675. 201-307-8999.

Schwem Gyro lens 60-300 set up for Sony 3-chip cameras, $5500. R Winwood, Video Taping Svcs, 48 Split Cedar Dr, Islandia NY 11722. 516-234-0508.

Panasonic Wv-RC32 remote control camera units with cables (2), $200/ea BO/both. B Kelley, WYOAK, 4237 Airline, Muskegon MI 49444. 616-733-4040.

Tiffon 9 series filters, 81A, Fog #2, low con #4, low con #2, $95/all; Ikegami 79EAL comp adaptor, $300; Anton Bauer Lifesaver 8-hour quad chrgr for brick type batts, $400. C Branen, 716-546-8435.

Jazz Ensemble DVE bdct quality 3-axis FX, Z axis rotation, shrink & zoom, color FX, borders, mirror images, flips & tumbles, crops, mosaics, foreground background dissolve, key output, transparent shadows, chroma key, luminance key, solarization, A/B channel flips over background video, adjustable H/SC phase, YC or comp in/out, manual 2 Harmony FX cards & 1 mem card, $5800; Videonics MX-1, digital video mixer, 4-input switcher, frame synchronizer/TBC, special FX gen, under 10 hrs, $975. Todd 703-956-1659.

Ultimate 4, perfect, BO; Quantel DPE 5000 digital fx syst (2) w/all boards, cables, manuals, spares, as is, BO; Videonics PRO ED prosumer edits (3), new in boxes, BO. P Goldberg, 718-224-3333.

Panasonic WJ-4600C special fx gen/switcher, $1000; Prime Image "S-Switch" Y/C video/audio switcher, $1000; Prime Image DSK 6012 keyer, $1000. J Dore, 408-553-2323.

EDITING EQUIPMENT

Want to Sell

JVC 8250/5550 & VE92 or ECS-90 3/4" edit system, all excellent condition, $3000. Damien, 212-431-6841.

Paltex Elite A/B edit cntrlr w/JVC 850 cables, $450; FFwd Video F21 SMPTE TC Gen/rdr w/window insert, rack mount, $350. R Diponio, KHIZ-TV, 15605 Village Dr, Victorville CA 92392. 619-241-5888.

Sony RM-440 edit controller, good condition, $900. C Kappelamn, AVC Video, POB 3725, Lawrence KS 66046. 913-841-0209.

Convergence ECS-900 plus edit syst w/Grass Valley 100 switcher, PC-300 List Mgmt and more, exc cond, $7500. Dick, RW Prods, Dearborn MI, 313-945-9292.

JVC 1/2" edit system, incl BR-6400U, BR-8600U edit, RM-86U edit controller, $4000/BO. Perry, 800-698-0307.

Convergence ECS-103B parallel editor w/2 cards for MDA-100, NV-8500, AU-300, CTL or TC capable, cables for AU-300, exct cond, $400. Adam, 804-868-4286.

Panasonic AGF-745 TC gen/reader for AG-7450, BO. B Weaver, Mentor Prod, 24220 Watt Rd, Ramona CA 92065. 619-789-2001 xt 357.

JVC CR665OU 3/4" edit rcdr, new heads, well maint, $800; JVC CR8250 3/4" edit rcdr, new heads, well maint, $1000; JVC SAT400 S-VHS TBC with freeze frame, exc cond, $900. R Skotleski, 215-362-2924.

Sony BVE-500A edit cntrlr w/tech manual & cables, $500 or trade for A/V gear; Panasonic AG-A95 edit cntrlr for Panasonic AG video machines, $175 or trade for A/V gear; Sony 2860A w/flite case, 3/4" edit rcdr w/cable for RM 440/450 cntrlr, $1000 or trade for A/V gear. B Barrett, Barrett A/V, 330 Blue Heron, Missoula MT 59801. 406-542-2595.

Mediaphile Edit Controller, tweaked for use w/Sony V5000 & Panasonic S-VHS decks, $125. D Stonek, 407-969-9126.

Paltex Abner A/B edit cont V7.3 w/T/C, RSID & BVU-850 cable & monitor, will trade for RM-450, $1200/BO; Paltex Abner A/B cont with 3 cables for Sony 5850, with monitor, printer & manuals, $1000/BO. R Schroeder, American Odyssey Productions, 2500 S 370th St #164, Federal Way WA 98003. 206-838-8338.

Sony VO-5800 3/4" edit source mach, $1500; Sony VO-5850 3/4" edit w/TC mod, $2950; Edit Master 3.3 edit cntrlr w/3 serial I/F, 1 SWR I/F, slo-mo, GPI, $3000; Edit Master edit cntrlr w/2 Vlan I/F for type 5, $750. M Hedler, 212-489-9310.

DIGITAL EFFECTS

Want to Sell

Pinnacle 2010 2D software-based special fx system, uses 4:2:2 component video processing in the digital domain, built-in frame buffer, fully programmable moves plus advanced preprogrammed fx, upgradable to 3D, excellent condition, $3400/Best Offer. PEM, 734 Rt 110, Melville NY 11747. 516-421-4800.

J-Lab component adapter for Ikegami 730 cameras, $50. M Seeber, Seeber Prod, 612-227-9520.

Sony CA-537 camera adapter for Sony 537 head, used 3 times, $650. B Broyles, BVP Prod, 5531 W Plane, Peoria IL 61604. 309-697-9669.

Panasonic AG455, JVC X-1, dolly for Bogen 3033, remote zoom HZZS13BU for Canon lens, BO. Jim, Star Video Prod, 912-924-4321.

Videomedia Z6000 Eagle 2 A/B Roll & Sync roll cont with full list management, SMPTE, cont track or Microlock, animation, built-in sync gen & black burst, DD & printer output, extra keyboard, manual, $2250/BO. PEM, 734 Rt 110, Melville NY 11747. 516-421-4800.

CMX The Edge (2), many interfaces, BO; ADDA AC20 PRC20 dual TBC/fx, BO; Panasonic AU300 M for MAT edit decks, working/not, BO; Crosspoint Latch 6403 edit, switcher interface, programmable, BO; Convergence 104 serial ports (3), parallel, TCR, BO; Sony 5800/5850/440 edit system, mint condition, BO; Polaroid freeze frames (2), rebuilt, composite in/out, remote control & 35mm camera adapter, BO; Panasonic AUJ10 multi-source adapters (2), BO. P Goldberg, 718-224-3333.

Convergence ECS195LM edit, interfaces for Sony & Ampex machines, monitor, manuals, complete working system, $1750. M Seeber, Seeber Prods, 612-227-9520.

LIGHTING

Want to Sell

4K port softlight with soft case, $800. M Seeber, Seeber Productions, 612-227-9520.

MOVIE PRODUCTION EQUIPMENT

Want to Sell

Elki 16CL 16mm film proj, optical sound, 3 blade shutter, $1100. J Baltar, ME Reel, 67 Green St, Augusta ME 04330. 207-623-1941.

Subscribe to: **KUENSEL**
(Bhutan's National English Newspaper)
Send one year's subscription U.S. $80 in CASH by registered post only to:
M/S SANGAY AGENCY
P.O. Box No 285, G.P.O. Thimphu, BHUTAN, S. ASIA

TV TECHNOLOGY
5827 Columbia Pike
3rd Floor
Falls Church, VA 22041

Call **Caroline Freeland**, Classified Ad Manager, to reserve space in the next issue. Use your credit card to pay, we now accept VISA and MASTERCARD.

PHONE: 703-998-7600
FAX: 703-998-2966

Ad deadlines are the first Friday of each month for the following month's issue

Select from these categories for best ad positioning:

Help Wanted	Miscellaneous	Test Equip.
Positions Wanted	Monitors	Transmitters
Antennas & Towers & Cables	Movie Production Equip.	Tubes
Audio Production	Pedestals	TV Film Equip.
Cameras	Receivers & Transceivers	Video Production Equip.
Digital Effects	Remote & Microwave Equip.	Video Tape Recorders
Microphones	Switchers (Video)	

Classified Advertising Rates Effective January 1, 1994

	1x	3x	6x	12x
1-19 col inch (per inch)	$82	79	76	69
Professional Card	97	92	88	86
Classified Line Ad		$1.75 per word		
Blind Box Ad		$10 additional		

To compute ad costs: Multiply the number of ad inches (columns x inches) by the desired rate schedule for your per unit cost. Example: a 3" ad at the 1x rate is $246, at the 3x rate $237, at the 6x rate $228 at the 12x rate $207, etc.

services

2" QUAD
NTSC/PAL
VIDEO ARCHIVES
TRANSFERRED
TO DIGITAL
TAPE FORMATS.
FREE RECORTEC
TAPE CLEANING.
INPUT VIDEO
LONDON
Phone: 44 181 740 5222
Fax: 44 181 746 0811

MANUFACTURERS OF TELECOMMUNICATIONS EQUIPMENT
CED
QUALITY TRANSMISSION SYSTEMS
• UHF / MMDS • ALL SOLID STATE TECHNOLOGY
• LOW POWER • COMPACT, MODULAR DESIGN
• LOW COST • COMPUTERIZED CONSTRUCTION
• RACK MOUNT • HIGH SIGNAL POWER
Amplifiers • Modulators • Upconverters • Exciters
Office: (305) 633-8020 Fax: (305) 635-5445
2500 N.W 39 th Street • Miami, Florida U.S.A 33142

MOVIE PROD EQUIP...WTS

College student wants to trade film equip for computer animation work on Lightwave Demo reel avail any film/video cameras, edit misc. Roger, 612-252-9537.

SIGNAL PROCESSING

Want to Sell

Hotronic AH91 dual TBC w/fx, $1200. Kelly, 318-234-1422.

Digital Creations Kitchen Sync, dual TBC w/ Y/C option, $950. Todd 703-956-1659.

Matthey adj delay lines, 180 degrees, $125/ea; Mathey adj delay lines, 360 degress, $175/ea. M Hedler, 212-489-9310.

DPS 220 frame sync, full frame TBC, Net/Direct, proc amp, Genlock, $1200. Don, Classic Image Prods, 805-529-7586.

Sony VPR-722 remote conts (2) for video proj, good cond, $50/ea. Adam, 804-868-4286.

Hotronic AE16B 16-line window TBCs (6), variable 24/30 frame, proc amp, Genlock, $450/ea or trade; Ampex VPR1SC w/TBC (2), many xtra parts, front panel remote, convergence card & cable, needs adj, $2500/BO. Don, Classic Image Prods, 805-529-7586.

Hotronic AE-61 TBC, $300; Panasonic edit syst incl cables, extra parts, NV-9240 deck, Hotronic AE-61 TBC, NV-A960 controller, NV-9600 deck, NV-9240 deck (parts only), good cond, $700 complete. B Kelley, WYOAK, 4237 Airline, Muskegon MI 49444. 616-733-4040.

CSL-710 Sync gen w/gen lock color, nice, $100+shpg; Hickok 675-A Oscilliscope, $25+shpg. B Kelley, WYOAK, 4237 Airline, Muskegon MI 49444. 616-733-4040.

SWITCHERS

Want to Sell

JVC KM2000 video switcher, excellent cond, $1800. E Stevens, 81 Lancaster Ave, Malvern PA 19355. 610-889-9676.

Panasonic WJMX12 audio/video switcher w/special fx & frame sync, complete w/WJKB15 CG, orig box & manuals, $1150. R Cooper, 802-878-0526.

Polarvision Broadcast Field switcher, 12v-110v, 4 inputs, color gen, wipe gen, Chroma Key, never used, very small (12"x7"x3 1/2"), $500. R Winwood, Video Taping Svcs, 48 Split Cedar Dr, Islandia NY 11722. 516-234-0508.

Panasonic AVE-5 switcher, new, $850. D Stonek, 407-969-9126.

JVC KM-2500 8-input, auto x, DSK, colorizer, chromakeyer, lk new, $2000. R Diponio, KHIZ-TV, 15605 Village Dr, Victorville CA 92392. 619-241-5888.

Grass Valley 1600 IL bdct switcher, recent alignment, manuals, BO. P Goldberg, 718-224-3333.

GVG 1600 1x10 input switcher with borderline option, needs bypass card, $1500. M Hedler, 212-489-9310.

TEST EQUIPMENT

Want to Sell

TEST EQUIPMENT
Reconditioned Wavetek, HP, Tektronix & more. Signal Level Meters, Sweep Systems, TDR's, Power Meters, Spectrum Analyzers, Frequency Counters & Fiber Test Equipment. Guaranteed to meet/exceed manufacturer's specs. 90 day warranty standard.
PTL Cable Service, Inc., USA
Ph: 407-747-3647 Fax: 407-575-4635
BUY - SELL

TRANSMITTERS/EXCITERS

Want to Sell

RCA TT630 or 60 magnet, "newly rebuilt", nvr used, for ch. 40, $10,000/BO; RCA UHF xmtr parts, price varies. R Biddle, WOWL TV, 840 Cypress Mill RD, Florence AL 35630. 205-767-1515.

Transmitters, TV/FM/AM, new and used. Low Prices. Espanol, Portugues. Miami, 305-757-9207.

Especiales de Marzo: Harris BTD50L, RCA TT-30FL, Harris BT18L, banda baja VHF, Linear 1 y 5 W UHF, RCA TT-50FH, banda alta, muchas mas. Microondas, antenas. Su idioma, Miami, 305-757-9207.

TV FILM EQUIPMENT

Want to Sell

Chyron VPR-RGB photo rcdr, 15kHz interlaced analog RGB or composite to film, Polaroid back & lenses, exc for Targa board output, incl Targa cable, $400; AGFA/Matrix 6500 film rcdr w/16mm Arriflex animation cam, holds 100' reels, ultra high bandwidth analog scan, RS-232 interface, 1500 lines horizontal res, w/all docs, exc cond, $2000. Adam, 804-868-4286.

USED EQUIPMENT

Want to Sell

VIDEO PRODUCTION EQUIPMENT

Want to Sell

Knox K40 computer keyboard char gen, stand alone or w/through video, 8 fonts, $1250. J Nickerson, Illinivideo, 1007 Broadway, Highland IL 62249. 618-654-5583.

Chyron ACG, filled w/fonts, exc cond, BO/trade for Beta equip. Perry, 800-698-0307.

Laird CG 7000 Y/C char gen, $650. J Dore, 408-553-2323.

Quanta QCG 500 char gen, twin DDs, multi-font option, good cond, $2495. D Brennan, Brennan Prods, 205-823-0088.

Lenco CCE 850 color encoder, $225; For-A 420 TBC, $1750, M Seeber, Seeber Prod, 612-227-9520.

VCR/VTRS/RECORDING MEDIA

Want to Sell

Panasonic AG-7750A with TC, $3900; Panasonic AG-7650A with TC, $2900; Panasonic AG-DS840, $4200; JVC 4900U 3/4" port with AC battery charger, $1000. Kelly, 318-234-1422.

JVC BRS-378U ind S-VHS recorder with basic edit controls, color processor, HiFi sound, manual, in original box, $800. T Kremer, 5228 Carmen, Las Vegas NV 89108. 702-648-0526.

Ampex 1" type B edit, not working, BO. P Goldberg, 718-224-3333.

Sony BVU-110 3/4" U-Matic port, good-con, $300/OBO. Adam, 804-868-4286.

Panasonic AGDS840 source VCR w/digital slo-mo, TBC, TC, $4360. Greg, 607-687-0545.

Sony 3/4" U-Matic "top-load", VO-2650s (2), RM-430 cntrlr w/cntrlr cables, recently svcd, manuals, works great, must sell, $800/BO. Mike, 203-758-9552.

Sony BVH 2000 with BVT 2000, with DT, completely recond with TC, $18,000; Sony BVH500 A port 1" recorder, color PB, power supply, excellent condition, $2200; JVC GX-2 new with lens & tripod plate, warranty, $6500. E Stevens, 81 Lancaster Ave, Malvern PA 19355. 610-889-9676.

Sony SLP303 Beta I video player & tapes of 1987-89 Chrysler/Plymouth & other cars, dealer marketing & commercials, about 50 tapes, good condition, $250/or trade for video equipment. M Kantor, WPOB-Radio, 50 Knickerbocker Rd, Plainview NY 11803. 516-822-6915.

Panasonic AG-6100 VHS player, 4-head std, many features & still slo-mo, as is, needs cleaning, several avaiablel, $95/ea+shpg. Dan, 201-484-5291.

JVC BRS 611/811 S-VHS player, editor, RMG 810 edit cont, excellent condition, low hours, $5300. Todd 703-956-1659.

Sony VO-8800 3/4" SP with time code, PortaBrace case, very low hours, $2500. C Kappelman, AVC Video, POB 3725, Lawrence KS 66046. 913-841-0209.

NEW PRO VIDEO SYSTEMS INC.
305-444-7654
FAX 444-7644
BROADCAST & PROFESSIONAL USED EQUIPMENT SALES
BETA SP - BETA - 1" - 3/4" - SVHS
Repair - Maintenance - Installation
3027 SW 28th Street, Coconut Grove, FL 33133

GENLOCK YOUR SYSTEM
BLACK-BURST, SYNC, AUDIO TONE $289
NEED TO GENLOCK YOUR VIDEO SYSTEM? The BSG-50 from HORITA generates black-burst, composite sync, and a 1kHz audio tone. Provides up to 6 separate outputs of any mix of up to 6 RS-170A black, 4 sync, 2 subcarrier, blanking, drive and burst flag. **UNCONDITIONAL GUARANTEE.** Contact your local video dealer or:
HORITA, P.O. Box 3993, Mission Viejo, CA 92690 (714) 489-0240
Circle (48) On Reader Service Card

BCS *New and Used*
The Most Intelligent way to Handle Your Video Needs
Sony BVW-400 Betacam Camcorder-32,000
Fujinon A7 X 7F-(Ikegami mount)-2,000
BTS BCB-60 Betacam SP Player-13,000
Sony BVU-950 3/4" SP Editor-9,000
Sony BVH-2500 1" Editor-21,000
Tektronix 1740 Waveform/Vectorscope-2,750
BCS-LA:818-551-5858 BCS-NY-212-268-8800

ACTION-GRAM
EQUIPMENT EXCHANGE

Please print and include all information:
Contact Name _____
Title _____
Company/Station _____
Address _____
City _____ Postal Code _____
Country _____

Brokers, dealers, manufacturers and other organizations who are not legitimate end users can participate in the TVT Equipment Exchange on a paid basis. Listings are available on a $1.75/word basis.
Call **1-703-998-7600** for details and complete display rates.

I would like to receive or continue receiving TV Technology FREE each month. ❑ Yes ❑ No
Signature _____ Date _____

Please Circle only one enty for each category:

I. Type of Firm

A. VHF-TV station
B. UHF-TV station
D. Prod/post-prod studio
E. CATV company
G. Network/group owner
J. Broadcast consultant, mfg. dist, or dealer
L. Corporate TV facility
M. Medical TV facility
N. Government TV facility
P. Educational TV facility
Q. Recording studio
K. Other (specify): _____

II. Job Function

A. Corporate mgt
B. Engineering/tech mgt
C. Engineering/tech staff
D. Prod/oper mgt or staff
E. News mgt or staff
G. Training
F. Other (specify): _____

WTS: ❑ Category: _____
Make: _____ Model: _____
Brief Description: _____
_____
_____
Price: _____

***TV Technology* Equipment Exchange**
PO Box 1214, Falls Church, VA USA 22041
Phone: +1-703-998-7600 FAX: +1-703-998-2966

ADVERTISERS INDEX

While every care is taken to ensure that these listings are accurate and complete, TV Technology does not accept responsibility for omissions or errors.

PAGE	ADVERTISER	READER SERVICE	PAGE	ADVERTISER	READER SERVICE
36	AAVS	122	18	Itelco	52
16	ABE Elettronica	121	44	JVC	44
34	ATI	5	11	Jampro Antennas	4
48	*AVT Srl	33	10	Leitch Inc.	61
20	Altronic Research	131	25	Lightworks Editing Systems Ltd	17
4	*Antenna Concepts	79	51	Linear S.R.L.	8
17	Anton Bauer	6	45	McRoberts Software	119
35	Aston Electronic Designs	108	54	Mier Comunicaciones, S.A.	41
21	Atlanta Video Production Center	26	56	NAB	—
26	Audio Precision	2	59	OMB/Transamerica	112
30	CTE International	94	31	PAG Limited	73
42	Cartoni SRL	69	7	*Panasonic	98
37	Coaxial Radio Systems	15	24	SETEL Spa	110
29	Communication Specialties	23	15	Sachtler	64
38	DB Elettronica	72	47	Sira Srl	40
8	De Sisti Lighting Srl	56	1	Snell & Wilcox	47
2	Digital Processing Systems	91	30A-H	Snell & Wilcox	9,10,12,13
40	E-F Data	113	60	Solid State Logic	75
39	ESE	82	9	*Sony Broadcast	125
50	Elca SRL	22	7	*Sony Broadcast	117
28	Elman Srl	106	49	*Stage Tec Gmbh	53
28	Forefront	92	46	Standard Communications	114
9	*Fujinon	38	12	Superior Electric	127
28	Garner Industries	118	22	Teko Telecom	32
13	Genelec Oy	85	53	Tektronix	89
33	Getris Images	50	28	Telecast Fiber Systems	128
41	Graham-Patten Systems	36	28	Television Systems Ltd.	67
43	Graham-Patten Systems	36	32	Telex Communications	24
23	Harris Allied	77	55	Tennaplex	97
4,5	*Hewlett Packard	19	28	Tentel	88
58	Horita	48	27	Videolinea Systems Snc.	134
			28	Viz, Inc.	62

*These ads appear only in one demographic edition

Sales Representatives

U.S. East Coast:
Mike Dahle
+1-914-762-3572
FAX: +1-914-762-3107

U.S. East Coast:
Eric Trabb
+1-908-591-0906
FAX: +1-908-591-1170

U.S. Midwest:
Gene Kinsella
+1-312-327-3192
FAX: +1-312-327-3193

U.S. West Coast:
Jack Ducart
+1-916-988-8558
FAX: +1-916-988-4052

Europe:
Dario Calabrese
+39-2-7530274
FAX: +39-2-7532697

Japan:
Eiji Yoshikawa
+81-3-3327-2688
FAX: +81-3-3327-3010

Classified Advertising:
Caroline Freeland
+1-703-998-7600
FAX: +1-703-998-2966

USE THIS FORM IF THE SUBSCRIPTION/READER SERVICE CARDS INCLUDED IN THIS ISSUE ARE MISSING

TV TECHNOLOGY

FREE Subscription International Edition

I would like to receive or continue receiving **TV Technology** FREE each month via surface mail ☐ Yes ☐ No

Signature _____ Date _____
Please print and include all information:
Name _____ Title _____
Company/Station _____
Address _____
City/Province _____
Postal Code _____ Country _____

1 Type of Firm *(check one)*

☐ A. VHF-TV station
☐ B. UHF-TV station
☐ D. Prod/post-prod studio
☐ E. Cable TV
☐ G. Network/group owner
☐ J. Broadcast consultant mfg, dist, or dealer
☐ L. Corporate TV facility
☐ M. Medical TV facility
☐ N. Government TV facility
☐ P. Educational TV facility
☐ Q. Recording studio
☐ K. Other (specify): _____

2 Job Function *(check one)*

☐ A. Corporate mgt
☐ B. Engineering/tech mgt
☐ C. Engineering/tech staff
☐ F. Other (specify): _____
☐ D. Prod/oper mgt or staff
☐ E. News mgt or staff
☐ G. Training

Reader Service

March 1995 Issue Use Until July 1995

Use this section to receive free information about products or services advertised in this issue. First fill out the contact information to the left. Then find the Reader Service number printed at the bottom of each advertisement you are interested in, and circle that same number below.

Purchasing Authority *(check one)*
☐ 1. Recommend ☐ 2. Specify ☐ 3. Approve

001	016	031	046	061	076	091	106	121
002	017	032	047	062	077	092	107	122
003	018	033	048	063	078	093	108	123
004	019	034	049	064	079	094	109	124
005	020	035	050	065	080	095	110	125
006	021	036	051	066	081	096	111	126
007	022	037	052	067	082	097	112	127
008	023	038	053	068	083	098	113	128
009	024	039	054	069	084	099	114	129
010	025	040	055	070	085	100	115	130
011	026	041	056	071	086	101	116	131
012	027	042	057	072	087	102	117	132
013	028	043	058	073	088	103	118	133
014	029	044	059	074	089	104	119	134
015	030	045	060	075	090	105	120	135

Telephone _____
FAX _____

Send to: TV Technology, PO Box 1214
Falls Church, VA 22041 USA
or FAX: +1-703-998-2966

COPY & MAIL TO TV TECHNOLOGY, PO BOX 1214, FALLS CHURCH, VA 22041-0214 USA, OR FAX: +1-703-998-2966

RADIO O.M.B.® T. V.

Why settle for less ?

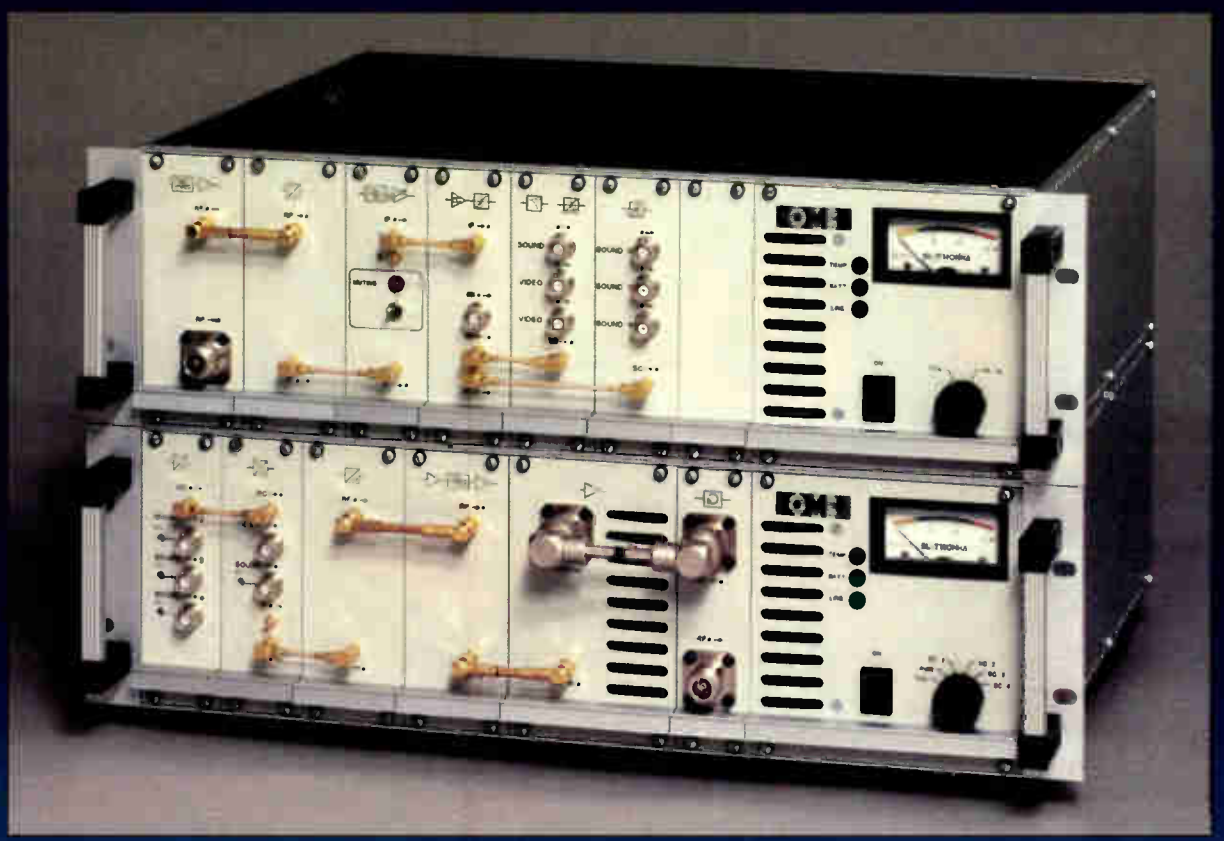
AMPLIFIERS

TRANSMITTERS

LINKS

REPEATERS

PORTABLES



AMPLIFIERS
I - III - UHF BANDS
DE 30 W. - 5 K.W.

TRANSMITTERS
BANDS I - III - UHF
2 Watts - 5 K.W.

MICROWAVE
LINKS
2 - 14 Ghz.

REPEATERS

PORTABLES

STEREO
GENERATORS

MIXERS

ANTENNAS

CABLES

CONNECTORS

MIC-5-2N

- Modular concept with frontal extraction
- Capacity for 1 Video and 4 Audios
- 5 Watts +/- 0.2 dB output power *
- High frequency stability
- AGC at receiver input
- Synthetized
- 30 µ Silver-plated galvanized passive filters
- All parameter controls
- Power requirements: 110/220 V AC, 24 V DC, 50/60 Hz

PARABOLIC
ANTENNAS

VHF - UHF
ANTENNA PANELS

DIPLEXERS

PASSIVE FILTERS

RACKS

* 5 Watts in the 2 and 3 GHz. versión.

O.M.B. has microwave links available in the following bands: 2 - 3 - 7 - 10 - 14 GHz.

O.M.B.®
AMERICA
3555 N. W. 79 Avenue
Miami, Florida 33122 - U.S.A.
Phone: (305) 477-0973 / 74
Fax: (305) 477-0611

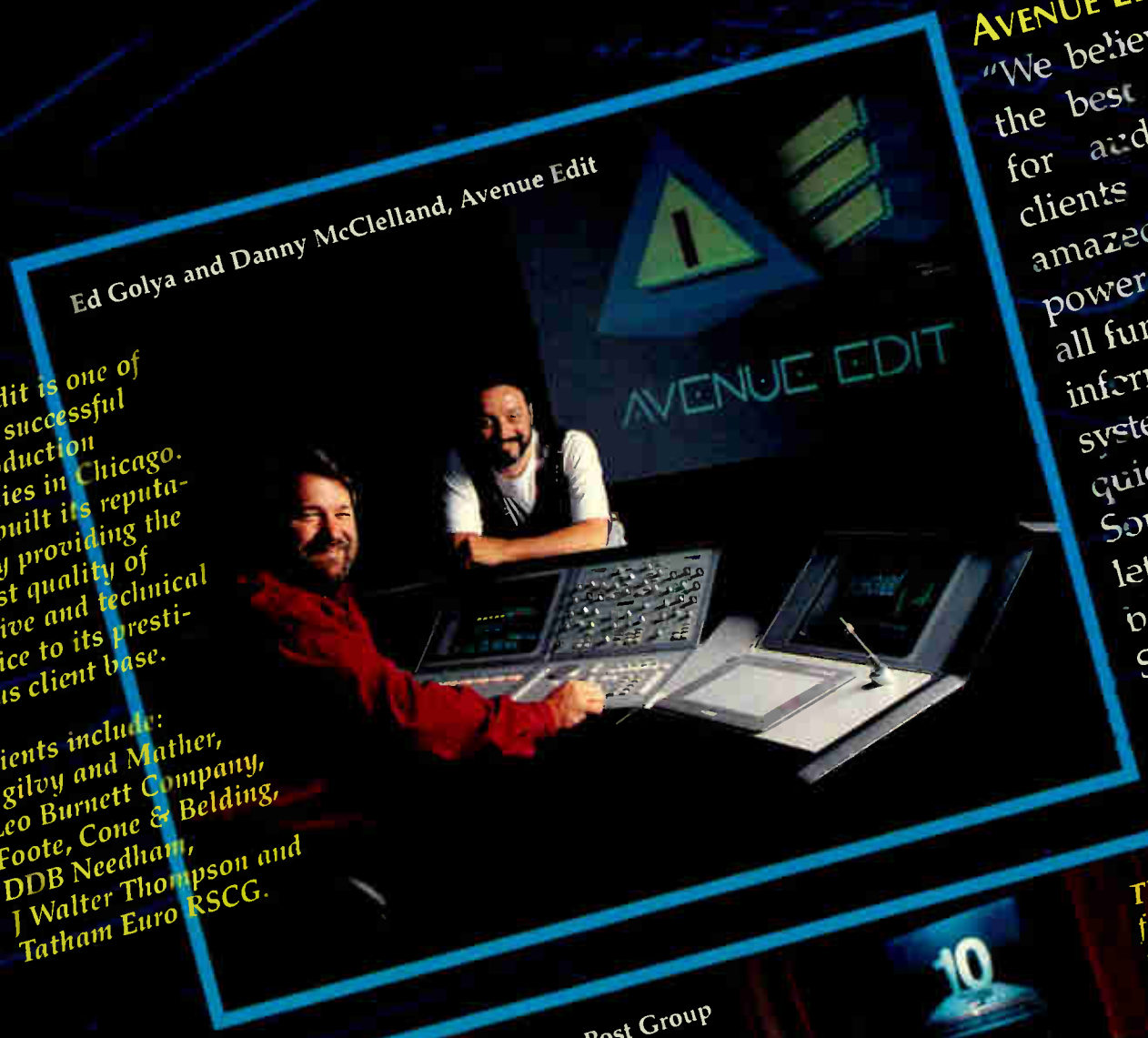
Our only purpose ... To be the best !

O.M.B.®
EUROPE
María Moliner 74-76
50007 Zaragoza - SPAIN
Phone: (76) 370300
Fax: (76) 372336

See Us At NAB Booth 3601

Circle 112 On Reader Service Card

SCENARIA – THE FIRST CHOICE FOR AUDIO POST-PRODUCTION



Ed Golya and Danny McClelland, Avenue Edit

AVENUE EDIT, CHICAGO

Avenue Edit is one of the most successful post-production companies in Chicago. It has built its reputation by providing the highest quality of creative and technical service to its prestigious client base.

Clients include: Ogilvy and Mather, Leo Burnett Company, Foote, Cone & Belding, DDB Needham, J Walter Thompson and Tatham Euro RSCG.

"We believe Scenaria is the best tool available for audio post. Our clients are always amazed by Scenaria's power and integration; all functions and project information reside in one system, making revisions quick and painless. And SoundNet networking lets us share resources between our two Scenaria systems."

Rick Wilson, The Post Group

THE POST GROUP, HOLLYWOOD

The Post Group is a full service post-production facility with a four room audio department. Their ScreenSound and Scenaria systems are used for a variety of projects from music videos and commercials to interactive video games.

Projects include : Paul McCartney World Tour video. Music videos for artists such as P-ince, Hammer, Ice Cube and Tra[illegible]itt.

"The ergonomics of Scenaria attracted us to the system. We needed an automated system, but were limited in the amount of space available for its installation. Scenaria has solved both problems allowing recording, editing and mixing to be carried out on a compact, uncluttered work surface, and in the digital domain."

Solid State Logic

SSL DIGITAL

International Headquarters:- Begbroke, Oxford, OX5 1RU, England. Tel: (0865) 842300
Paris: (1) 34 60 46 66 • Milan: (2) 262 24956 • Darmstadt: (6151) 93 86 40 • Tokyo (3) 54 74 11 44
New York (212) 315 1111 • Los Angeles (213) 463 4444 • **In USA call Toll Free: 1-800 343 0101**

See Us At NAB Booth 16621

Circle 75 On Reader Service Card