

TECHNOLOGY

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by Maggie Dugan

GENEVA

The European Broadcasting Union's new state-of-the-art control center here in Geneva has brought new sophistication to the organization's program exchange capabilities.

With new distribution technology and communications systems, and the fact that the organization's staff is now under one roof, the union has become a more efficient and higher quality operation.

While the facility may be new, the European Broadcasting Union (EBU) certainly is not. Founded in 1950 by 23 European radio and television organizations, it replaced the International Broadcasting Union, an organization dating from 1925, which began to flounder during the upheaval of World War II.

BROADCAST MISSION

The EBU's mission, then, as it is now, was to serve the common interests of European broadcasters by providing a network for program exchange and program cooperation.

The organization boasts 42 active members in national public service radio and television operations from Western Europe and the Mediterranean Basin; and 18 more from Eastern and Central Europe, which became part of the



Technicians at the new Eurovision control center keep an eye on program exchanges.

EBU in January when it absorbed the former broadcasting association of Eastern Europe, OIRT. As well, there are 54 associate members in the union, which makes for EBU cooperation in 79 countries around the world.

The new facility in Geneva brings the EBU's television cooperative, Eurovision, into the digital age. The video monitoring capabilities, recording and switching facility, measurement equipment and intercom equipment, allow Eurovision to distribute programs more efficiently and with a higher-quality transmission. And when an HDTV standard is established, Eurovision's control center will be poised to promote it.

Eurovision does not produce any programs. Its charter within the EBU is to facilitate the exchange of programs between members.

According to Chief of Eurovision Operations Paul Turbang, "Our main job is to coordinate, to monitor and

to see a maximum number of pictures exchanged between members."

KEEPING TRACK

With the new control center, Turbang said it is much easier to track how and when programs are being exchanged and to troubleshoot any transmission problems.

Eurovision maintains six channels on Eutelsat, plus nearly 14,000 kilometers of terrestrial circuits to manage the daily exchanges. Many sporting events that European viewers see are exchanged via the Eurovision network. Eurovision also oversees a new exchange, so members can share video footage from news events. Eurovision control handles an average of 150 transmissions a day; the most it can transmit while still maintaining quality is about 300.

Turbang said the key to Eurovision is managing data flow.

(continued on page 9)

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Español Vea La Página 14



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PROFESSIONAL



HDTV
.....

U.S. SELECTS HD TRANSMISSION SYSTEM

WASHINGTON, D.C.

The U.S. "Grand Alliance" of companies working toward a terrestrial HDTV delivery system has selected the Zenith 8-VSB (vestigial sideband) system as its transmission component.

The selection was made following a round of tests comparing the Zenith System with General Instrument's QAM (quadrature amplitude modulation) system. Both companies are participants in the Grand Alliance and have agreed to share all royalties regardless of which system is utilized.

According to representatives of the group, VSB technology was selected based on its performance in coverage area, interference with existing television signals and overall robustness of the signal. The U.S. expects a period of "simulcasting" at the onset of HDTV service, in which HDTV channels will co-exist with NTSC channels. This made non-interference with NTSC channels a key criterion for the new HDTV system.

The transmission component was the last section of the overall system to be determined. Other systems selected late last year were for audio, data transport, scanning, compression and interoperability with other digital media.

Although VSB has been selected, it will continue to be refined before a final HDTV system is put in place. Among some of the expected improvements are adoption of MPEG2 data packets and the insertion of several adaptive equalization components from GI's QAM.

Meanwhile, the U.S. broadcast community is still holding out hope that a system based on the Coded Orthogonal Frequency Division Multiplex (COFDM) models under development in Europe could still be adopted. However, since no systems are currently being designed for the 6 MHz environment of the U.S., such a system is unlikely to be available by the time final HDTV specifications are established in early 1996.

HDTV
.....

JAPANESE WAVER ON HDTV SYSTEMS

TOKYO

Displaying the power that Japanese manufacturers hold over the domestic market here, a Japanese ministry's initial endorsement of the U.S. digital approach to HDTV in February was quickly withdrawn after one day.

Following a firestorm of protest from major electronics corporations, Akimasa Egawa, director general of the Broadcasting Administration Bureau at the Ministry of

Posts and Telecommunications, retracted his statement that the ministry would join the U.S. to promote digital HDTV in Japan.

Instead, the government will continue to promote the existing analog Hi-Vision system at least into the next century while fostering a gradual transition to digital.

The retraction followed protests from chief executives of leading Japanese manufacturers, such as Matsushita, NEC and Sony, who appeared to be caught by surprise by the original government announcement. For the past two decades, leading Japanese companies have invested billions in the Hi-Vision system, which is currently available by satellite with receivers selling for about \$6,000.

BUSINESS
.....

BTS CHIEF SENT TO U.S.

DARMSTADT, GERMANY

Dr. Pieter A. van Dalen, chief executive officer of BTS GmbH, has been sent to the U.S. to participate in a team investigating multimedia opportunities, company officials announced recently.

The action was requested by the Philips Group Management Committee in Eindhoven.

Rüttger Keienburg, formerly chief operating officer of BTS, has been chosen to succeed van Dalen.

In a short statement, BTS said van Dalen will participate in the U.S. group in order to define ways in which BTS can best take advantage of the emerging multimedia market, particularly in high definition applications.

NETWORKS
.....

CZECH REPUBLIC GETS FIRST PRIVATE NETWORK

PRAGUE, CZECH REPUBLIC

After nearly 40 years of state-run television, the first commercial network began airing here earlier this year.

After obtaining a national license, Nova TV, a unit of CET 21, began broadcasting in February. The venture was funded largely with US\$45 million from the Central European Development Corp.

The network provides Western-style entertainment, as well as public affairs shows featuring question-and-answer segments with public officials.

The network will compete for viewers with state-run Czech television, which already appears to be altering its programming to attract more viewers. When Nova launched its service showing the popular Czech film "Elementary School" and the U.S. film "Ghostbusters," the government aired the previously forbidden film "The Godfather."

OLYMPICS
.....

MATSUSHITA READIES DIGITAL GEAR FOR '96 OLYMPICS

OSAKA, JAPAN

Even before the flame was extinguished at the 1994 Winter Olympic Games, Matsushita was readying its equipment for the 1996 Summer Games in Atlanta, Georgia.

Matsushita has forged an agreement with the Atlanta Committee for the Olympic Games (ACOG) to supply television broadcast equipment to the International

Broadcast Center for the '96 games.

Matsushita will provide 430 D-3 composite and D-5 component digital VTRs, 120 digital processing cameras and a complement of audio and monitoring gear.

The equipment will be supplied through PESA Electronica S.A. of Spain, which has been selected as the turnkey supplier for the games.

NEW TECHNOLOGY
.....

TOSHIBA OFFERS SINGLE-CHIP MPEG 2 DECODER

TOKYO

Toshiba Corp. announced the development of a single-chip circuit capable of decoding HDTV signals compressed with the MPEG 2 standard.

The unit is designed for use in multimedia systems and has the capability to reproduce 1152x1024 images in real time at 30 frames per second. The device measures 225mm² (15x15mm) and features a single-chip 0.5μ triple-level metal CMOS structure containing 1.1 million transistors.

The chip requires four peripheral 4M DRAMs to decode NTSC signals at 3.3V operating voltage, although the 70 MHz clock speed is fast enough for HDTV.

BUSINESS
.....

NEWTEK GEARS TOASTER FOR PAL/SECAM USE

TOPEKA, KANSAS

NewTek, manufacturer of the Amiga-based Video Toaster desktop video production system, has formed an alliance with another U.S. company aimed at bringing the Toaster to PAL and SECAM standards.

Under the agreement, NewTek will unite the Toaster with the Passport 4000 standards converter from Prime Image. This will make the Toaster compatible with PAL, SECAM, PAL-M, PAL-N and NTSC 4.43 standards.

The Passport 4000 also brings time base correction and frame synchronization capabilities to the Toaster, meeting a need that had long been one of the chief criticisms of the Toaster.

"The Video Toaster equipped with the Passport 4000 is going to bring desktop television production to vast new markets," said Tim Jenison, NewTek president.

"Prime Image's customers around the world have let us know there is a tremendous demand for the Video Toaster in diverse video format applications," said Bill Hendershott, president of Prime Image.

SATELLITE
.....

GEMS TV LAUNCHES LATIN AMERICA FEED

MIAMI, FLORIDA

GEMS Television, a Spanish-language cable television channel, has begun transmitting to Central and South America on the Intelsat 332 satellite.

GEMS is using General Instrument's DigiCipher compression technology for the transmission, and plans to lease extra channel capacity for as many as four additional programming services.

Feeds to North America and the Caribbean will continue on the SpaceNet 2 bird.

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Vol 12, No 4
APRIL 1994

Editorial Director: Marlene Lane
International Editor: Arthur Cole
U.S. Editor: Richard Farrell
South American Editor: Lucia Cobo
Associate Editor: Mary Ann Dorsie
European Editor: Chris Dickinson
PHONE/FAX: +44(71)249-5890
Technical Consultant: Lyn Heiges
News Correspondents:
New York: Frank Beacham, Mary Gruszka,
Andrew Morris; *Los Angeles:* Bruce Goren;
Jakarta: Mark Timpany

Production Director: Kim Lowe
Production Manager: Lisa Lyons
Assistants: Lisa Mamo, Julianne Stone, Vicky Baron

Ad Production Coordinator: Kathy Jackson

Publisher: Stevan B. Dana
Associate Publisher: Carmel King
U.S. Sales Manager: Mike Dahle
Marketing Assistant: Annette Deutscher

Ad Coordinator: Caroline Behan
Circulation Director: Rebecca Seaborg
Circulation Mgr.: 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, U.S.A. Phone: +1-703-998-7600. 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 1994 by Industrial Marketing Advisory Services, Inc. All rights reserved. For reprints contact the author and TV Technology.

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PRINTED IN THE USA

Canada Tests Video-On-Demand

by James Careless

OTTAWA, Canada

True video-on-demand. In Canada, it is no longer a dream. It is a reality — one being tested in this city by Stentor and Bell Canada.

Stentor is the alliance of nine major Canadian telephone companies. Bell Canada is the local Stentor partner, which is providing telephone facilities for the test.

These companies are providing true video-on-demand (VOD) services to students at Carleton University and the University of Ottawa. Since January, these students have been able to access over 60 hours worth of

movies and pretaped lectures, using eight PCs located in their respective libraries.

KNOWLEDGE ON-LINE

"The trial is intended to test out the technology to see how it works in a live situation," said Mario Rodriguez, Stentor's associate director of advanced video services. "We are trying to get feedback from the users on their requirements; what they like about the system, what they do not like — the changes they may wish to see. And we are trying to get some feel for potential uses they may have for this system."

"True" video-on-demand is a system in which users can access the video they want,

when they want it. In contrast, the VOD being proposed by cable companies is actually "near" video-on-demand: a bank of TV channels showing the same movie, but with starting times staggered at different intervals. In this system, if the user misses the 8:00 p.m. showing on channel A, he has to wait five minutes (or more) for the same movie to begin on channel B. This is better than having to wait two hours for the channel A run to begin again, but it isn't true VOD.

Stentor has managed to bypass near VOD by dispensing with videotapes and conventional television channels. Instead, it is taking an entirely digitized approach to video delivery — one that gives the user not just the ability to see what they want when they want it, but to manipulate that video remotely over the telephone line, just as if it were playing on a VCR.

The video programming being used in this trial is first compressed by a ratio of 100:1 using the MPEG 1 (Motion Picture Experts Group 1) standard. It is then stored in a Bell Canada video server computer capable of providing 66 gigabytes (GB) of storage on line.

The server is designed to send short bursts of information to buffers, or "cache cards," which then relay the data directly to users. This results in a sort of multiplexed storage facility that can serve many users at once without any of them tying up the actual hard disk itself.

OPEN WINDOW

At the other end, the user accesses the video simply by using a conventional Windows program.

The two-way interactive connection is then made over Bell Canada's network. However, the actual signal processing differs for both sites.

Delivering video to Carleton University is relatively easy. Bell simply sends the MPEG 1 compressed signals down a fiber optic network to the campus, where it is shunted over conventional copper wires to MPEG decoders mounted on the PCs (each with its own individual telephone line).

"Out of the MPEG decoder comes an NTSC signal, which you could plug into a TV set," Rodriguez said. "But since we're using a PC, it goes into a video card, which allows you to display that video on the monitor."

For the user, the system provides an intuitive menu.

"You get a movie list," Rodriguez said. "(It) gives you a little description at the bottom; tells you (in) a couple of lines about what the movie contains. Click on the movie you want, and up pops a video window which starts displaying the movie. And you get another little window with the VCR controls, if you wish, on-screen. With your mouse you can basically click on the 'stop' icon, or the 'fast forward' icon, or the 'play' icon. And the movie in the video window will respond to your VCR-like commands."

Normally, it is difficult to adequately deliver even compressed video signals down "twisted pair" copper wires, since this medium's carriage capacity degrades over distance. However, the relatively short distance from Bell's fiber termination point to Carleton's PCs means such delivery is technically feasible.

However, such is not the case with Bell's link with the University of Ottawa. In this case, the signals are being delivered from the server to the user over an extended copper network; one long enough to significantly degrade video signals.

For this system, Bell uses Asymmetric Digital Subscriber Line (ADSL) technology.



Developed by Bell-Northern Research (BNR), the research and development center for Bell Canada, it essentially increases the carriage capacity of copper networks a hundredfold, making VOD signal delivery possible on copper networks up to 3.45 miles long. After that point, degradation is again too high for adequate signal delivery.

Thanks to ADSL, the University of Ottawa has video-on-demand, allowing fourth-year students to view 40 course-required films whenever they want, on campus.

The question is, how is it performing?

"The resolution is not as sharp as the one you would see on a regular VCR, but it is extremely good," said Pierre Belanger, a communications professor at the university who is evaluating the trial. "We have had some minor technical problems with it, having to do with the system crashing on a few occasions in the first few weeks. But since then, it has been performing up to standard."

LOOKING AHEAD

In the meantime, Stentor is planning to test a multimedia training course for physicians at the Ottawa Civic Hospital. Within two years, it hopes to start offering similar multimedia services to businesses, and ultimately, to bring its version of VOD into the home as part of the much-touted "information superhighway."

Such a service would unavoidably compete with cable television, admits Gary van der Meulen, Stentor's director of advanced video services.

"If what you are giving to the home is primarily entertainment, and it is linear video, then it is going to be quite similar to what the cable companies would be providing."

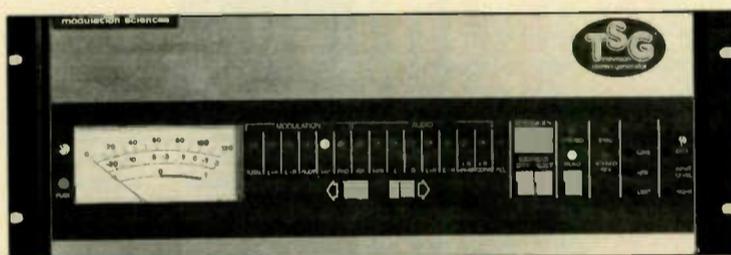
But, he added, "The intent is also to provide more of the interactive transactional kinds of services, which require switching and interface with the content."

It is not clear whether the federal broadcast regulator, the Canadian Radio-Television and Telecommunications Commission (CRTC), will actually allow Stentor to make this final move. Under Canadian law it is currently forbidden — regulations Stentor lobbied hard to change during CRTC hearings in November 1993.

But what is clear is that Stentor has the technology to deliver true video-on-demand — something that, to date, Canada's cable companies do not have and something that may put Stentor's partners into the fast lane of the emerging information superhighway. ■

Editor's note: James Careless is a frequent contributor to Radio World, sister publication to TV Technology.

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O P I N I O N

America Is More than Just the U.S.

by Mario Castellanos

GUEST COMMENT

With all the discussions lately involving global economies, trade agreements, single currencies, etc., it is no wonder that many companies and individuals are feeling somewhat left out of what is happening around them. Add to this such developments as multimedia, the "information superhighway" and communications mega-mergers, and it is easy to see why terminology such as digital and hyper-anything is old news.

There is so much happening and competition has become so aggressive that the belief that "build it and they will come" is less relevant now than it has ever been.

A NEW DAY

Times are definitely changing. It seems that companies are no longer developing new creations every day, but rather, every minute. With each new development, a new market to sell these products and services must be established, and the aggressive companies are progressing toward sales on a worldwide level.

The problem for many companies attempting to deliver its products and services throughout the world is the sheer number of cultures and attitudes found in the various regions. No where is this more true than in the region known as "Latin America."

For people that do not already know it, Central America, South America, Mexico and the Caribbean make up a vital part of the global marketplace.

Although "Latin America" is the most common reference to this part of the world, it is not a very accurate term. In the first place, the inhabitants are not "latins" in that they are not descended from ancient Romans. Secondly, a term like "Latin America" suggests that the region is a single, large homogenous area with common attitudes and customs. As anyone familiar with the area knows, this is hardly the truth.

Also, it must be realized that Mexico is part of North America, along with the U.S. and Canada.

As a whole, this region offers a wide diversity of languages, cultures and customs.

South America consists mainly of Spanish-speaking countries, except for its largest country, Brazil, which speaks Portuguese. There are also a handful of small countries in which English is the dominant language.

Central America is also dominated by Spanish-speaking countries. The one exception is Belize, which is mostly English.

The Caribbean, meanwhile, is a mixed bag of languages. This region's numerous island nations feature a number of European languages, as well as many

indigenous languages and local accents, phrases and colloquialisms.

DIFFERENT APPROACHES

When looking to these areas as a potential market, there are several approaches to choose from.

Probably the easiest and least costly approach is to utilize current, in-house staff. With this option, there is no need to worry about the complexities of hiring new employees and all the associated expenses. This approach also eliminates the possibility of misrepresentation or poor service and support by distributors or dealers.

In addition, an in-house effort affords a tighter reign on the operation, and the elimination of a middle man can ultimately lead to higher profits.

However, there are several drawbacks. The most prominent is the expense over an extended period of time. Dealing with foreign markets often means playing by a new set of rules and regulations. Everything from payment to shipping must be handled differently, and travel, communications and other expenses could eventually be far greater than the revenues from additional sales.

Also, there is the disadvantage of potential miscommunications or misunderstandings with customers and the problem of not being readily available to attend meetings or provide consistent personal follow-up to sales.

To overcome these problems requires a local employee or representative. An employee has the ability to focus on specif-

ic products or services, while a dealer would most likely be able to handle peripheral items or services that could enhance the entire package. In both cases, the knowledge, experience and personal contacts provided by a local employee or representative could generate immediate results.

As mentioned above, the possibility of misrepresentation exists with an independent representative. However, a proper pre-evaluation when choosing a dealer lowers the risk considerably.

The main problem with local representation is it generally limits activity to a particular geographic region. People accustomed to the rules, regulations and business customs of one region or country would not necessarily be able to operate so easily in another.

PERSON IN CHARGE

Another option is to establish a regional sales manager. This choice provides the benefits of both of the above options. By using the direct approach to learn about the different countries, a regional manager stands the best chance of overcoming a common misconception of this area of the world: the notion that all markets are the same. The fact is that although the basic languages may essentially be the same, the cultural, business and legal aspects can be vastly diverse.

In addition, a regional manager can also learn for himself that engineers in this area of the world are as qualified as anywhere else, capable of building systems and structures, not just replacing them.

This understanding helps tremendously when determining how best to penetrate a market and whether it is necessary to obtain additional assistance. By hiring or appointing an individual with the ability to determine at what pace to continue a market penetration, or whether to continue at all, a company or firm can gain the necessary insight and market share to succeed in these regions.

An experienced sales manager will also have an opportunity to meet customers face-to-face and can then decide which dealers or representatives best meet the company's needs. Eventually, the goal is to have name recognition, perceived product reliability and a service organization that best suits the customer.

If one thing can be said about the South and Central America, Mexico and the Caribbean, it is that it is a very active, dynamic region. While the media has labeled it an "emerging economy," it is not. It has always been a vibrant marketplace but is only recently receiving the attention it deserves.

I think the best analogy is to equate this region to a train about to leave a station on a fast-moving track. Companies looking to do business here are like passengers at the ticket window asking themselves: "Can I afford to get on this train, or can I afford not to?" ■

Editor's note: Mario Castellanos is a freelance journalist and marketing consultant specializing in the South and Central American, Mexican and Caribbean region.

SHOW LISTINGS

Editor's note: The 1994 edition of Broadcast in Madrid, Spain, originally scheduled for 10-13 May, 1994, has been postponed until October of 1995. For information, contact show organizers at telephone: +34-1-722-5000 or FAX: +34-1-722-5792.

25-29 April — Africa Telecom '94

Cairo, Egypt. Organized by the International Telecommunication Union. For information, contact Tom DAHL-HANSEN or Suzan Hee-Sook LEE at the ITU at Place des Nations, CH1211, Geneva 20, Switzerland, telephone: +41-22-730-5811; FAX: +41-22-730-6444.

5-7 May — TV Qulp East '94

Vilnius, Lithuania. The first television equipment exhibition for Eastern and Central Europe. For information, contact show organizers at 3, Rue Henri Martin, 92100 Boulogne, France, telephone: +331-4621-1414; FAX: +331-4620-1730. In Asia: Ste. 15D Plaza Ampang City, 332 A Jalan Ampang, 50450 Kuala Lumpur, Malaysia, telephone: +603-452-5436; FAX: +603-452-6058.

25-27 May — DigiMedia

Geneva, Switzerland. The EBU's first DigiMedia Conference will highlight multimedia technologies at the International Conference Center. For information, contact the organizing committee c/o the EBU at Case postale 67, CH-1218 Grand-Saconnex, Geneva, FAX: +4122-717-2710 or 717-2481.

25-28 May — KOBA '94

Seoul, Korea. The '94 Korea International Broadcast & Audio Equipment Show sponsored by the Ministry of Trade, Industry and Energy and eight other government and trade groups. For information, contact the Korean Broadcast Engineers & Technicians Association, 14-11, Yoido-dong, Yeongdeungpo-ku, Seoul 150-101, Korea; telephone: +2-780-0361; FAX: +2-780-0362.

1-4 June — BroadcastAsia 1994

Singapore. The broadcast show returns to Singapore after a

successful run in 1992. For exhibiting information contact: Overseas Exhibition Services in London at telephone: +44-71-486-1951; FAX: +44-71-413-8230. Also, contact Singapore Exhibition Services Pte Ltd. in Singapore at telephone: +65-338-4747; FAX: +65-339-5651.

5-8 July — Future Horizons/SMPTE Australia '94

Sydney, Australia. Television broadcasting, production and post production, as well as film and multimedia issues will be the focus. For information, contact organizers at telephone: +612-976-3245; +612-977-0336.

3-7 August — CES South America

São Paulo, Brazil. The Consumer Electronics Show opens in South America. For information, contact Cynthia Upson at: telephone: +1-202-457-8728, or writer to her at 2001 Pennsylvania Ave., NW, Washington, D.C., 20006-1813, USA.

14-17 August — Video Expo-Set, Broadcast South America '94

São Paulo, Brazil. The Sociedade Brasileira de Engenharia de Televisão will present the show at the Anhembi Convention Centre, accompanied by the first South American Multimedia Show. For information, contact organizers at Rua México, 11slj. 01-CEP20031-144, Rio de Janeiro, RJ, Brasil, telephone: +5521-220-3386; FAX: +5521-240-8195.

16-20 September — IBC '94

Amsterdam, The Netherlands. The 1994 International Broadcasting Convention will be in the RAI Exhibition and Congress Centre. For information contact the IBC Convention Office, Savoy Place, London WC2R 0BL, U.K.; telephone: +44-71-240-3839; FAX: +44-71-497-3633.

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

BroadcastAsia Sets New Goals

1994 Exhibition Reflects Pacific Region's Dynamic Economic Expansion

SINGAPORE

BroadcastAsia continues to emerge as one of the leading professional video and audio exhibitions in the Pacific Rim, with expected 15 percent to 20 percent increases in attendance and exhibitors over the 1992 show.

And with a number of new satellite-based television networks, including Australia Television International, Asian Business News, Cable News Network and TVB International, as well as new production facilities such as a film studio complex by Legend Media and the Singapore Economic Development Board, the region is gearing up for substantial growth.

GROWING MARKET

This year's show, scheduled for May 31 to June 3 at the World Trade Center here, is expected to draw 430 exhibitors and more than 10,000 attendees.

"BroadcastAsia is now firmly established as the premier exhibition and symposium for broadcasters in the Asian region," said Hugh Leonard of the Asia-Pacific Broadcasting Union (ABU).

BroadcastAsia will run concurrently with three other communications-related shows:

CommunicAsia94, NetworksAsia94 and MobileCommAsia94.

"The converging technologies of these shows allow visitors to view more products, learn about more new technologies and make more contacts than if the shows

were held separately," said Nat Wong, senior project manager for BroadcastAsia.

Like many video- and communications-related shows throughout the world, BroadcastAsia will highlight the enormous changes that have overtaken the industry in the past few years. Chief among them is the onset of digital technology and its impact on the production and transmission aspects of the industry.

In fact, the theme of this year's show is, "Broadcast Technologies in Transition: Where Do We Go From Here?"

Attendees can expect to learn about such developments as digital compression,

designed to squeeze more channels through a single satellite transponders or a terrestrial television channel, and non-linear editing for post production on a desk-top computer.

Both the show floor and the conference portion will reflect the digital future, as speakers and manufacturers roll out their visions of where technology will lead the industry. Some of the leading companies scheduled to exhibit at the show are:

"BroadcastAsia is now firmly established as the premier exhibition and symposium for broadcasters in the Asian region,"
— Hugh Leonard, Asia-Pacific Broadcasting Union (ABU).

Matsushita, Harris, Quantel, Thomson and BTS.

INDUSTRY SUPPORT

In addition to international manufacturer support, BroadcastAsia has received the backing of numerous professional trade organizations. Among the list of supporters are the Asia-Pacific Broadcasting Union (ABU), the Asia-Pacific Institute for Broadcasting Development (AIBD),

the Singapore Broadcasting Corp. (SBC) and the Singapore Economic Development Board (EDB). Also lending support are the U.K.'s International Association of Broadcasting Manufacturers (IABM) and the U.S. National Association of Broadcasters.

During the show, the ABU will hold its engineering bureau meeting and the ABU and the IABM will conduct their International Manufacturers and Broadcasters meeting.

While the Pacific Rim continues to be one of the most economically dynamic markets in the world, the region's broadcast industry is expected to grow substantially in the coming years. And that is likely to result in continued growth for BroadcastAsia.

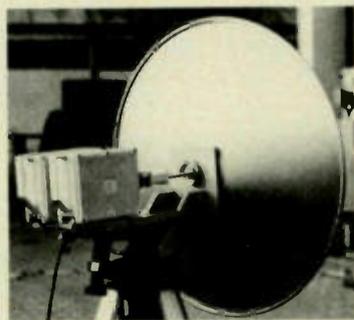
"BroadcastAsia has proven its worth as a specialized event catering to the region's broadcast sectors," Wong said. "Visitors come to upgrade their equipment and production methodology to meet tough market demands."

For further information, contact Singapore Exhibition Services Pte. Ltd., 11 Dhoby Ghaut, 15-09 Cathay Building, Singapore, 0922, telephone: +65-338-4747; FAX: +65-339-5651. ■

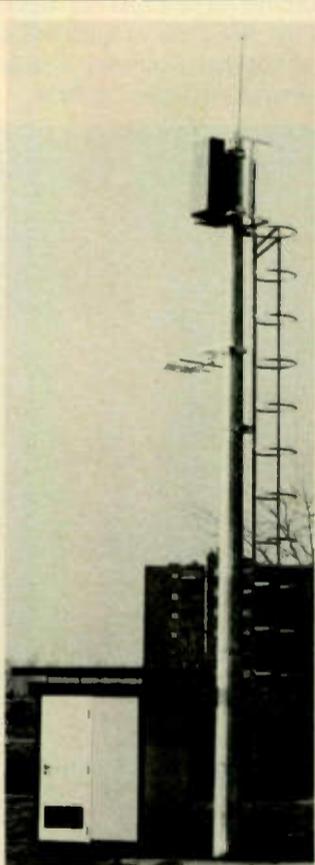
NEWS



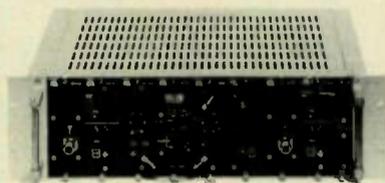
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BroadcastAsia '94

The following is a preliminary list of exhibitors at BroadcastAsia '94. A final list with booth numbers will be available at the show.

- | | |
|-------------------------------------|--------------------------------|
| Abekas Video Systems | International Datacasting |
| ADC Telecommunications | IO Research |
| AEV DI Vaccari G&C | IRT Electronics |
| AKG Akustische U Kino Gerate | Italiana Ponti Radio |
| AMS Neve | Kathrein-Werke |
| Asia Pacific Space Report | Larcan |
| Asia Radio Singapore | Link Communications |
| Australian Broadcasting Corp. | Magna Systems |
| Auvi | Maser Technology Group |
| Broadcast Rentals | Mecomb Singapore |
| Bryan Broadcast & Data Comm. | Miller Fluid Heads |
| Broadcast Television Systems (BTS) | Odetics |
| Canon | Otari Singapore |
| Cinekinetic | Para-Di (S) |
| Cinerent Technik | Pioneer Electronics Asiacentre |
| Comstream | PKE International |
| Crow Broadcast Equipment | QTECH Enterprises |
| Daxco | Quantel (HK) |
| Digital Processing Systems | Radio Computing Services |
| DX Trading Co. | RME |
| EEV | Rohde & Schwarz |
| Egripment | RTI UK |
| Elenos | Sennheiser Electronic Asia |
| Finnish Foreign Trade Association | Sira Sistemi Radio |
| Fuba Hans Kolbe & Co. | SoftImage |
| Fujikoki Singapore | Sony Corp. of Hong Kong |
| Genelec OY | Talia Sound and Vision |
| Hagemeyer/Matsushita Electric | Team 108 Technical Services |
| Harris Allied/Broadcast Div. | Technosystem |
| HHB Communications | Techtel (SEA) |
| International Broadcast Information | Teleste Antenna |
| | Thomson-LGT |
| | Thomson Tubes Electroniques |
| | Transtel Technology (M) |
| | Vistek Electronics |
| | Winsted |

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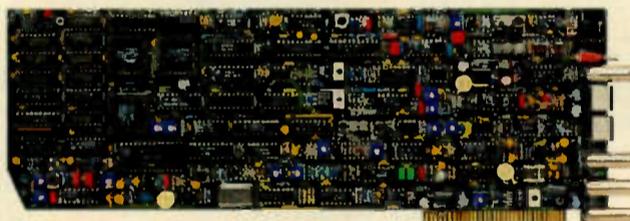
DPS-365 Universal Synchroniser



DPS-375SP TBC/Framestore



DPS ES-3200 Expansion System



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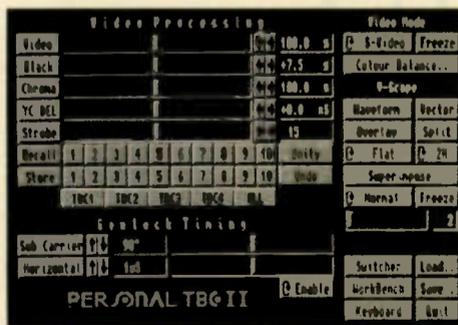
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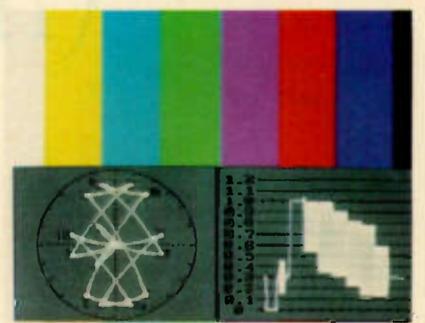
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Component Tapes Tested

GENEVA

A series of tests conducted by the EBU and German broadcasters indicate that the three new component digital tape formats are "sufficiently" robust under adverse conditions, although results varied among the three.

The European Broadcasting Union, in conjunction with German national broadcasters ARD and ZDF, completed this first round of testing earlier this year on Panasonic's D-5, Sony's Digital Betacam and Ampex's DCT formats. A further round of tests in March was expected to be followed by a final report in April.

The EBU said preliminary conclusions from the objective and subjective testing were that, in the objective tests, the formats were found to be "sufficiently robust to be suitable for all but the most complex and demanding applications."

However, the report questioned the numerical transparency of the video compression systems used in DCT and Digital Betacam. The same tests on D-5 — which uses no bit rate reduction — were inconclusive and had to be rearranged after the D-5 VTRs supplied to the EBU proved faulty.

In the subjective tests, DCT and Digital Betacam produced "satisfactory" pictures, except in a few multi-generation tests. DCT and Digital Betacam both employ forms of bit rate reduction of about 2:1.

Richard Chalmers said that although the preliminary report had caused some controversy among the manufacturers, it could still be modified in light of the second round of testing and after an "amicable exchange of views" with the manufacturers.

Martin Salter, Ampex's director of marketing, said the EBU tests concentrated on the "theoretical" numerical transparency of the formats.

"There are two types of transparency," he said. "What we are trying to achieve is visual transparency, not numerical transparency. The criteria of the EBU were very narrow and did not represent the overall reasons for choosing a format."

At Sony, John Ive, European director of broadcast and pro audio products, said the purpose was to stretch the formats past their limit.

"We are extremely happy with the results of the tests," he said. "They were very extreme tests over a wide range of issues, and we are very pleased with the outcome for Digital Betacam."

All three formats were subjected to a range of environmental conditions, pushed through 500 animation edits and replayed with the heads off-track to check error rates.

Subjective tests involved groups of experts and non-experts who compared picture quality without knowing which format they were watching or what sort of processing or the number of generations the tape had been subjected to.

As of presstime, D-5 was due to undergo the same tests. The results, along with revised conclusions for DCT and Digital Betacam, are expected to be circulated to EBU members in the final report in April. ■

CONTINUED FROM PAGE 1

EBU Enters the Digital Age

It works like this: A program or a piece of news footage is offered by a member; EBU sends that offering out to all other members, who reply if interested. Then the EBU coordinates the transmission of the program and tracks the utilization of the program for billing. Members pay for the ability to use EBU transmissions based on the number of household viewers or listeners. Larger members pay more, and probably contribute more, but every member has access to all the programming exchanges.

Up until the new facility was built, the EBU staff was split between Brussels and Geneva, making communication more cumbersome for managing and tracking program exchange. The new operation brings business and technical people together, greatly improving the data flow and making it less expensive, a savings that will be passed along to members.

FUTURE PLANS

Radio remains somewhat of a second sister to television at the EBU. The radio cooperative, Euroradio, still does not have a radio-only transmit station.

"The problem with pooling in radio is the language, and that is why it cannot work like Eurovision, where we have a picture in common," Turbang said.

But the EBU has a target date of September 1994 to install a radio transmit signal in the technical center in Geneva, allowing for the same quality and efficiency of program-sharing for radio as for television.

Euroradio does manage some radio transmission via satellite for its members — each year 180 live concert events are broadcast. But the rest of the program sharing is done on tape: Some 1,500 classical concerts and operas are mailed between

members each year.

Thomas Alexanderson, who heads up Euroradio, calls this "the last idealistic program exchange in broadcasting in Europe." A member records a concert, clears the rights to broadcast for the other members, offers it through the Euroradio network and mails tapes to receiving members across Europe.

Alexanderson is looking forward to next fall when the Euroradio technical center will be complete.

"Next year, we will be able to transmit these concerts to all our members to record," he said. "This will simplify the exchange program tremendously, and hopefully create economic gains for all our members."

The delay is not just getting the Geneva control center up to speed, it is also equipping the radio members to receive the transmissions. Although the EBU fund helps to subsidize part of the cost of installing satellite reception equipment, it takes time to get all the members prepared, especially the new members from OIRT, who in many cases are poorly equipped technically.

Alexanderson also has organized a computer databank and e-mail system to increase the efficiency of member communication.

"A couple of years ago, I realized how many sheets of paper we circulated by mail from this office every year and installed a databank here, which is being used by an increasing number of members," he said.

Besides program exchange, Euroradio

hopes to improve its ability to provide technical operation services for news and sports events by offering portable satellite stations for reporters to use on location.

DARK SUITCASES

"We have two dark suitcases," said Alexanderson, "which you just unfold, put up the antenna, phone the international satellite and the reporter can be linked to his home base to report."

And something that Euroradio can do that Eurovision probably cannot is a project of program cooperation. Last year, Euroradio organized a joint commission to pro-

duce plays of well-known authors. "Now Euroradio has entered the realm of the spoken word and proved there can be program cooperation, which is economically sensible in this way," Alexanderson said.

Turbang said the new facility changes the EBU's television and radio cooperatives' technology and efficiency, but not the mission.

"Of course, there are improvements in communication and coordination activities," he said, "but the new technology of digital switching is the big thing, which we will begin next year. But we are here, as before, to facilitate the exchange between our members." ■

Maggie Dugan, an independent consultant, writes on the industry for Radio World, sister publication to TV Technology, from Switzerland.

Up until the new facility was built, the EBU staff was split between Brussels and Geneva . . .

EC Proposes Data Highway Fund

by Chris Dickinson

BRUSSELS, Belgium

The European Commission (EC) has proposed to set up a development fund of ECU 5 billion to help research and build Integrated Services Digital Network (ISDN) links in an effort to create an "information superhighway" across Europe.

If the plan is approved by member states, the effort would mirror plans for broadband video and data networks currently being examined in the United States and Japan.

The money, which would be made available over the next 10 years, is part of a package put to European governments by EC President Jacques Delors in support of new information networks. The aim is not only to help finance projects, but to coordinate the work of individual national telecom operators and ensure common standards.

However, before the EC fund is established, national governments will have to approve it, which is unlikely to happen before June.

EC officials said disagreement over the proposal currently centers on exactly what the money should be made available for.

"Some states feel that it should cover the infrastructure only, but most think that it should cover not only the infrastructure, but also the associated services," according to an EC statement.

Whatever the final make-up of the fund, the creation of an information superhighway is already being researched by a host of telecommunications operators, software companies, equipment manufacturers and broadcasters.

The EC estimates that the cost of a such a project is likely to

total about ECU 150 billion over the next 10 years, of which ECU 67 billion would be needed between 1994 and 1999 for priority projects. The overwhelming majority of this money is expected to come from private investors.

In the U.K., British Telecom has announced a consortium with Pearson, one of the backers of BSKyB, as well as with terrestrial channel LWT and U.S. retailer Kingfisher to develop video-on-demand services on the BT network. A small-scale trial is due to begin this spring in Ipswich, located north east of London. The trial will be to test the technology for these services using equipment supplied by U.S. software management specialists, Oracle Corp.

A larger trial involving up to 2,000 homes is planned for the fall.

Oracle, which has also signed a deal with U.S. broadcaster Capital Cities/ABC to develop a new interactive video news service, is supplying the BT trial with the computer capacity and management software to control up to 17,000 simultaneous demands for video programs, plus the capacity to expand that at least ten-fold.

Other European companies are also researching how television channels and video services can best be managed down a cable link, though the relatively high take-up of cable TV services in countries like Germany and Benelux already mean the infrastructure is available.

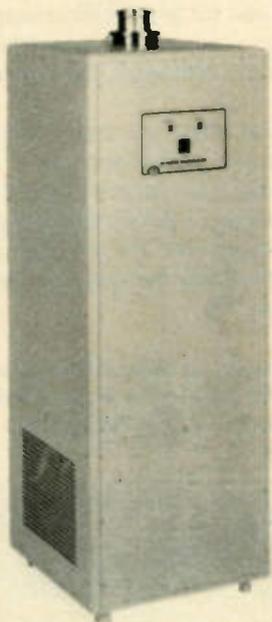
France, Germany and Italy are all known to be testing systems for interconnecting video programming with telecommunications. As a result, the market for both programming and equipment is expected to increase in Europe over the next several years. ■

Designing a Shortwave Receiver

by Doug Lung

RF TECHNOLOGY

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Recently, I lost the parts for a shortwave receiver/frequency standard project I had been working on. Well, fortunately I found them in Los Angeles before the earthquake rearranged my apartment. I hauled them back to Miami and am pleased to report I have come up with a working design that uses two ICs and one FET.

This month I will show you the details so you can build and perhaps improve on the design. Although I have only tested this circuit with the U.S. standard frequency station WWV operating at 10 MHz, there is no reason why the circuit cannot be modified to work on other frequencies.

Most time and frequency standard stations operate on 5 or 10 MHz. Table 1 is a list of major worldwide time and frequency standard stations operating full time. I have not listed all stations or all frequencies, but shortwave guides usually list these stations. The most complete list I have seen is in the "World Radio TV Handbook" published by Billboard Books. It should be available at most amateur radio stores.

WHY BOTHER?

Why build this receiver/frequency standard? While it is possible to use a calibration laboratory with traceable standards, the calibration they provide usually is not valid for more than six months. Also, with less expensive frequency counters, the long-term stability of the time base in the counter may not be sufficient to provide accurate enough readings even over six months.

Figure 1 shows the receiver/standard. The heart of the circuit is the NE602 double balanced mixer/oscillator integrated circuit. The SA602 is an equivalent chip, and I used one made by Signetics. The NE602 is designed for use in cellular radios as a second mixer, but does an excellent job at HF frequencies. The specifications show a typical noise figure of 5 dB at 45 MHz with a third-order intercept point of -15 dBm.

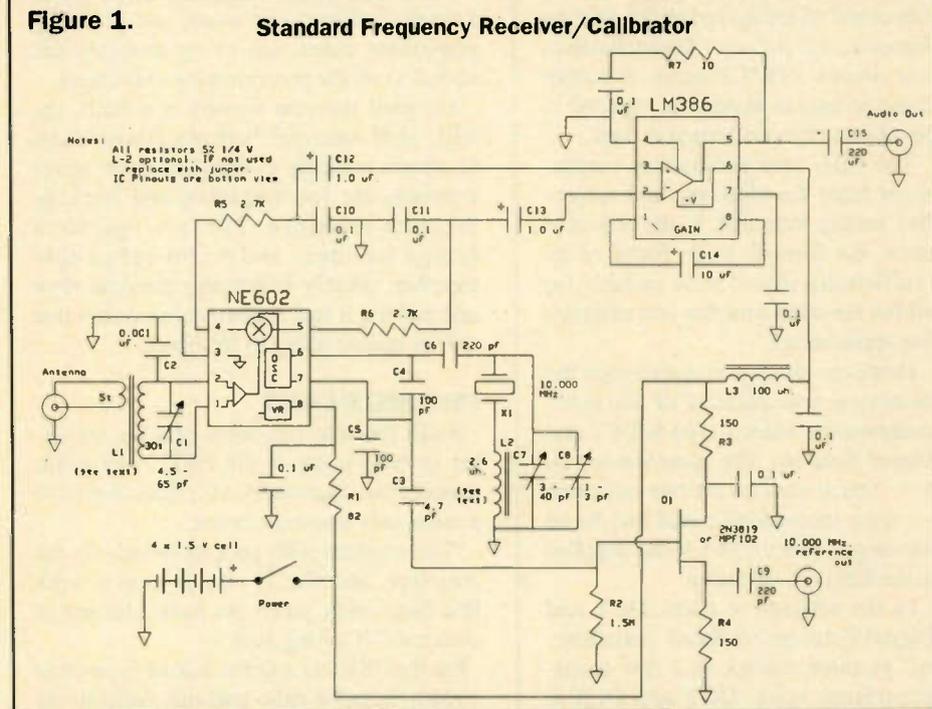
The NE602 amplifies the off-the-air standard frequency signal applied to L1 and mixes it with the signal from its oscillator. The output of the NE602 is the difference between the oscillator's crystal frequency and the standard frequency station. A capacitor across the crystal (X1) permits it to be

the wipers to the LM386 — a coupling cap is not required here. I also found it was necessary to use a tuned input circuit to increase RF coupling efficiency. While it worked without one, performance was horrible.

I was also concerned that the internal oscillator circuitry in the NE602 would not be stable enough for use as a frequency standard. This turned out not to be a problem, however. I was easily able to keep the frequency within 0.02 ppm long enough to cal-

ibrate my frequency counter, although I did find that connecting the counter to the oscillator slightly changed the frequency. This should only be a problem if you are attempting to use the calibrator without receiving the standard frequency station.

Reducing the value of C3 and/or inserting a resistor in series with it should help isolate the counter output. If the coupling is reduced too much, an additional amplifier stage may be necessary to get enough voltage to operate the counter.



Other than the ICs and the crystal, the parts are not particularly critical. However, the quality of the capacitors used in the oscillator circuit will directly affect its stability. Use ceramic capacitors with "NPO" temperature

drift characteristics for C3, C4, C5 and C6. The coarse (C7) and fine (C8) frequency adjust capacitors need to be high quality variable capacitors, but do not use compression type mica trimmers.

I used a Sprague-Goodman "Filmtrim" capacitor for C7 and an air variable 1-3 pf. capacitor for C8. NPO ceramic trimmers should work fine for C7, but for C8 an air variable or piston trimmer is better, since they have less of a tendency to change capacitance when the tuning tool (or your hand if you use a knob) is removed.

Whatever type of variable you use, be sure to ground the side the tuning tool will touch. The 0.1 µf bypass caps are not critical. However, I would recommend using a film type capacitor rather than a ceramic capacitor for C11 and C10.

All capacitors with polarities shown are electrolytic. I used tantalum caps for C12, C13 and C14 and a plain electrolytic for C15. None are critical, but C12 and C13 should be matched. A film type capacitor would be best here, but it must be large.

The inductors L1 and L2 will probably be the most difficult to locate. I wound my own using iron power toroid cores. L1 has 30 turns of #26 wire on a T68-6 core with a 5 turn coupling loop. L2 ended up being 2.6 microhenries — 23 turns of #22 wire on a T50-2 core. I like toroid cores because they are self-shielding. However, conventional coils wound on a form like a plastic 35mm film canister ought to work. L1 needs to be 4.2 microhenries, and the coupling loop should match the 1:6 turns ratio.

None of this is critical, however, as long as the tuned circuit L1 and C1 resonate at the same frequency as the crystal and the standard frequency station. I used another

"Filmtrim" variable capacitor to tune L1. Do not be afraid to remove turns or add a parallel capacitor if needed to resonate the circuit. The value of L2 will depend on the crystal used, or it may not be necessary at all. I used a 10,000 MHz CTS microprocessor crystal for X1.

IN TUNE
My original circuit did not include L2, and I found I could not get the crystal to oscillate below 10.002 MHz. I added inductance (L2) until I could tune the crystal using C7 and C8 through 10.000 MHz. Unless you can tune the crystal through zero beat, it is tough to be sure the frequency is correct.

My first receiver had problems with loud feedback. Apparently, a small amount of RF was getting through the LM386 and back into the NE602. I solved the problem by adding a 100 microhenry RF choke in series with the power supply line to the LM386.

A series resistor (R1) working with the 0.1 µf bypass capacitor on pin 8 provided sufficient decoupling. If the bypass caps do not have good characteristics at radio frequencies, add a 0.005 to 0.01 µf ceramic capacitor in parallel with them.

The power supply for the frequency standard receiver is simple — 4 AA cells. I measured the current draw at 8 mA when using earphones at audio output. This type of receiver is known as "direct conversion," and they have a history of being very sensitive to picking up hum. Since we will use the power line frequency to get extremely accurate frequency readings from the circuit, there cannot be any hum on the signal. Direct conversion receivers are also known to pick up nearby AM radio stations. The inductively coupled input and resonant input circuit should eliminate this problem. I have not seen a problem with "bleed-through" when testing in an urban area (Miami).

(continued on next page)

A Look at the Video Explorer

by Max Whitby

SPECIAL REPORT

Fifteen years ago, as a trainee for the British Broadcasting Company, I quickly learned to appreciate the high standards that the fabled organization set for production quality. The complexities and limitations of broadcast and video technology required a team of technical engineers, but they impacted the creative process as well.

I looked forward to the day when, as a producer, I would have technical as well as creative control. Today, as founder and director of the Red, Green & Blue Company, a London-based teleproduction company doing work for the BBC, Thames Television, London's Channel 4 and British film-makers, I have that control right on my desk with an Apple Macintosh Quadra 950 computer and a Video Explorer digital video processing card.

I first saw the potential of the Mac in broadcast production while working on a program called "Hyperland" that involved Douglas Adams, creator of the futuristic

"Hitchhiker" series. The show featured complex graphics, all done on a Mac.

I was convinced that this kind of device would result in the same kind of revolution in television production that we have already seen in document publishing. However, at that time, I was not satisfied with the quality of the video output from the Mac.

In 1990, I read about a new video card that offered high resolution, broadcast-quality output. I tried it and found it to be completely true to its claims. The card was the Video Explorer from Intelligent Resources Integrated Systems, an American company headquartered in Arlington Heights, Illinois.

The Video Explorer enables broadcast quality video to be produced from a Macintosh desktop computer. It can work in a variety of extended Macintosh applications, supporting such advanced capabilities as image capture, processing, real-time and special video effects, multimedia, animation, paint and character generation with anti-aliasing.

Today, at the Red, Green & Blue Company, I use a Video Explorer RGB input/output card with either a Macintosh Quadra 950 or Macintosh 800 and an Avid editing system.

Science and history documentaries represent the bulk of my work. One of my recent productions, "The Truth About Sex," aired on BBC 2's "Horizon" series.

The Video Explorer was used to create all of the program's graphics, and the results were quite satisfying. Everything was done within our £3,000 budget. If we had opted for traditional methods of character generation, it would have cost two to three times that amount.

A recent challenge has been an animation project called "The Mouse/Cat," a children's story illustrated by Nicola Bailey. I am working with Grasshopper Productions,

required a budget of approximately £500,000. With the Video Explorer, the graphics were done for half that cost.

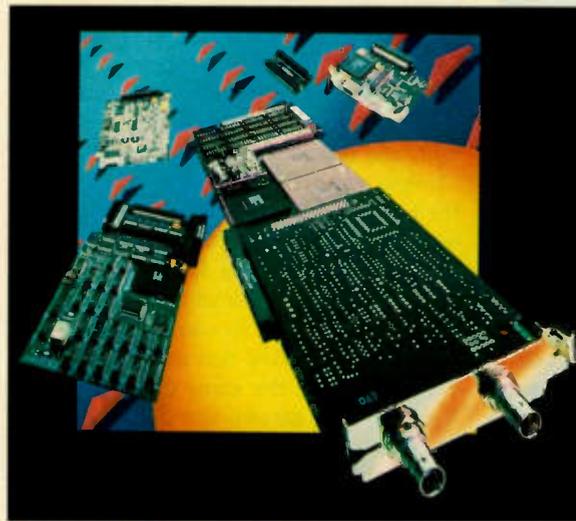
Currently, I am producing and directing a segment of "The People's Century," a 26-part history of the 20th century that is scheduled to air on both the BBC and the U.S.'s PBS network in 1996.

Products like the Video Explorer enable people to produce exceptional programs for less than they thought possible. As a producer, it means I can literally do it myself. I have control over the images, and I can generate the quality I require.

The Video Explorer enables me to complete my artistic vision without a lot of layers. It lets me go from concept to completion with little space in between those two points. ■

Editor's note: After spending a decade with the BBC, Max Whitby formed the Red, Green and Blue Company in 1989. He then founded The Multimedia Corporation, a firm committed to the advancement of multimedia, in 1990. He holds a degree in philosophy from Oxford University, has produced more than 50 documentaries on science and history subjects and holds numerous awards from English and American television organizations.

For further information on the Video Explorer, contact Intelligent Resources (telephone: +1-708-670-9388; FAX: +1-708-670-0585), or circle Reader Service 20.



Intelligent Resources Video Explorer brings multimedia to the Mac.

an English company that won an Emmy Award for a similar animated program, "The Angel and Soldier Boy."

Using the Video Explorer, we took the illustrations from print form and brought them to video, adding animation along the way. We ended up with a 30-minute program of about 30,000 frames of animation.

In a major undertaking of this type, conventional animation methods would have

CONTINUED FROM PREVIOUS PAGE

Constructing Your Own Shortwave Receiver

Construction is not difficult. I built the first version in one evening using the "ugly" copper clad board method. The ugly method made it easy to change components and optimize the design. With a little care, it might not even look too ugly. If you are not familiar with this style, this is how to do it:

STEP BY STEP

Take a copper-clad printed circuit board blank, about 4x6 inches (10x15 cm) in size and position the ICs, capacitors and connectors around the board to keep the lead lengths as short as possible. The circuit board serves as a ground plane. Once the items are positioned, secure the ICs dead bug style (legs up) on the board by using a short piece of bus wire or component lead to tie the ground connections to the board.

Next, solder the IC bypass capacitors to the IC leads and ground, keeping the capacitor lead length to a minimum — 1/4 inch (6 mm) or less. Finally, connect the rest of the components using their ground connections or other components to support them. Double check all the connections and the position of the IC's before applying power. The pin connections for the IC's are shown in Figure 1 as they appear from the bottom of the IC.

If all this construction sounds too difficult, I found an alternative. Ramsey Electronics, Inc. (793 Caning Parkway, Victor, NY 14564, telephone: +1-716-924-4560, or FAX: +1-

716-924-4555) sells a kit with the NE602, LM386 and all the other parts needed to make a tunable 10 MHz receiver. (Batteries not included). I paid US\$30 for the kit.

Although I have not had a chance to test it, I do not see any reason why it could not be modified for this application. It does not include a crystal, so you would have to modify the board to use my crystal circuit. Also, only one of the NE602 outputs and one of LM386 inputs is used, without much filtering, but again, this does not appear to require a significant modification. You would lose the volume control, but since the kit includes an RF gain control, it should not be missed.

Ramsey uses a 9 volt battery to power the kit. The NE602 cannot handle 9 volts, so Ramsey includes a 6.2 volt zener to reduce the voltage to the chip. I would recommend using 4 AA cells and eliminating the zener.

If you have any questions or comments, fax them to me at +1-305-884-9661, or telephone me at +1-305-884-9664 after 6:00 p.m. eastern U.S. time. The fastest way to reach me is via CompuServe or Internet. My CompuServe ID is 70255,460. On the Internet, use 70255.460@compuserve.com. You can also write me at 2265 Westwood Blvd., Suite 553, Los Angeles, CA 90064. ■

Doug Lung is vice president and director of engineering at the Telemundo Group of stations.



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ITALIAN TECHNOLOGY FOR WORLDWIDE MARKETS

Quality Audio Strengthens Video

by Mike Sokol

SPECIAL REPORT

Most video facilities are being asked to do more complex audio as part of the editing process. Sometimes, even the best equipped studios fail the most basic audio editing chores. Here are some procedures and equipment setups that will help your staff streamline the audio editing process and make better sound tracks at the same time.

AUDIO MONITORING

While it is obvious that you should not edit video on a black-and-white monitor or a cheap TV receiver, many facilities use the equivalent level of equipment for their audio. In the past, the sound was judged acceptable if it was undistorted and the meter was moving, but modern audiences have become acclimated to the music video

experience — the sound must be excellent, or they will quickly lose interest. The only way to know what the final product will sound and look like is by using proper monitoring.

Although even many consumer hi-fi speakers will sound better than the built-in three-inch drivers in video monitors, professional speakers offer much more flexibility and realism.

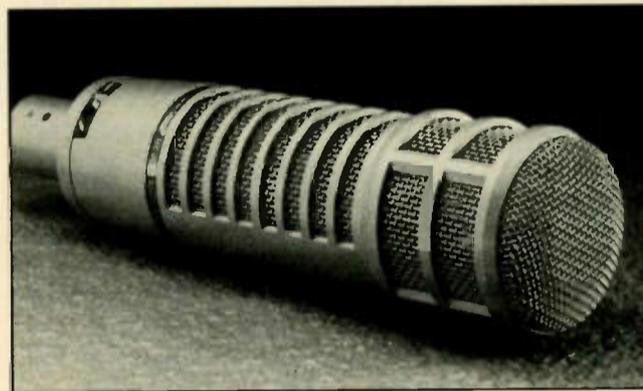
Unless you are doing music video editing for heavy metal rock bands, you do not need the huge cabinets found in many recording studios; near field speakers will be fine for most applications. These monitors are designed to sound good when placed three to five feet away from your ears and about the same distance apart. Typically they are two-way, with a six-inch or eight-inch woofer and a single tweeter. Yamaha, JBL, and Tannoy have sold many such units to recording studios around the world. Fostex manufactures a line of excellent monitors with built-in amplifiers, which simplifies installation. (Be sure to look for magnetic shielding if you plan to mount them close to your screens.)

Placement is also a consideration. Typically, speakers are placed on the floor or a corner of the rack, but they need to be located an equal distance apart on either side of your main video screen. In this way, even mono audio sound will seem to come from the center of the video and be much more realistic.

Most facilities edit audio in a split track format for later mixing to mono. In the edit room the music track can come from one speaker and the narration from the other, which will make it much easier to spot voice problems such as "P" popping.

BACKGROUND NOISE

Reduction of background noise is also important. I find the whine of a computer hard drive especially irritating during a mixing session. Background noise tends to mask real problems lurking in the audio tracks, problems that will be revealed once someone plays your video in a quiet environment.



The Electro-Voice RE-20 microphone

In my studio, I built a closet for the computers and ran extension cables for the keyboard, mouse and monitors into the editing area. Make sure the cable runs do not come too close to other signals, since digital cables can be pretty hot in terms of RF generation.

If possible, also move the video decks out of the area. My closet has a sliding glass patio door which allows me to see what is happening and not have to listen to it. Just be sure to allow for ventilation since most equipment generates a lot of heat.

When it comes to audio processing, the biggest question is whether or not to compress. There are two basic types of compressors. The first type is the ALR (automatic level control) found on cheap cameras and decks that merely assure you that "something" will get recorded at all times. These types of systems are easily identified from their lack of a VU meter.

Unfortunately, they cannot be defeated most of the time, and they often overcompensate during quiet passages, pulling up all the room noise in the process of riding the gain. I have successfully used a downward expander in post audio to help restore some of the room dynamics, but it is a gamble at best.

The second type of compressor is a hard limiter usually found on professional decks and camcorders. They are fine when you are not sure of your audio level and need to bring it back alive, but I prefer to do my processing back in the studio.

DROPPING THE LEVELS

If you have hi-fi tracks, such as on an S-VHS deck, then you can get away with recording at much lower levels than normal, as much as -10 VU on the average. This will prevent the on-board limiters from cutting in and should prevent distortion on the peaks if you choose to bypass the limiters, yet it still provides a good S/N ratio.

You can level out the audio in the studio with any one of the excellent compressor/limiters available today. I still

use my DBX 160X on a daily basis, and many clients enjoy the Urei LA-2 for its "classic" sound. The advantage of compressing in the studio is that you can always change your mind if something does not work, and later "fixes and additions" will have the same type of processing.

Equalization is another thing that can cure or kill your production. Avoid drastic eq at all times (more than 6 dB of boost or cut usually means something is wrong), and if you are recording in the field on a board with eq, avoid the temptation to boost the highs and cut the lows during taping. Tape saturation and overload do not sound very good and cannot be fixed later.

If you cut all audio flat and log the microphone type used, any later fixes can be matched much more easily. I typically have

a house curve which will be used on the audio during its last stage of editing. Fixes are much easier if you do not have to go several generations back to duplicate a room ambience or match a voice insert.

There is another group of processors which I will call "enhancers." These work by either adding even-order distortion to the fundamental tones, or by actively dipping the

mid-range equalization, thereby making the program sound brighter. Aphex and Barcus Barry manufacture systems of these types. Both work very well, but you should avoid the temptation to pre-process audio in the field or during the first stages of editing. I often get narration tapes from various studios and radio stations that need to be integrated into a single production. Matching all the various processing can be very time consuming and expensive, and it actually degrades the product.

VOICE LESSONS

Sooner or later, everyone needs to record a voice. You may think that it is very easy; after all, you just jam a mike in the talent's face or point a shotgun at them. But in reality, the human voice is probably the most familiar thing most people have ever heard, and that makes it one of the toughest to reproduce accurately. The average person has no idea what a sampled drum kit really sounds like, but they have been listening to voices since the day they were born.

Here are some hints on recording voices well.

— **Use a good mike.** This may seem obvious, but it is so often overlooked that it often ruins an otherwise good production. My favorite standard mike is the Sennheiser 421 with a good pop filter. There is a nice bass boost when used close, which enhances male clients' "tubes," and the high end is free of nasty presence peaks that are often a source of trouble with female voices. The price is around \$300, which may seem expensive at first, but a good mike will last practically forever.

I also use a Shure SM-7 or Electrovoice RE-20 for a lot of productions, but it is mostly a matter of personal taste. All of these units will do a good job under most circumstances and be the best mike for some situations. You only need a few good mikes for video narration, so go listen and pick up one or two.

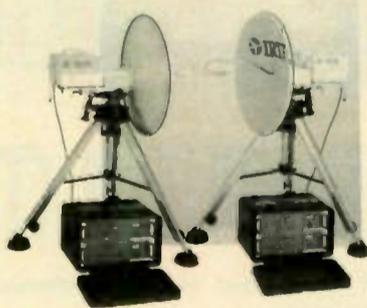
— **Prepare the room.** Do not try to record in a closet because it will really

(continued on next page)

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Give Your PC the Care It Needs

by Tom Vernon

SPECIAL REPORT

To the engineer trained on audio and RF circuits, a station's personal computer can be an intimidating black box. Nevertheless, the day will probably come when he or she is called on to fix one, or connect several together in a network.

You can learn about your PCs at a low-stress pace by adding them to your station's regular preventive maintenance schedule.

CLEANING UP

The best place to begin is inside the main cabinet, where dust tends to accumulate. Air flow is restricted, increasing the chance of thermal intermittents or failures.

Remove the cover and give the inside a good cleaning. A vacuum cleaner and crevice tool work, but a miniature vacuum is gentler and allows for easier access to tight spots. If you do not have one, a mini-vac is a worthwhile and inexpensive addition to your tool kit.

Pay particular attention to the area around the fan and power supply. Be careful not to loosen any boards or edge connectors, and to return any cards that were removed to the correct slots.

Check the backup battery. This device keeps the system clock running on time and also powers the CMOS circuitry that maintains configuration information. They usually are lithium-type batteries with two- to three-year life spans. If you decide to replace the battery, keep a printout of the configuration file to save yourself from searching through manuals for the correct scheme.

Replace the cover and give the outside of the machine a thorough going over with a damp cloth and mild cleanser. This will not affect the computer's performance, but it gives people the perception that your equipment is clean and orderly. By all means, give them that perception.

The most vital part of your computer system is the hard drive and the information it stores. You can replace any part of your system in much less time than it takes to restore or replace lost data from a faulty hard drive.

You can get a written report on your hard drive's health with the DOS CHKDSK command. It tells you the amount of memory that is being used, the amount that is still available, and it lists the directories and files.

DAMAGE REPAIR

Be aware of any messages that tell of file allocation problems, damaged sectors or lost chains. If your drive has any of these problems, you must run CHKDSK again with the /F option. DOS will then attempt to repair the damage. Details on how to use CHKDSK are included in your DOS documentation.

The speed of a hard drive will gradually decrease as files that were once together are fragmented. Specialized software, such as Norton Utilities SD (Speed Disk), will

restore files to their original configuration and greatly improve speed.

If you are not already doing so, institute a regular back up of hard-drive data to floppy disks. While this may be done with the DOS BACKUP command, more elegant and efficient programs are available from other manufacturers. You also may purchase an internal tape backup for either Macintosh or IBM compatibles for around US\$200. These devices automatically back up a hard drive overnight, even if you are not around.

Like cart machines, computer disk drives have heads that get dirty and can impair proper operation. Floppy disk head cleaners are available in 5.25- and 3.5-inch formats, and should be part of the regular maintenance schedule.

Disk head cleaners contain a porous, mildly abrasive material, which is usually moistened with special fluid. It can be cycled through the drive a few times by typing the DIR command. The cleaner will evaporate after a few minutes.

Clean the screen of the monitor with a damp rag and glass cleaner. Always spray the cleaner on the rag, and never directly on the screen. Spraying the screen causes excess cleaner to run inside the monitor, possibly resulting in short circuits and ruining PC boards.

If you have a serious dust problem, consider purchasing special anti-static screen cleaners. They are available through most computer supply houses.

Keyboards usually receive the brunt of use and abuse. Depending on the circumstances, cleaning may require wiping the exterior with a damp cloth and vacuuming under the keys, or complete disassembly and washing to clean spilled drinks and other dirt. Some keyboards may require careful disassembly and burnishing of the contacts with an eraser to remove oxidation.

One important precaution: never plug in or unplug a keyboard while the computer is running. Some keyboards have a micro-processor chip inside, and you will invariably end up destroying it. Replacement ICs may be expensive and hard to find.

COOL HEAD

Before cleaning your dot matrix printer, unplug it and allow the print head to cool. Use a vacuum cleaner and damp cloth to remove all the fine paper dust from inside the machine and along the paper feed path. Remove the ribbon and clean ink debris from around the print head. Then install a new ribbon.

Run the built-in self test to verify print quality and operation. This is done on many

Like cart machines, computer disk drives have heads that get dirty and can impair proper operation.

printers by holding down the line feed button while turning the power on, although this procedure varies from machine to machine. A white line running through the printout indicates a broken pin or pins on the print head, and it will have to be replaced.

A laser printer also needs regular attention. As with a dot matrix printer, unplug it and allow it to cool down before going over it with a mini-vacuum and damp cloth to remove the fine white dust in the paper feed.

Follow the manufacturer's instructions for disassembly to clean the transfer corona wire. This is typically done with a swab dipped in alcohol. The transfer guide and registration assembly also need to be cleaned per directions in the owner's manual.

The final step is to close the printer, power up and run the self-test to check the print

CONTINUED FROM PAGE 12

Good Video Begins with Better Audio

sound like it. I prefer a quiet desk in the corner of the room with several feet of Sonex on the walls. Avoid carpeting the walls because that will only attenuate the highs and not affect the bass or mids, leading to a "tubby" sound. Again, computer drives, video deck fans, and other whirling things will get into the audio very easily, so make sure they are nowhere in sight.

If recording outdoors or next to a window, be especially aware of crickets and birds, which often are not noticed until the tape is brought back to the studio for review.

— **Prepare a script.** Everyone has their own way of doing it, but a few rules are universal. First, be sure to have at least two copies of a typewritten script, three if you have a session producer. The talent, producer and engineer each need a copy, and I find it almost impossible to follow for continuity without the written word right in front of my face. Many clients think they can ad-lib or use scribbled notes, which is sure to bring disaster on the whole project. I like a script typewritten in column format, about 50 to 60 characters wide. This allows room in the margins for production and take notes.

Be sure not to have sentences that jump from one page to another. Page rustles can only be removed if they are between words. I generally like to record a page at a time, working each paragraph for proper effect. Do multiple takes while on each page, since matching a voice edit from the beginning and end of a long session is difficult, voice fatigue becoming very obvious. I record unequalized on DAT and mark each take with DAT running time and program ID if available. A system of check marks, Xs and stars will let you or an editor know later what were good takes and what were duds.

With some planning and a little extra work, the quality of your audio can match that of your video. People notice and appreciate a good sound track much more than you may realize. Plus, good audio will not only enhance the look and feel of your finished production, it will make it a better communication tool as well. Both you and your client will be impressed. ■

Mike Sokol owns JMS Productions in the U.S. He is a frequent contributor to TV Technology.

density. Most laser printers have a density control you can adjust to compensate for gradual loss of toner.

Finally, document your entire computer system in the same manner you do studio wiring. Use adhesive wire markers on cables and equipment. Make a block diagram of what goes where as the system expands.

Computer systems have become so reliable that we tend to take them for granted. Downtime or the loss of a hard drive is almost as bad as being off the air. You can reduce system failures, while familiarizing yourself with normal PC operation by adding your computers to the maintenance routine. ■

Tom Vernon divides his time between consulting and completion of a Ph.D. He is a regular writer for TV Technology's sister publication, Radio World.

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PROTÉJASE CONTRA LOS RELÁMPAGOS

por W.C. Alexander

DALLAS, Tejas

Es amplia la cantidad que se ha escrito acerca del tema de como proteger al equipo de transmisión contra las descargas eléctricas atmosféricas, e igualmente, se ha invertido mucho dinero para proteger al equipo de estos rayos.

Sin embargo, yo creo que se ha gastado aún más dinero en el arreglo de las instalaciones luego de que un relámpago ha derribado por completo los equipos de alto rendimiento.

Las descargas atmosféricas suelen penetrar a las plantas emisoras a través de la antena, la estructura de la torre, las líneas de alimentación, las líneas telefónicas y a través del acoplamiento inductivo a los conductores de entre-planta. Con que frecuencia está expuesta una instalación a las descargas atmosféricas depende de una variedad de factores, incluyendo la topografía local, la altura de la torre, el encaminamiento de la línea de alimentación y la proximidad de la torre a otras estructuras y la altura de aquellas.

Antes de ahondar en el tema, estudiemos los varios tipos de descargas atmosféricas y su frecuencia.

LECCIÓN METEOROLÓGICA

Por lo general, las tormentas que producen rayos de nube-a-suelo son localizadas y de poca duración, causadas por la convección (movimiento vertical del aire).

Por fortuna, las tormentas menos comunes son de tipo masa de aire, causadas por el choque de las superficies limítrofes de zonas frontales de aire (una masa de

aire caliente y húmedo choca con una masa de aire frío). Este tipo de tormenta puede cubrir una zona bastante grande y durar un tiempo largo.

La estructura de una torre de *h* metros de altura cubre una zona de más o menos $9(\pi)h^2$ metros cuadrados, un radio tres veces la altura de la torre. Esto significa que una torre que mide 312 metros de alto (500 pies) blindará una zona de más de 400 metros cuadrados (un cuarto de milla). En una zona donde hay tormentas 100 días al año, a una torre de 312

metros le pueden caer un promedio de nueve relámpagos al año (si predominan las tormentas de masa de aire) o solamente una descarga atmosférica si es que predominan las tormentas de convección.

El golpe principal de un relámpago consiste de una ligera elevación y decadencia casi exponencial de corriente que proviene de una fuente de alta impedancia que consiste de un largo tramo de aire ionizado.

El valor medio de un rayo tiene una amplitud máxima de 20.000 amperios y una duración de 40 microsegundos. Estos valores son basados en el valor intermedio de la información empírica que se ha reunido hasta hoy. El tiempo promedio de elevación de un rayo a la amplitud máxima es generalmente de cinco segundos.

PUNTOS DE PROTECCIÓN

Un rayo es una descarga de una nube al reservorio semi-infinito de electrones que se conocen por lo general como tierra. Tierra verdadera es una conexión elusiva con la superficie del planeta.

Supongamos que una descarga común cae en una torre puesta a tierra. Si es que la resistencia de la conexión de tierra de la torre es de 50 ohmios y la corriente de la descarga es de 20.000 amperios, el potencial máximo a través de la conexión de tierra sería de un millón de voltios. Si hay conexiones de tierra remotas conectadas a la torre (como líneas de transmisión conectadas a transmisores puestos a tierra), la corriente de la descarga será distribuida proporcionalmente entre todas las vías paralelas a tierra.

Es obvio que el primer y más importante principio es de proveer la mejor y más baja impedancia a tierra en el sitio de la torre. Un círculo de varillas de tierra excitadas es uno de los mejores métodos para lograr esa tierra. No suponga que una radial enterrada o un sistema de tierra de recuadro provee una buena tierra a la tierra. Tal sistema puede tener una capacitancia alta a tierra verdadera y ser ineficaz como tierra local, aun cuando sirva bien de tierra de radiofrecuencia (RF).

No importa cuan buena sea la tierra local, siempre pasa alguna porción de la corriente de la descarga a través de los conductores externos de las líneas de transmisión a las tierras remotas. Esto inducirá un voltaje más alto entre los conductores externos e internos del cable coaxial en la línea del transmisor. A este fenómeno hay que tratarlo con un aparato de abertura de chispas o descargas gaseosas, pero lo más importante es conocer la vía que tomará la corriente para llegar a las conexiones remotas.

El segundo principio, entonces, es prevenir que la corriente atraviese el equipo de transmisión. Un arreglo cuidadoso de las conexiones a tierra dentro del puesto de transmisión es de lo más importante.

Cada vía entre torre y tierra (continúa en la página 22)

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Matsushita Electric del Perú S.A.
Telf: 51-14-529470 Fax: 51-14-529476

Brasil

Panasonic do Brasil Ltda.
Telf: 55-123-31-0492 Fax: 55-123-31-6294

Representativo Y Agente

Venezuela
Representaciones Electronicas Hercasa C.A.
Telf: 58-2-285-6440 Fax: 58-2-283-7867

Chile

Teknos Comunicaciones S.A.
Telf: 56-2-555-5530 Fax: 56-2-550-2390

Argentina/Uruguay/Paraguay

DGA Electronica S.A.
Telf: 54-1-951-2127 Fax: 54-1-951-6599

Colombia

Corporación Video Carrillo Ltda.
Telf: 57-1-212-3710 Fax: 57-1-212-2250

Matsushita Electric Industrial Co., Ltd.
Audio & Video Systems Division
Overseas Marketing/Sales Dept.
2-15 Matsuba-cho Kadoma, Osaka 571 Japan
Tel: 81-6-901-1161 Fax: 81-6-908-5969

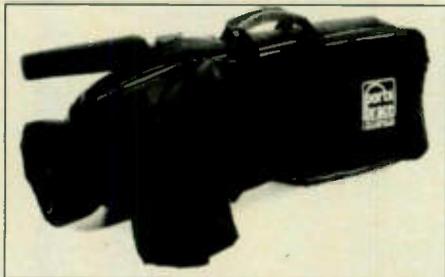


MARKETPLACE

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

CAMCORDER CASE

Available from distributor Pyser-SGI, the new Polar Bear heated case from Porta-Brace keeps camcorders and cameramen's hands warm in extreme cold, reducing the risk of battery, motor, lens and tape malfunction and keeping operators' hands safe and comfortable in arctic conditions.



The outside of the case is thickly padded and insulated, while the inside is lined with a heat-reflecting fabric.

The two hand openings have cotton cuffs for a tight seal.

For more information, contact Paul Goodwin in the U.K. at telephone: +44-732-864111; FAX: +44-732-865544, or circle Reader Service 117.

ROUTER OPTION

Alpha Image, a Dynatech Video Group company, has developed a new 4:4:4 option for its range of serial routers, including the recently released DYN series.

With this option, 4:2:2, 4:4:4 and D-2/D-3 video signals can be routed inside the same routing chassis at the same time. Current users of Alpha Image routers can easily upgrade their existing installations without the need for new equipment.

The 4:4:4 option can be used with all existing Alpha Image router options to enhance the overall routing system.

For further information, contact Art Shifrin in the U.S. at telephone: +1-203-329-3777; FAX: +1-203-967-4121, or circle Reader Service 72.

CAMERA HEADS

Vinten has introduced Vision SD heads with patented Serial Drag pan and tilt systems.

The Vision SD12 pan and tilt head consists of a permanently sealed fluid drag labyrinth and a constant drag unit that work together to give total control.



Weighing 6.6 pounds, the SD12 is lighter than its predecessors while offering additional features and improved performance.

For more details, contact the company in the U.K. at telephone: +44-284-750560; FAX: +44-284-750560, or circle Reader Service 45.

BATTERY ANALYZER

The new PAG Analyzer by PAG Ltd. enables video professionals to obtain full and accurate assessment of all NiCd batteries in the range 4 to 30 V, 0.5 to 10 Ah, regardless of their manufacturer.

The Analyzer is operated via a system of menus, with a liquid crystal display that indicates the soft function control parameters of



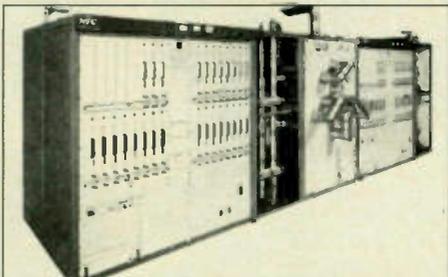
the instrument and the status of the battery.

Although the PAG Analyzer is a stand-alone unit, it may be controlled from an IBM-compatible PC.

For more details, contact Brian Walker in the U.K. at telephone: +44-81-5433131; FAX: +44-81-5404797, or circle Reader Service 130.

UHF TRANSMITTER

Offering high reliability, NEC's UHF 30 kW transmitter incorporates a parallel running system of two sets of 15 kW transmitters.



Fully redundant, the PCU-930 SSW transmitter employs two independent transmitters to significantly enhance reliability and enable independent maintenance work during operation hours.

For further information, contact the company in Japan at telephone: +81-3-3454-1111; FAX: +81-3-3798-6936, or circle Reader Service 48.

AUDIO METER FOR VIDEO

The SOL-20/20 by Solutec inserts a stereo audio level meter in a video image in the form of three bar graphs.

The left and right bars are used to display the corresponding channel levels, while the center bar is used to display the level of either the sum (L+R) or the difference (L-R) so that phase coherence can be visualized.



For more details, contact Gilles Fortin in Canada at telephone: +1-514-522-8960; FAX: +1-514-598-7808, or circle Reader Service 38.

BUILDING PANEL

Kalwall Corp. has recently developed a translucent building panel that provides radio frequency shielding for applications in new and existing buildings.

The Kalwall RF shielding panel is a structural composite sandwich panel permanently bonded to an interlocking, extruded aluminum I-beam.

Made of reinforced, translucent fiberglass sheets, the panel keeps out high-level RF and radar signals while letting in light.

For more information, contact Bruce Keller in the U.S. at telephone: +1-603-627-3861; FAX: +1-603-627-7905, or circle Reader Service 74.

CCD COLOR CAMERA

Toshiba's SC-521 is a fully automatic color camera that employs three 600,000-pixel CCD chips.

Featuring high sensitivity, high resolution and S/N ratio, the SC-521 enables the user to produce color images of high quality without smear or blooming.

The SC-521 has a wide bandwidth to permit transmission of 900 TV lines of CCD horizontal resolution and is thus compatible with multi- or optical fiber cable.

For further details, contact the company in Japan at telephone: +81-3-3457-3246; FAX: +81-3-5476-4057, or circle Reader Service 67.

IMAGE PROCESSOR

DVS DigitalVideo Solutions has introduced the ISP500 image sequence processor.

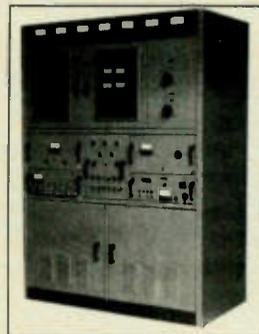
The ISP500 is a high-capacity RAM-recorder designed for realtime I/O of image sequences and video signals in all kinds of TV rasters, resolutions and picture formats.

Using the latest VLSI technology, this system now features video input and output boards with digital color space processing and 3x10 bit/pixel resolution.

For more information, contact DVC Digitalvideo Computing GmbH in Germany at telephone: +49-8152-93010; FAX: +49-8152-91331, or circle Reader Service 118.

MW BROADCAST TRANSMITTER

The 1 kW MW broadcast transmitter by Shaanxi Broadcast and TV Equipment Factory in China features AM for high-level plate modulation and PDM for low-level plate modulation.



Because of the adoption of PDM (pulse duration modulation) technology, this transmitter offers high-quality audio and electrical performance.

For more details, contact the company at telephone: +86-4456-4467; FAX: +86-4456-2330, or circle Reader Service 5.

CLOSED CAPTIONING

Teknova Multilingual Captionings has released a new process for captioning television programs in numerous languages and for the hearing-impaired.

The Teknova system can caption up to 44 languages on a single program using the CaptionVision technology developed in the U.S.

Teknova also makes lower-cost systems for captioning two to four languages.

For further information, contact C. Gustavo Farrell at telephone: +1-915-544-6350; FAX: +1-915-543-3213, or circle Reader Service 125.

TV TRANSMISORES

Ditel presenta su linea EXCEL de transmisores para TV (VHF/UHF). Totalmente estado sólido hasta 10 kW de potencia pico de sincronismo.

Fabricados bajo normas CCIR y FCC, son de gran facilidad operativa y mínimo mantenimiento. Su concepto modular y la intercambiabilidad de los amplificadores de video y sonido, aún con el transmisor en funcionamiento, le otorga una importante reserva activa, que hacen de esta, una cualidad muy importante.

Por información contactar Walter Almada en Argentina al teléfono +54-51-556121; al FAX: +54-51-552851, o marque el No. 56 de Reader Service.

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

Mail-Order Mayhem: Items You Will

by Mario Orazio



SOMEWHERE OUT THERE You might not have noticed that the 1960s U.S. television comedy show "Gilligan's Island" is a subject of scholarly research. I did not realize this, either, until the postal service called it to my attention late last year, and yes, this is going to be a ranting on what you did not see at NAB last month.

I am sure you noticed that many parts of the world suffered through some severe weather conditions this winter. Well, I must tell you that the post office did everything in its power to ensure that I would not personally suffer much; they delivered a steady stream of bulky catalogs to me.

Frigid temperatures? Receiving catalogs

for everything from lingerie to assault weapons, I had plenty of fuel to burn for heat. Floods? There were more than enough catalogs to stuff under every door. Slippery road conditions? Plenty of catalogs provided extra traction. High winds? I had enough catalogs to stack in front of every window to protect myself from shattering glass.

READING MATERIAL

I even read a few of them, which is how I found out about "Gilligan's Island." So I figured I would see if I could rant about the personal catalogs I have received — professional catalogs were off-limits, even those of consumer electronics distributors who

just happen to carry frame synchronizers. I even added another challenge: All of the catalogs had to be unsolicited.

The 128-page (not counting covers) McFarland '93 catalog contains books — good, solid reference books, like Al Abramson's "The History of Television, 1880 to 1941," practically a day-by-day diary of what anyone was doing in the field anywhere in the world during that period. It is ISBN 0-89950-284-9, and it is worth every penny of its US\$39.95 price. I even appreciate McFarland calling it to my attention, though I cannot imagine how I got on their list.

Anyhow, that book is at the bottom of page 78 of the catalog. At the top of the same page is "Inside Gilligan's Island: From Creation to Syndication," by Sherwood Schwartz, 342 pages of scholarly research, complete with photographs, illustrations, appendices and index, all for just US\$29.95 (ISBN 0-89950-339-X). The catalog features this review of the book from "Rolling Stone" magazine, reprinted here in its entirety: "interesting."

For ten dollars more, you can get "Hogan's Heroes: A Comprehensive Reference to the 1965-1971 Television Comedy Series, with Cast Biographies and an Episode Guide," by Brenda Scott Royce (ISBN 0-89950-796-4).

I do not make this stuff up. You cannot make this stuff up.

To order those books, or such other gems as "Television Weathercasting: A History," by Robert Henson (ISBN 0-89950-492-2, US\$35), give McFarland a call in North Carolina at +1-910-246-4460 (FAX: +1-910-246-5018), or contact their U.K. distributor, Shelwing Ltd., 127 Sandgate Road, Folkestone, CT20 2BL. If I were the sort of person who gambles, I would bet that none of these works will ever show up at NAB, not even in the association's own Books About Television exhibit.

BYGONE ERA

That is not the only catalog I got last year with books about TV old and new. Lindsay Publications in Illinois (telephone: +1-815-935-5353, FAX: +1-815-935-5477) lists on the same page of their catalog a book, originally published in 1925 by SMPTE's first president, C. Francis Jenkins, called "Vision By Radio" (catalog number 20200, US\$9.95), and another, originally published in 1987, by Graf & Sheets, called "Video Scrambling & Descrambling for Satellite & Cable TV" (#370, US\$24.95).

I am not ordering the latter book; I am not enough law enforcement agency lists already (I wonder if they sell my name to catalog merchants). Here is part of the description for the Graf & Sheets book: "Although the authors are quick to point out that the information is not to be misused in theft of signal" — Gosh! Who would ever do such a thing? — "they have provided a wealth of schematics, printed circuit board layouts, IC chip specs, patent reprints, lists of satellites and the scrambling systems they use and much more."

Maybe I should switch to safer territory. Heck, I will go all the way to The Safety Zone catalog. These folks, operating in Pennsylvania, U.S.A., (telephone: +1-717-633-3370, FAX: +1-717-633-3222) offer such goodies as smoke masks that are supposed to help you survive a plane crash (#K836882, US\$59.95), swabs to let you know if there is lead in your dishes

(#K830752, US\$22.95), and fire blankets for out-of-control flambés (#K849588, US\$44.95).

What I saw in their catalog that was really useful this year was that they are selling staff. Not staffs, staff — people to work for you. No talking back. No complaining about working conditions. No salary or benefits. They call them "Safe-T-Man," a "life-size, simulated male that looks like a 175-lb. man, yet weighs only 4 lbs" (#K833046, US\$119.95). I repeat, I do not make this stuff up.

NOVEL INVENTIONS

If I was going to make something up, it would be something like a left-handed solar-powered gumbo fork, but I will not be surprised in the least to discover same in the Johnson Smith Company's "Things You Never Knew Existed" catalog, subtitled "and other items you can't POSSIBLY live without!" Here are just a few examples from the first page: a talking Tasmanian Devil alarm clock (#4967, US\$36.95), an electronic one track mind cap with flashing railroad crossing lights (#5196, US\$19.95), and a disgusting sounds machine (#5195, US\$19.95). Get the idea?

I figure the big shot pocket pager (#1348, US\$4.98) is perfect for Safe-T-Man. All he has to do is push a button with his latex hands and the beeper will go off. Come to think of it, maybe I could use a pager like that, one that goes off only when I want it to.

Anyhow, this ranting is not supposed to be about toys. In this very same Florida-based Johnson Smith catalog (+1-813-747-2356, FAX: +1-813-746-7896), I found Russian-built see-in-the-dark light amplifiers selling for as little as US\$295 (#3239).

I think this is a genuinely useful product, but I must admit I have not gotten around to ordering one yet. All the news organizations I work with already have more expensive versions, and I have not been able to justify three hundred dollars just to make nighttime surveys easier.

What I did order right away was from Campmor, an outdoor leisure equipment supplier in New Jersey (+1-201-445-5000, FAX: +1-201-447-5559). I do not mind months of sub-zero temperatures. I can take snow and ice. I also do not melt when it is 120 degrees out, and my no-longer-svelte body seems reasonably stable in gale-force winds. But I hate rain.

WATER SPORTS

Yes, I know; just put on a rainsuit, a sou'wester hat and waders to keep the rain off, and I have, on occasion, learned how to stay at least partially dry in the middle of a deluge. But given a choice, I prefer sunny days.

Then there are the zealots who say they never take notes with a pencil and paper anymore; it all goes straight into the computer. I like to watch them using their sub-notebook in a torrential downpour.

The trouble is that it is no picnic using a pencil and paper under a heavenly faucet either. The pencil is not a big problem, but paper has this strange tendency to return to the form of the masticated wood pulp from whence it came when exposed to copious quantities of water. Enter the Campmor catalog and its Rite in the Rain all-weather writing paper.

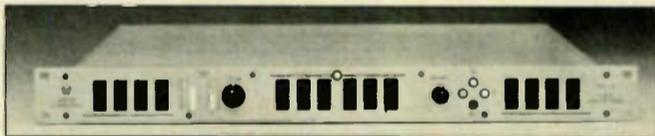
It comes in three styles, all spiral-bound, white, ruled pages. The shirt pocket memo pad (my personal favorite) has 50 3x5-inch pages (#31653-P, US\$2.50); the hip pocket memo pad has 50 4x6-inch pages (#31654-

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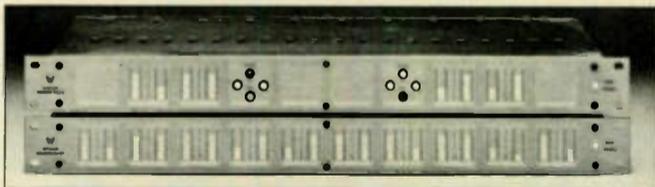
"We need hi-fi stereo in one rack space." 1987

SOLUTION:
The AMP-1A •
Five speakers
and three power
amplifiers.



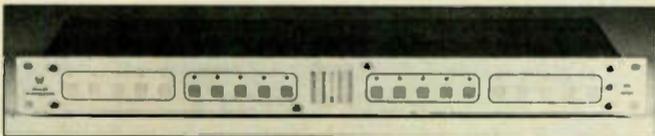
"We need to visually check a lot of audio sources." 1991

SOLUTION:
MSM Series •
Monitor levels
and phase for up
to 20 mono (10
stereo) inputs.



"We just need a flexible, affordable audio router." 1992

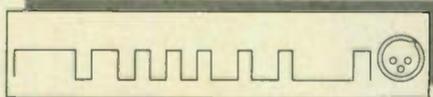
SOLUTION:
ARS Series •
Up to 20x1,
or 5x4 matrix.



1993

"We need digital inputs for our Wohlers."

SOLUTION: Wohler's digital input • AES/EBU



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Never See at NAB

P, US\$3.30); the spiral notebook is 32 pages with a side spiral (the other two are top), each roughly 5x7 inches (US\$3.95). I have tried it in the shower; it works!

Like all good outdoor suppliers, Campmor carries the Leatherman tool (#81063-P, US\$39.99). I once heard an engineer I respect a lot say that the entrance exam for getting into this business should include possession of same. At the time, I must admit I agreed with him completely. If you have got nothing else, the Leatherman offers some semblance of everything from pliers to a tweaker.

But I also have some gripes about it (would I be me if I didn't?), not least of which is the fact that when you open it up to use the pliers, four metal edges dig into your palm. Well, now the Leatherman's got competition, and I am not entirely sure yet which I like best.

Cabela's of Nebraska (+1-308-234-5555, FAX: +1-308-254-2200) offers the Leatherman two bucks cheaper than Campmor (#AE63921-000), but they also offer Gerber's version for US\$41.95 (#AE-60716-000), in black for another dollar (#AE-60462-003).

It has smooth surfaces when you are using the pliers, and it has a saw and a wire stripper, but it lacks the Leatherman's file and, much more important, tweaker functions. (Well, it has the same thing that is on the edge of the can opener of a Swiss Army knife, which will let you at least tweak exposed pots.)

For another \$18-\$20 (depending on whether you purchase it with the tool or separately), you can get a set of six more screwdriver bits and a coupling shaft, which seems to me to be approximately useless, give or take a hair.

PRYING EYES

But that is not all. SOG, the folks who make the knives used by the U.S.'s Navy Seals, have two more entries. Frontgate, in Ohio (+1-513-248-3900), which offers the Leatherman for the same price as Campmor, has the SOG Toolclip for US\$49.95 (#3751). It has a saw and something to tweak with, and it is supposed to be used as a prybar (which is how I once broke a Leatherman), but it just does not feel all that good as pliers.

Brookstone, which takes orders in Mexico, Missouri (+1-314-581-7777, FAX +1-314-581-7361) has the other SOG entry. The tweaker part could use some grinding, and I would not want to use it as a pry bar, but it is otherwise fully equipped, it feels great, and it has the narrowest plier tips (#176958, US\$55.00).

Herrington, in New Hampshire (+1-603-437-4638, FAX: +1-603-437-3492) has the Gerber plier tool for US\$59.95 (#T334), so you might want to take their prices with a grain of salt, but they have the (so-far) best catalog price I have seen for any of the new consumer active noise cancellation systems: US\$149.00 (#R317). Stick the headphones on your head, and all of a sudden, the world is a lot quieter. These things really work, and it is not all that hard to adapt them to an intercom system.

It takes no adapting whatsoever to use them with Dak's "Theater of The Mind." You have to applaud Drew Alan Kaplan, whose initials form Dak's name, and whose lack of shame seems to form everything else about the company. To him, a hand-

held memo recorder is a "Pocket Battleship" and a pair of binoculars becomes "Action Amplifiers."

Sheesh! Just once, I would like to get a catalog that spoke English — even *my* kind of English.

SLOW SERVICE

I have another gripe with Dak. I think they wait until they get enough orders for something and then design it. Every time I have ordered from them, I have received a card telling me there has been a delay, but I will get my stuff within 30 days. Within 30 days, I get another copy of the same card.

So, if you are in a hurry for something, do not order from Dak.

On the other hand, if you have the time, and if you do not mind the silly catalog descriptions, by all means order from them. They do not charge your credit card until they ship, and, when you *do* get the stuff, you just might be highly pleased with it, the way I was with Theater of The Mind, a hand-held clock radio with AM, FM and VHF TV PLL tuning, for US\$49.90 (#3391).

It is light as a feather, it fits in the smallest pockets I own, it has a built-in speaker, and it sounds pretty good. I think Sangean makes it, but the best price I have seen for the Sangean-branded version (bigger, heavier, without the clock or alarm, and with fewer station presets) is ten dollars higher. Anyhow, I tune the AM between stations to check for EMI problems, and I monitor

whatever I am working on off-air to be sure I do not screw something up unwittingly (which is easy to do when you are witless, like me). That, of course, is what I do with it when I am not just listening to news, music or TV shows. Dak is in southern California (+1-818-888-8220, FAX: +1-818-888-2837).

Dak was not at the recent NAB show in Las Vegas, but I think it might be fun for some NAB exhibitors to hire Drew to write their product brochures. They could hardly get any worse. ■

Mario Orazio is the pseudonym of a well-known television engineer who wishes to remain anonymous. Send your questions or comments to him c/o TV Technology. Or drop him a note on e-mail 581-6729@MC1Mail.com.

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Circle 51 On Reader Service Card

Keep Your Camera Warm and Dry

by John Premack

FOCUS ON VIDEOGRAPHY

Photojournalists cover the news in all sorts of weather. Neither rain nor sleet nor snow nor hail can keep us from recording our assigned sights and sounds. But while videographers who cover snowstorms, chase tornados, do live shots during hurricanes or enter combat zones are usually dressed in appropriate protective gear, our cameras frequently are not. The results are often disappointing — missed shots, blurry pictures even aborted assignments.

Pursuing a story, we tend to forget that drying out a camera or de-fogging a lens takes a lot longer than do the simple precautions that prevent these problems from occurring in the first place.

Rain, the most common camera hazard, is also the easiest to control. Fitted rain covers, available from a number of camera manufacturers and after-market case makers, will keep a camera dry in practically anything short of a hurricane.

UNDER COVER

Unfortunately, many of these tailored plastic or Gortex rainsuits will not stretch to fit over a camera whose once-trim shape now bulges with such essentials as an on-board light, shotgun mic or wireless receiver. And there is not a rain cover yet invented that will do its job unless someone takes the time to put it on the camera.

When the story will not wait, an easy alternative to the elastic bands and Velcro tabs of a fitted rainsuit is a simple plastic trash bag. It takes only moments to stuff your camera, lens first, into a trash bag before dashing in from the car during a downpour. Larger-sized bags, inverted so the opening faces down, are perfect for keeping a tripod-mounted camera dry between live shots.

Sometimes, despite your best intentions, you are going to get wet. All it takes is a broken fire hose or a fast-moving thunderstorm, and suddenly, you and your camera are both soaked. When this happens, turn the camera off immediately and resist the temptation to turn it back on to see if it still works. The absence of current to moisture-laden circuits and chips may be all that is preventing them from self-destructing.

If your camera gets totally drenched, as mine did when the heavens opened up during a live shot one day, remove the battery immediately (or as soon as you are off the air). Once you are out of the rain, remove the lens and all accessories, open the camera covers, shake out the puddles and let everything dry overnight.

Microphones are almost impossible to keep dry, especially when your reporter is attempting an interview or live shot in the driving rain. Many professional sound

recordists protect their mics against the elements with an ordinary condom. Virtually invisible when stretched over a mic, these microshields can even be used on camera.

Although the same protection strategies apply when the weather is below freezing, falling snow actually offers less of a hazard than rain. Your equipment is in jeopardy only if the snow melts, and there is actually little danger in letting snow accumulate atop your camera if you remember to brush it off before returning to a heated building or vehicle.

Heat creates a different set of problems, including one that bedevils videographers everywhere: condensation. Who has not gratefully escaped from the cold outdoors on a bone-chilling winter's day only to discover that wiping off the condensation that has formed on the viewfinder does not erase the fuzzy images on the CRT.

When moisture condenses on the inner surfaces of a camera's optical system, the results are blurry pictures and low contrast images that look like you shot them in a steam bath. Not exclusively a problem for cold weather videographers, this problem can occur whenever the temperature of the camera and lens is significantly lower than the air around it.

Humid air can also stop a shoot cold if an internal sensor shuts your recorder down. Since extremely humid conditions can soften the emulsion of videotape, allowing it to stick or jam, recorders are designed to prevent this from happening.

To speed the drying process, the well-prepared videographer reaches for a hair dryer. A gentle stream of air from a dryer set to low heat will chase the humidity away.

Absent a hair dryer, a quartz lamp is another convenient source of heat. In either case, take care not to apply too much heat — the goal is to dry the camera, not cook it. If you cannot expose the back of your hand to the same heat you are applying to

the camera, then the light is too close or the dryer set too high.

To further prevent condensation from fogging your shots or shutting down the recorder, seal the camera inside a plastic bag before bringing it into the warmer environment. Condensation will still form, but this time it will be on the outside of the bag instead of inside the camera.

Videographers who work in coastal areas have an extra enemy: salt-laden ocean spray. Cameras that are frequently used in ocean air eventually show external signs of corrosion; screws holding the battery bracket to the camera weld themselves in place, lines of white crust form at seams

Videographers who work in coastal areas have an extra enemy: salt-laden ocean spray.

and in crevices.

It is one thing to shoot a weather shot from the beach or take a harbor cruise, but when you set to sea for an extended period or in any kind of weather, do not take a chance — break out the garbage bags. Keep the salt spray out by temporarily sealing the gaps around the camera's side covers and the tape compartment with gaffer's tape, and then go below to change tapes if you have to.

And if, heaven forbid, you get knocked down by a wave or fall into the ocean and your camera is soaked in salt-water, immediately remove the battery and run — don't walk — to the nearest supply of fresh water. The following procedure could save your camera.

EMERGENCY STEPS

Remove the battery immediately, but do not even try to eject the tape. Unless you have just shot exclusive video of the end of the world, saving the camera is more

important than rescuing the tape. Unplug all cables and remove all external accessories such as the shotgun mic, wireless receiver and on-board light. Next, remove the lens and open all camera side covers.

Remove each circuit board from its slot and drop it into a big bucket of fresh water. When the cards are all out, toss the camera itself, motherboard, prism-block and all, into the bucket as well. The goal is to dilute, displace, and neutralize the salt water before it can begin to eat its way into the components and connectors.

Once the camera is safely soaking, turn your attention to the lens. If there is salt water between the elements, toss it into the bucket too. Do the same for the accessories, but remember to remove all internal batteries first. Keep everything immersed in fresh water until you can hand it over to a repair technician.

Hopefully, you will never need to take such extreme measures, but if you ever do give your camera a salt-water soaking, you must know how to take immediate action because every second could mean the difference between saving your equipment or tossing it in the garbage. Salt residue on circuit boards is the electronic equivalent of a malignant cancer; once it begins eating away at your camera's innards, it is almost always fatal.

Even if your assignments never take you within one thousand miles of the ocean, out in foul weather, or even outside the studio, there is one precaution that everyone who owns or operates a camera should take: Throw away the lens cap and instead protect the business end of the lens with a clear glass filter. Most lenses have internal threads just ahead of the front element or at the rear of the lens hood that allow you to permanently mount a filter. A permanently installed clear (or UV or Skylight) filter never gets misplaced, can be wiped with a shirttail or the back of a glove when you are in a hurry, and can be replaced with greater ease and far less expense than a front element. ■

John Premack has been chief cameraman at WCVB-TV in the U.S. for 17 years. He may be reached at +1-617-433-4199.



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Want to Sell

Hitachi SK-70 camera w/case; Hitach SK-70 camera w/o case; Hitachi SK-80 camera ENG pkg w/9-108mm lens & 10-100 mm lens. R Reeves, Mid-Sth Prod, 9220 A-1 Pkwy E Ste 115, Birmingham AL 35206. 205-251-3111.

Sony EVW300 3-chip, Hi-8 camera w/12X lens, case & access, excl cond; Sony EVO-9850 HI-8 editor w/TBC, excl cond, \$8000/both. Roger, 616-843-2820.

Sony DXC-3000 w/Fujinon 10-120mm video lens & Sony DXF-3000 electronic viewfinder & Sony BVU-110 U-matic 3/4" port video cassette rcd, needs new heads, video cable to attach is incl, \$2500/BO. S Szabo, After Image Prod, 2525 S Raymond, Seattle WA 98108.

Canon L-2 Hi-8 w/1.5 lens, loaded w/remote job/shuttle cntrl, brand new, \$2975 + shpg. J Musser, TV8, Rockford IL 815-987-3970.

Panasonic WV 200 CLE (3) 2/3" chip camera, 12X Canon lens, all access, batts, chrgs, extra view finder, tripod mounting plate, 34 to 14 pint VTR cable, \$3000. T Keegan, Video Keepsakes, 55 Andover Pl, Robbinsville NJ 08691. 609-443-1101.

Sony DXC537 w/CA537 & Fuji 9.5x16, \$6000. 703-527-1200.

Sony BVP-3A Saticon camera head only, can operate as stand-alone camera w/CA-3 adapter or can be docked to Betacam decks for 1-piece op. vgc, incl manuals, tripod plate, extender board, \$2500/BO. D Brown, 813-895-9595.

Panasonic AG 450 S-VHS industrial full size camcorder, complete system incl batt, AC adapt/batt chrg & rugged pro style case, excl cond, \$800. Bob, 617-821-2675.

BTS LDK 91 (2) chip cameras w/Fujinon S18x6.4 Berm-16 lenses, \$25K/ea. Don, 617-449-5830.

Sony BVP-30 3-tube Plumbicon camera, head only, tubes in gd cond, \$2000/BO, must sell. Jeff, Cinecan, Ontario Canada. 705-525-1801.

Want to Buy

Ikegami ITC-735, used, gd cond, or new cameras, CCU units, spare parts. Brito Jose, Televisao Nacional De Cabo Verde, Cape Vert Island, West Africa, FAX: 238-61-5831.

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Panasonic UV-RC30 CCU fro WV-F777 camera, operation manual, works great, \$500. M Friedman, HVS, 800-236-4000.

Hitachi SK-70 (2) 1.5" viewfinders; Fujinon A 22 x 12.5 RW TV lens, 1:1.6/12.5-275mm; Fujinon A 10x10.5 RW (2) 1:1.4/10.5-105mm; Fujinon A 10x10 RS-1, 1:1.9/10-100mm; BC-70 batt chrgs; Hitachi 12v pwr sply; Hitachi DC pwr pck; JVC AA-P47U batt chrg. R Reeves, Mid-Sth Prod, 9220 A-1 Pkwy E Ste 115, Birmingham AL 35206. 205-251-3111.

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Panasonic AG-1970 (2), brand new, never used, \$1325/ea; Future Video EC 1000 PRO edit cntrl, like new, \$350; Knox K128B char gen, \$250; Tektronix 528 waveform monitor, \$500; 9" color monitors (2) rack mtd, \$400; B/W monitors (2), gd cond, \$150; Panasonics S-VHS 20" color monitor, like new, \$250; get all as pkg \$3750 + shpg. J Musser, TV 8, Rockford IL. 815-987-3970.

CMX Omni 100E edit system, brand new, never used, \$27K. Don, 617-449-5830.

Convergence ECS-90 w/Pana interfaced cards, \$500/BO. D Broomfield, Mtn View Comm TV, 950 N Rengstorff Ave, Mtn View CA 94043. 415-968-1540.

Sony Beta I edit system w/2 SLO383 & 1 RM440 cntrlr, plus cables, gd cond, \$2500/BO. J Huey, Pictures & Sound, 3206 Fayette Rd, Kensington MD 20895. 301-942-9290.

JVC RM-86U edit cntrlr w/cables, cntrls JVC S-VHS & JVC 3/4", used only few times, \$750. Bob, 617-821-2675.

Panasonic AGA95 (3) edit cntrls, still in box, \$50/ea. Steve, Videocom, 46 Charles Dr, New Castle DE 19720. 302-836-0484.

Sony Type 5 edit syst w/VO-5850, lw hrs, VO-5800 w/new head, RM-440 edit cntrlr, (2) Sony high res monitors, \$5400. Jaye, Nimbus Prod, POB 5903, Takoma Pk MD 20913. 301-507-3358.

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Sony VP-2000 3/4" VTR, \$100. D Broomfield, Mtn View Comm TV, 950 N Rengstorff Ave, Mtn View CA 94043. 415-968-1540.

Sony VO-8800 3/4" SP port deck w/BKU-706 time code board, Porta-Brace case incl, excl cond, \$2500. M McCleery, One by One, 210 Cherry Ave, Voorhees NJ 08043. 609-354-0074.

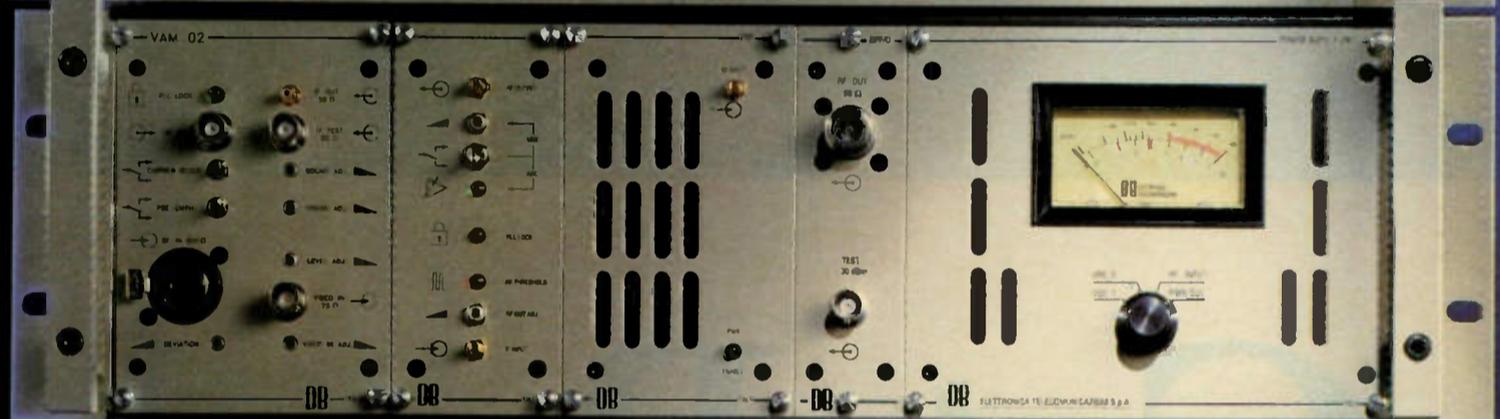
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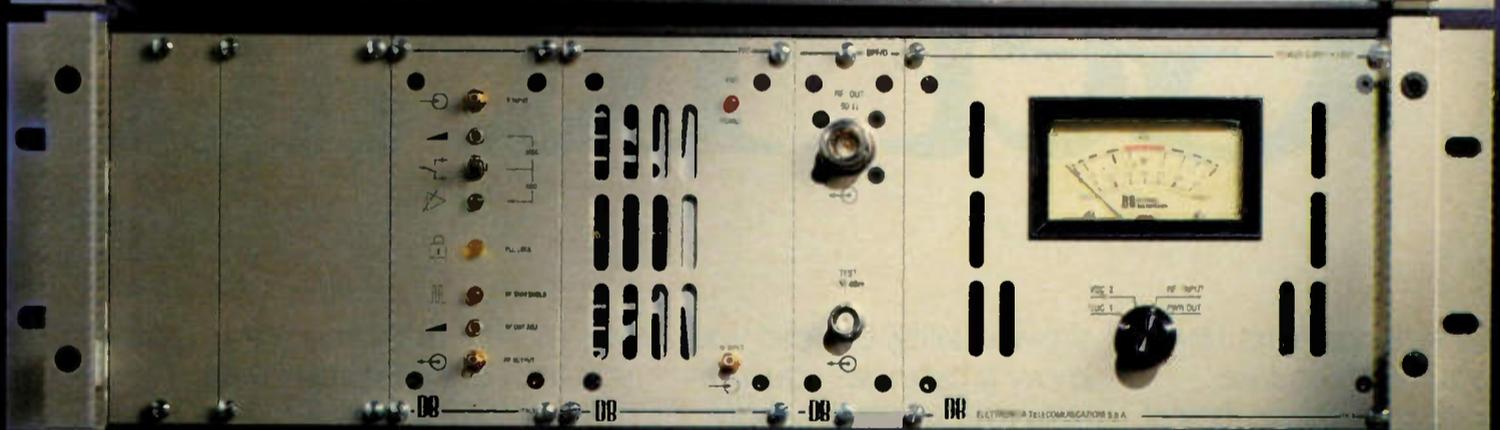
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