

TV TECHNOLOGY™

International Edition

Special Report
on V-LAN
See page 11

Wading Through A Strange Mix of Technology

by Mario Orazio

SOMEWHERE OUT THERE

You might not have noticed that extraterrestrials (like E.T.) don't need CD players. That's just my way of pointing out that the business of TV technology is not the only one full of infra-brilliant ideas.

I promise to end this month with information at least marginally relevant, but I couldn't resist starting off with some Class A bizarrenesses I've recently come across in other fields, like global positioning satellites (GPS) and Compact Discs.

GPS in session

Let me start with GPS. I forgive you if you felt you had something better to do at the NAB Exhibition than listen to a paper called "Differential GPS" in an engineering session with the highly exciting title of "Data Broadcasting: Radio." But I find I tend to learn a lot when I drop in on technical sessions that don't seem to have anything to do with me (and probably wouldn't want to if they knew me).

You might have come across GPS in Horita's time code equipment. It automatically knows what time it is when you turn it on. Heck, with the right data base, you could have the thing set itself with not only time but also time zone and daylight savings time. The basic accuracy of the civilian version of GPS is within 100 yards or so, which is good enough to catch all the wiggles in the time zone lines.

I won't be betraying top secrets by telling you the basic accuracy of the military version is somewhere in the range of a fifth of an inch. Maybe

(continued on page 8)

The High Points of Montreux

by Chris Dickinson

MONTREUX, Switzerland June's International Television Symposium here was characterized by a great deal of uncertainty.

Longstanding complaints about the organization of the ITS, coupled with the high costs of travelling to and staying in Switzerland, have cast doubts about how long the show will survive.

Results of a survey by the International Association of Broadcasting Manufacturers (IABM) indicated that a clear majority of exhibitors would like Europe's other main exhibition, the International Broadcasting Convention in Amsterdam, to become annual and thus squeeze the ITS out of existence. Currently the ITS and IBC take place in alternate years.

IABM chairman Tom McGann said those opposed to ITS were the smaller companies, while the larger companies mainly continued to support it.

But McGann said the IABM would not press for the IBC to become annual.

"If we had recommended that IBC was held annually, it would have meant three shows every two years," McGann said. "Montreux would not go away, so we would have a division of the industry. We think it is better to talk and try to improve Montreux than pull out."

While confusion about the show's future had manufacturers

wondering, confusion about equipment was also apparent in the minds of many attendees.

Uncertainty abounded over the latest digital formats, as well as such issues as compression algorithms, analog backward compatibility, disk recorders and the future of tape.

Format wars

While their colleagues in the conference halls were engaged in a series of debates about another great mystery—the next generation of television standards—those who braved the equipment show had to tackle the solicitations of the three big video manufacturers: Ampex, Panasonic and Sony.

All three were pushing their new digital component tape formats. Ampex, with its 19mm DCT format targeted to the post market, was widely praised for having a technically excellent post production system, complete with recorders, players, a switcher, editor, DVE, still store and cart machine. The VTRs are 525/625 switchable and use compression of about 2:1.

Ampex said it had new sales of DCT to facilities in London, Ireland, Germany, Holland, Sweden, Italy, Monaco and Switzerland. Portuguese broadcaster TVI has also bought DCT edit controllers and switchers, while in the U.S., WTTW-TV in Chicago has bought an entire system for its National Television Production Center.

Despite these successes, the announcement that Ampex had put

(continued on page 6)



Rank Cintel's URSA and Dynatech's da Vinci keep up with the frantic pace of activity at Rushes, a U.K. post facility.

For more information on telecines and signal processing, see this month's Buyers Guide on page 14.

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CABLE

Wharf Cable Places Major Order with Dynatech

HONG KONG Wharf Cable, a Hong Kong pay TV system, recently ordered US\$2.3 million from the Dynatech Video Group.

Through its subsidiaries—Alpha Image, Quanta Corp. and Utah Scientific—Dynatech will provide central routing, digital text systems and master control systems.

Dynatech will install 12 DMC-601 systems, jointly developed by Utah Scientific and Alpha Image, at Wharf's Tsuen Wan transmission center. Alpha's 2000 series of serial digital routers will also be used.

In addition, 22 Quanta Delta E series and S series image generators will be used in Wharf's production and edit facilities.

Wharf Cable is expected to launch its 12-channel system next month after having received a 12-year franchise from Chinese officials. Programming will consist of entertainment, sports, community interest and news, as well as specialty programming for women, children and young adults.

BUSINESS

Grass Valley Group Restructures; Begins Direct Sales in Germany

GRASS VALLEY, California A general restructuring at Tektronix Inc. has led to a similar overhaul at its subsidiary, Grass

Valley Group.

Under a plan announced in June, Grass Valley will consolidate its three product divisions: production systems, distribution systems and graphic systems. Separate vice presidents will be established to oversee marketing, engineering and operations of the single division.

Also, GVG's graphics products manufacturing will be relocated from Paramus, New Jersey, to Grass Valley, although engineering and marketing of graphics systems will remain in New Jersey.

Meanwhile, GVG Ltd., the European headquarters, will move from its Basingstoke, U.K., location to the Tektronix facility in Marlow. According to Bob Wilson, president and CEO, Grass Valley will expand turnkey operations in Europe and will begin direct sales in Germany.

"These actions will strengthen our finan-

cial position, enabling us to continue to aggressively pursue profitable growth opportunities," Wilson said.

The restructuring is expected to be largely completed by the end of the year.

WBU

WBU Works Toward Worldwide Digital Standards

GENEVA Several international broadcasting unions have identified a number of general objectives in its quest for a worldwide digital television broadcast standard.

A total of eight international broadcast organizations have been meeting under the name World Broadcasting Unions since April, 1992, to devise a terrestrial and satellite digital transmission standard.

At its latest meeting here in June, the group agreed that any standard should improve picture quality, as well as work across different transport media, such as terrestrial, satellite and cable transmission.

Other aspects of the standard were that it should meet the needs of high definition, enhanced definition and standard television and provide receivers that are compatible with terrestrial, satellite and cable transport.

Other goals include reducing RF interference.

Groups participating in the WBU effort include the Asia-Pacific Broadcasting Union (ABU), the Union of National Radio & Television Organizations of Africa (URTNA), the Arab States Broadcasting Union (ASBU), the North American National Broadcasters Association (NANBA), the Caribbean Broadcasting Union (CBU), the Asociacion Internacional de Radiofusion (AIR), and the European Broadcasting Union (EBU).

It is unclear at this point how much commonality a world broadcast standard would be. With the U.S. and Japan likely to build on the NTSC system for its digital television and Europe, Africa and much of Asia prepared to do the same with PAL and SECAM, a fully compatible system is unlikely.

And with HDTV, U.S. officials recently told attendees at the International Television Symposium in Montreux, Switzerland, that they are not willing to delay the U.S. HDTV standard to consider several undeveloped European systems.

NEWS SERVICE

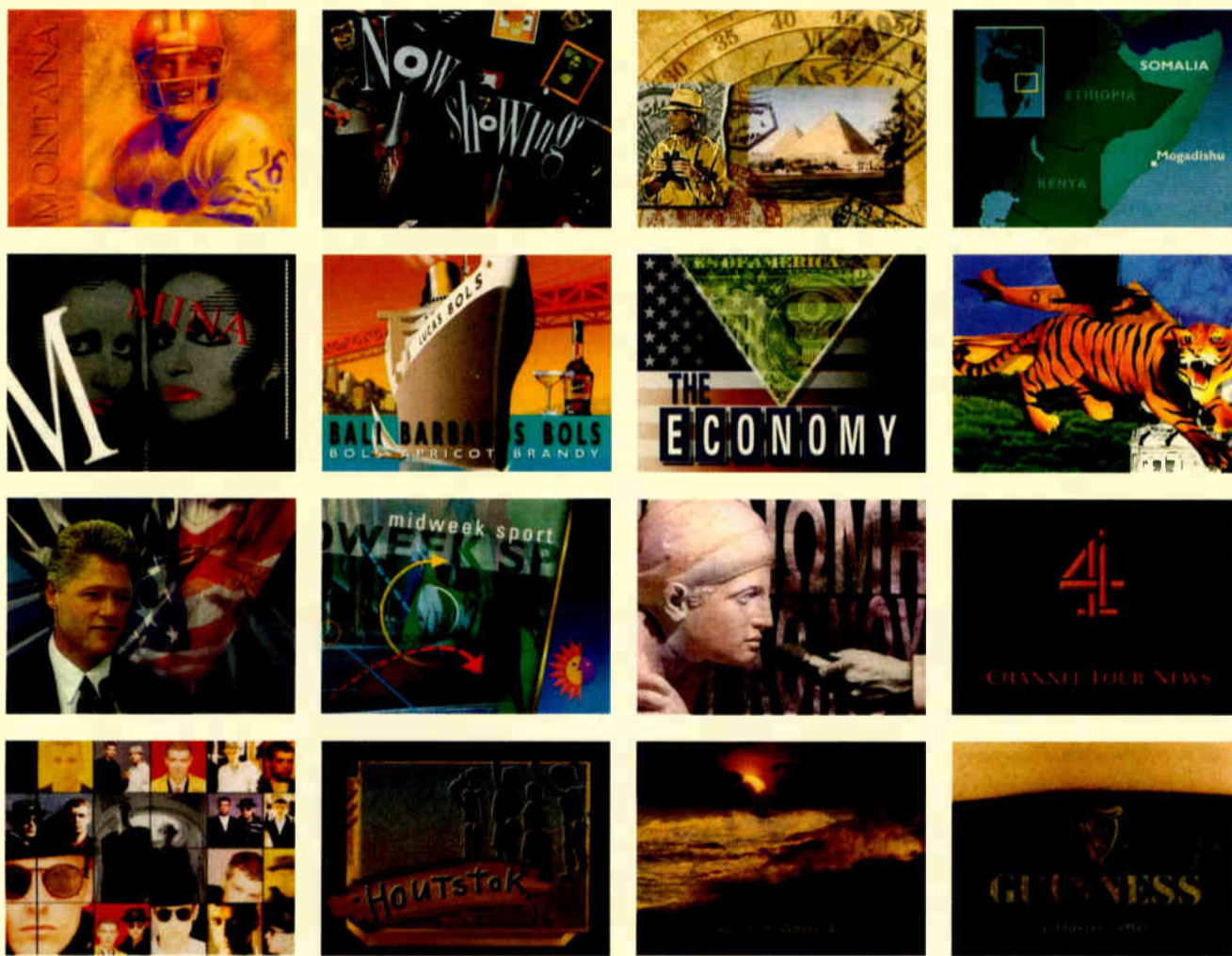
Keystone Starts 24-Hour News Service

LOS ANGELES Keystone Communications began delivering Cable News Network International (CNNI) 24-hours-a-day to the Pacific region in July following an agreement with Turner International, CNNI's owner.

Keystone utilizes an INTELSAT V POR satellite at 180 degrees East to distribute the all-news service to SMATV systems in the region stretching from Australia to Indonesia. The programming will be accessed at Keystone's International Teleport in Sylmar, California from a U.S. satellite before being uplinked to the INTELSAT.

Keystone currently leases two full-time INTELSAT POR transponders.

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Circle 47 On Reader Service Card

Outlook Dim for OFDM in U.S.

by Chris Dickinson

MONTREUX, Switzerland With the U.S. preparing to test a terrestrial television standard to replace NTSC soon, European authorities are clamoring for U.S. regulatory authorities to consider a worldwide compatible system.

Following the decision by the four remaining participants in the U.S. competitive testing process to join forces in the "Grand Alliance," regulators had hoped it would be a relatively simple job to come up with a new system.

United front

The backers of the four systems—AT&T/Zenith Electronics; a consortium consisting of the David Sarnoff Research Center, North American Philips, Thomson Consumer Electronics, the NBC network, and Compression Labs; and General Instruments/Massachusetts Institute of Technology, which offered two systems—reached a business and technical agreement in May to combine their systems and submit a single proposal to the U.S. Federal Communications Commission (FCC).

The FCC, through its Advisory Committee on Advanced Television Service (ACATS), had been applying pressure on the companies to join together, partly because no clear winner was emerging from the testing program, but also to offset the prospect of legal action brought by losing proponents.

In their May announcement, the Grand Alliance said the new system would offer broadcasters the ability to switch between

24, 30 and 60 frames per second (fps) transmission in 787.5- and 1050-line modes.

Under pressure from the computer industry, the Grand Alliance also pledged to adopt progressive scan transmissions (where entire picture frames are transmitted sequentially) and use square pixels (where the dots on a television screen are arranged in equally spaced rows and columns). NTSC-compatible interlaced scan technology will also be used in the

Speaking in the same debate, Wiley said observers from the European Broadcasting Union (EBU) were invited to send observers to the technical subcommittee's work. Observers from Canada and Japanese broadcaster NHK were also due to attend.

But Mark Richer, head of the FCC testing committee, said it would not be possible to consider an OFDM system unless someone formally submits a system for testing.

Two obvious candidates, European

Flaherty said . . . the European digital systems were unlikely to be ready before the U.S. set a standard.

initial deployment of the system, although this has been opposed by MIT.

The next step

But having joined together, and been heartily "commended" for doing so by the ACATS chairman, Richard Wiley, the proponents could then have expected a relatively easy ride in thrashing out the fine detail of the new transmission system.

A new technical subcommittee has been set up under the chair of CBS technical head Joe Flaherty to steer the Grand Alliance into a final proposal.

But at the June International Television Symposium in Montreux, Switzerland, the Americans, who had come to share their vision with delegates from all over the world—appeared to be taken aback by the strength of feeling in Europe for adopting an entirely different system based on European-backed technology.

At the ITS' key session on future digital transmission systems, Wiley and Flaherty were challenged to consider a system using Orthogonal Frequency Division Multiplex (OFDM), which is being employed in most of the terrestrial digital transmission systems under development in Europe.

Speakers said that although requirements for a new television standard differ between Europe and the U.S., there would be economies of scale and conversion advantages if the two regions adopted a common system. OFDM is also generally considered to be technically superior to any of the systems used in the Grand Alliance.

Not in time

Flaherty said it was still possible for another system to be considered for testing, but that the European digital systems were unlikely to be ready before the U.S. set a standard.

"The four systems we were testing were not prototypes," Flaherty said. "All four of these systems worked and worked well. The Grand Alliance came about because the proponents devised things that could be improved during testing."

"It is possible that by the end of 1994, a standard will be set. This doesn't match the schedule in Europe, where I imagine it will be 1996, '97 or '98 before terrestrial transmission begins. It is possible to have commonality—particularly for receivers—throughout the world. But we can't delay forever."

manufacturers Philips and Thomson, though having the financial power to support the development and eventual manufacture of an OFDM system, are thought to be unlikely to propose one because their U.S. subsidiaries are already part of the Grand Alliance.

Separate paths

While it is likely that the U.S. and Europe will go their separate ways, with the rest of the world selecting between the two, the ITS provided the various European proponents of new digital systems the chance to show off the work they are doing.

HD-Divine, the Scandinavian project that stole the show when it was unveiled at the International Broadcasting Convention in Amsterdam a year ago, was again being demonstrated. And the Thomson Diamond system—which, like HD-Divine, is part of the dTTb group in Europe—was being shown by Thomson and the U.K.'s BBC running four conventional television signals and one HDTV signal over a pair of 34 Mbps bit-streams.

Thomson—which appears to be happy to promote one system in the U.S. and another in Europe—said Diamond, using OFDM technology, avoided interference between the digital channels and existing PAL and SECAM channels. This, the company said, was one of the main benefits of the system.

There were also demonstrations of the enhanced television PAL-Plus system being developed by broadcasters in Europe.

The Japanese, meanwhile, were enthusiastic about their satellite-based Hi-Vision HDTV system. Junji Matsuzaki, director of HDTV Division at NHK, told an ITS session on future technologies that the eight-hour Hi-Vision service that had been broadcasting from the MUSE satellite since November 1991 would be followed by five services from commercial broadcasters in or after 1997.

Despite this commitment, only 11,000 individuals were receiving Hi-Vision broadcasts by March 1993.

Long analog life

Matsuzaki said that while Hi-Vision would eventually be replaced by a digital HDTV system, the analog system would continue to be broadcast until at least 2015.

"As the digital system is still some years

away, it is important for us to have Hi-vision receivers reach a wider audience in the interim," he said. "We should prepare a steady HDTV foundation first, and then build on this a worldwide all-digital system."

Matsuzaki also claimed that by 2015, ISDB (Integrated Services Digital Broadcast) on fiber optic cable networks would be used to distribute television signals, alongside audio and data transmission—mirroring the "information superhighway" proposed in the U.S.

But he conceded that a massive investment is needed in Japan for ISDB to be available. Only 20 percent of households currently have cable, compared to 63 percent in the U.S. And according to a report by the Japanese PTT, it would cost US\$275 billion in equipment investment to enable optical cable networks to reach all households in Japan before 2015. An additional US\$420 billion is estimated as the cost of laying all the cables underground.

SHOW LISTINGS

Upcoming conventions, meetings and exhibitions

**1-5 October 1993—
International Broadcast '93**

Jakarta, Indonesia. A broadcast-only exhibition to be held in Jakarta at the Kemayoran Exhibition Center. Exhibition planner is PT MultiMedia Promo.

**10-14 October 1993—
VISION '93**

Olympia, U.K. A new broadcast, film and video equipment show for the U.K., VISION '93 is the result of a collaboration between the IABM, the BKSTS, Single Market Events and Philbeach Events. For information contact Orlando Kimer: +44-71-830-8447/8.

**18-20 October 1993—
European Cable
Communications '93**

London, England. Following the success of the 1992 show, the Cable Television Association is expanding the size of the 1993 show. To be held at Olympia 2, London. For more information contact Sharon Chapman, Manager ECC '93, The Cable Television Association, 5th Floor Artillery House, Artillery Row, London, SW1P 1RT, England. Telephone: +44-71-222-2900; FAX: +44-71-799-1471.

**25-28 October 1993—
Broadcasting, Cable & Satellite
India '93**

Pragati Maidan, New Dehli. India's 1st International Broadcasting, Cable & Satellite India '93 exhibition and conference. 150 exhibitors from India, Europe, the U.S., Asia and Australia are expected to exhibit. A three-day technical conference will focus on trends in broadcasting, hardware and software, emerging technologies and non-governmental broadcasting. For information contact Broadcast Engineering Society (India): Room No. 410, Research Dept., All India Radio and Doordarshan, J.P. Estate., 14-B, Ring Road, New Dehli-110002, or Exhibitions India: telephone +91-4622710; FAX +91-11-4633506.

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Tokyo Masters Golf in HDTV

by Jim Eady

AUGUSTA, Georgia Tokyo Broadcasting Service's high definition coverage of the Augusta National Masters Golf Tournament laid to rest a number of questions about the feasibility of mobile coverage of live sporting events in HDTV.

As the technical producer of HDTV coverage for the event, I saw how the various elements of live coverage, such as field crews, mobile production units and fiber optic networks, can all come together to provide seamless coverage of an event.

The coverage was a joint project by the Augusta National Golf Club (ANGC), Tokyo Broadcasting, Sony and Southern Bell (a U.S. telephone concern), with the assistance of Meret Optical, a fiber optics company based in Santa Monica, California.

Pool coverage

Each organization was responsible for specific areas of the venture. ANGC provided on-site services, such as power, towers, tents, meals, etc., while Tokyo Broadcasting (TBS) mounted the actual production and post production. Sony provided all the demonstration monitors and augmented the production equipment that TBS supplied, and Southern Bell and Meret supplied the fiber optic and copper communication systems.

Although this was not the first HD recording of a golf tournament, it certainly was the most ambitious and definitely the most prestigious.

For flyover shots, we mounted a Sony HDC-500 HDTV camera with a Fujinon 11:1 lens on a Bell 206 helicopter with a Tyler nose mount. Because of the weight of the camera and lens, we could hear the nose mount groan during the installation, which is something to keep in mind when planning for the future.

Up and away

With pilot, cameraman, video operator, batteries, monitoring and Uni-Hi recorder, which is about the size and weight of a D-2 machine, we had to lighten the load on more than one occasion to get the helicopter out of the compound area.

With the wide aspect ratio and high definition, the pictures were spectacular. Next time, I will order a slightly larger aircraft.

Because our live production was limited to two holes, we built an ENG cart that consisted of a flatbed golf cart with the helicopter camera package and a wireless stereo audio package.

Unlike a Beta SP unit running around the course, ours rather resembled four men in a topless Volkswagen.

The crew consisted of the cameraman, with the Sony HDC-500, Fujinon lens and a Sachtler tripod; an audio operator with a wireless stereo shotgun mic on a fishpole; a video operator with a full CCU PAC; and a utility person to handle crowd control, cable handling and



A bird's-eye view, in high definition, of Masters Golf

aid to the cameraman.

Because the camera and lens were so heavy, we generally operated in true hand-held fashion for only about three minutes at a time.

Battery power

The entire ENG system was operated off of four deep-cycle batteries. When we first tested with the 12V-to-110V inverter, we found that the Uni-Hi recorders did not wire the hard edges on the square wave that the inverters put out. Instead, they introduced video hum into the picture. By swapping this unit out for the 24V-to-110V inverter, the problem went away.

It seemed that by putting the batteries in series/parallel and raising the input voltage, the square wave was softened to a level that the equipment could handle. Four batteries would give us about four hours of normal operation, or one hour of recorded material.

As for our mobile truck, it ran very smoothly, but it had the potential to be a disaster.

Our first problem was pollen, which was everywhere. All those beautiful flowering shrubs and trees in bloom meant only one thing: clouds of heavy green pollen, often so thick it looked like a mist blowing across the fairways. Add to this several days of rainfall, including one so heavy that play was suspended, and too many people working in too small a truck and I am surprised that we did not run into enormous tape and equipment problems. But, actually, we did very well.

We brought an HD Mobile Telsat truck from Dome Productions in Toronto, Canada. Onboard, it normally has three Sony HDC-300 cameras and three one-inch HDV-1000 digital videotape recorders. To this, Sony added another Uni-Hi video recorder for playback of ENG material and two of its HDC-500 camera systems. Finally, Tokyo Broadcasting brought one additional HDC-500 system from Japan, which we used instead of an onboard HDC-300.

Sony also borrowed two 40:1 lenses from Fujinon and one 40:1 from Canon. This was far better than we had hoped because we would be able to shake off the main problem of most other HDTV

productions: not enough glass. To the other two cameras we added a 22:1 lens and an 11:1 lens.

Dependable cameras

All the camera systems worked very well and had no problems over the week that we had them fired up. All were on multicore cable, which was either flown or buried.

However, we did run into one lens problem. It seems that the sun shining into the front of one of our 22:1 lenses focused enough heat to melt a plastic wheel, causing it to seize. The manufacturer has been notified and will change the design.

In the videotape area, things tended to go very well considering both the beating that the Uni-Hi machines received and the environment in which the tape stock was stored.

In the audio area we had a very big problem in that our truck was a demonstration unit that had no mics to speak of onboard and a very small audio console. To overcome these limitations, we added one additional stereo console with 12 inputs, 24 audio DAs and a combination of stereo and mono shotgun microphones. While the truck had almost no audio routing, each VTR machine had eight audio tracks and we managed to chase the submixes around the ISO VTRs to get a very good stereo mix onto the program.

Add HDTV graphics from our Chyron Scribe and we handed off a pretty nice package to Southern Bell for distribution.

Southern Bell pulled fiber from our mobile unit to five different locations around the golf course. From there the feed was further split to 12 different locations.

However, Southern Bell could only supply us with a limited amount of Grass Valley Wavelink equipment for distribution and to terminate the fiber. Also, their optical drivers only had a 20 MHz bandwidth.

For help we turned to Meret Optical, which supplied us with its "Live Link" system, delivering three 30 MHz feeds to our three prime locations. The "Live Link" system, Model LL300, uses a frequency division multiplexer to allow all three beams to be transmitted with a single laser.

For distribution, I borrowed several wideband VEA 681 video distribution amplifiers from Leitch.

The circle was complete when Sony supplied 12 HDTV monitors ranging in size from 34 inches to 120 inches.

As the show headed into post production for distribution in Japan, it was hard to place a cost on covering the event. But with my crew of 24 technicians, Sony's five technical reps, Southern Bell's four or five people on site, Tokyo Broadcasting Systems' five HDTV engineers, the valuable equipment and services lent to us by Meret, Leitch and the Augusta National Golf Club, I do not think that a budget figure of \$500,000 is too far out of line.

And what was the end result? In spite of the number of players, we had a production that ran fairly smoothly. We made some great pictures, and the golfing profession was able to put its best foot forward.

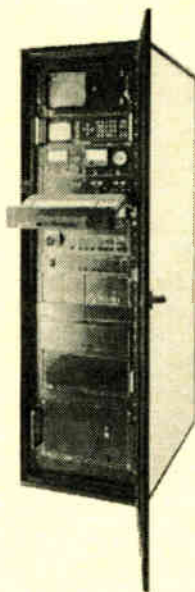
Editor's note: Jim Eady is managing director of Broadcast Services International, as well as a free-lance technical producer. His next two projects are director of technical operations at hockey and figure skating for the host broadcaster at the 1994 Winter Olympics and manager of venue technical Operations for the 1994 Goodwill Games in Russia.

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BASYS Speaks the Language of Wharf

by Harn Soper

HONG KONG East meets West—it is often a contrast of more than just language.

One might expect that in newsrooms just getting underway in the Far East, this same contrast would be evident. But what I have discovered is that nothing could be further from the truth. As I met with a number of new Asian broadcasters in Hong Kong recently, I could quickly see that their needs are actually very similar, even more demanding, than most Western newsrooms.

Newsrooms, of course, are not new to the Far East. Singapore Broadcast runs a very extensive operation using newsroom products from BASYS, as does MCOT-CH9 in Thailand, where 80 journalists operate in both Thai and English.

What is new to the region, beginning with the BASYS installation underway at Wharf Cable in Hong Kong, is a full function newsroom operating in ideographic languages. Operating in Chinese, Wharf will have access to all the same operational advantages that all electronic newsroom users enjoy.

Previously, newsrooms used office systems or a few networked PCs to produce scripts and rundowns. With advances in data base capabilities, all newsroom functions, including fully automated prompter control, are now possible. This had been a major stumbling block given the need to support Asian news readers in their native languages.

Wharf Cable's launch

Many of the news operations being launched in Asia are actually some of the most advanced in both programming formats and technical operations. At Wharf

Cable, BASYS is currently installing a combined Chinese and English language newsroom system to support the launch of a 24-hour news channel.

The biggest cable system of its kind in the world, Wharf Cable will be offering a package of entertainment, sports, learning, living in Hong Kong, news and pre-view channels beamed from more than a dozen sites. An English news channel is also under consideration, and separate channels for women, children and youth music are part of the planned line-up.

Wharf is scheduled to launch a trial run, including a test of its newsroom, in Sha



Tin and Tsuen Wan this summer. Territory wide service is expected to be in full operation in October, and Wharf expects to reach more than one million homes within two years.

As is generally true, the key to success for Wharf will be its ability to produce programs of interest to the local market. Chinese will be broadcast on 10 of Wharf's 12 channels, with much of the programming produced locally. That is where the need for a full Chinese newsroom comes in.

The BASYS installation underway at Wharf Cable will be a combined Chinese/English newsroom used by more than 200 journalists preparing and producing 24-hour news coverage. Journalists will have access to all the tools they need to automatically receive and distribute agency wire material, write scripts, prepare the program schedule and send the information to the news reader's teleprompter.

Using Microsoft Windows

The system now being installed in Hong Kong uses Microsoft Windows and includes the full range of functionality needed to support news production. Asian broadcasters were especially interested in being able to edit in Chinese with a clear display of complex characters. Access to Chinese wire services was also a concern, as was integrated prompting.

To provide a newsroom in the native language, BASYS has developed software capable of handling pictographic (also known as ideographic) characters. To reproduce these ideographic characters in a computer environment requires a multibyte data base to store pictograms. Unlike English, Romance or European languages, whose characters can be represented as single byte values, Asian characters can be anywhere from two to four bytes.

Working in Asian languages affects how data is handled within the system and how it is represented on the screen. Indeed, you need to handle output to a wide range of devices—printers, prompters and character generators.

By handling the multibyte characters, our newsroom software can now work just as easily with other pictographic languages, such as Kanji for Japanese journalists and Hongul for Korean users. We are finding these multilingual needs not

just within Asia, but wherever specialized language broadcasts are going to air.

More than new characters

Although it may be referred to as a Chinese newsroom, there are in fact a number of dialects to take into account—Cantonese, Mandarin, Wu, Fukienese (Min), Amoy, Hakka or Hsiang.

The majority of Chinese characters consists of two elements, a signific (radical), which indicates the meaning of a word, and a phonetic, which indicates the sound. Chinese is also what is known as a tonal language—different tones or intonations are used to distinguish words that are otherwise pronounced identically. The four Chinese tones are "high level," "high rising," "low rising" and "high falling to low."

For example the word "ma," when pronounced in these four different ways, means alternatively: "mother," "hemp," "horse," and "to curse."

When you set off to build an internationalized newsroom, you need to think of more than just how the computer handles different character sets, you must understand how the system is used. Our team was immediately immersed in a land of ideographs, specialized symbols and control functions.

There were a number of unique requirements to plan for, such as how to do word

counts, word-wraps and punctuation.

And because many broadcasters in the region want to be able to operate in English as well, the system needed to support the ability to store, edit, print and manipulate stories in both Latin and Asian characters.

Likewise, both Asian and English wires are a must, as is mail and messages in both languages. The way in which Asian language characters are entered at the terminal must be accommodated as well, and it varies by region. This includes working with phonetic alphabets or sound-based characters, as well as shape-based characters identified by special key sequences.

Internationalization and localization, in my view, are the keys as the newsroom goes Eastern.

Beyond the newsroom

Newsrooms just getting underway have a distinct advantage over established operations. They can go in with automated links to on-air devices without needing to break with established work practices. Much like the new franchises we are working with in the U.K., Asian news-



Harn Soper, manager of Asian News Products for BASYS

rooms have the ability to incorporate a high level of automation at the onset. Wharf Cable will be using machine control system (MCS) software from BASYS to link information contained in the scripts to the operation of studio equipment, allowing the automatic control of the character generator, still store and video cart equipment. This is essential for the type of 24-hour news operation Wharf Cable will be producing, where late breaking stories need to be captured, scripted and on the air within minutes.

Internationalization and localization, in my view, are the keys as the newsroom goes Eastern.

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Real character

Being able to handle a different character set was the most obvious special requirement for the Asian market. But the real needs go well beyond that. From the onset, BASYS designed its newsroom with flexibility in mind—letting each newsroom design its own scripts, run-

rooms have the ability to incorporate a high level of automation at the onset.

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Harn Soper is product manager, Asian news for BASYS Automation Systems Inc. For more information about news and automation solutions from BASYS, contact the company at +1-914-376-4800 (U.S.) or +44-753-583-333 (U.K.) or Tectel in Australia at +61-2-906-1488, or circle Reader Service 59.

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Highlights of Montreux: What Will

(continued from page 1)

up for sale its tape division, Ampex Recording Systems, worried some potential customers about the company's long-term commitment to the television industry.

George Merrick, executive vice president of Ampex Systems Corporation, said he was not allowed to disclose if there had been any offers for the division. But another new division, Ampex Digital Media, has been set up to ensure DCT tape continues to be made by the company.

Panasonic, unveiling its uncompressed D-5 half-inch format in Europe, announced that Philips-controlled manufacturer BTS will badge and sell the format. BTS, which has also pledged itself to make and sell Sony's Digital Betacam, said it intends eventually to develop its own line of D-5 VTRs.

BTS Chief Executive Officer Pieter van Dalen said he believed D-5 was "several steps" ahead of Digital Betacam.

"The D-5 design was carried out with special consideration to be suitable for an HDTV environment," he said. "Thus D-5 is future-proof and has unlimited applications."

But van Dalen added that BTS would still support Digital Betacam, selling the format in its systems and outside broadcast supply operations.

Panasonic did not disclose any further sales of D-5. But it announced a sale of D-3—the backward-compatible, composite digital relative of D-5—to European broadcaster Tele Monte Carlo, with a commitment to upgrade to D-5 "as and when required."

Sony announced that it had received more than 1,000 orders for Digital Betacam—which uses compression rates of about 2:1—including sales to broadcasters and facilities in Canada, Australia, Hong Kong, the U.K., Germany, Belgium, Luxembourg and the Netherlands.

French manufacturer Thomson Broadcast also announced a licensing agreement with Sony, under which it would make and sell Digital Betacam worldwide.

Sony hopes Digital Betacam's backward compatibility with the analog Betacam SP and Betacam formats will be its main selling point.

Camera developments

Hidden in a back room at the ITS, Sony was showing a prototype Digital Betacam camcorder to selected customers. The company said products would be introduced next year.

Shige Morikawa, product manager of the camera group, said the camcorder, which would allow producers to use digital component throughout the production chain, would use a new Sony CCD chip, the HyperHAD 1000.

Sony intends to launch two camcorders, one with a 4:3 aspect ratio, and another that is switchable between 16:9 and 4:3. The company added that the camcorder, at 7 kg, should weigh the same as the existing BVW-400.

Panasonic unveiled the prototype of its own 16:9 and 4:3 switchable camera, which will be available next spring. Based on the Panasonic AQ-225 and AQ-20D digital processing cameras that were used at the 1992 Barcelona Olympics, the new AQ-225W will have a 2/3-inch FIT CCD and will allow instant switching between the two aspect ratios.

Panasonic also pledged to develop a

portable D-5 camera by the end of 1994, though no date was set for the launch of a true D-5 camcorder.

Thomson Broadcast unveiled a new digital component camera, the 1657, which Francis Hericourt, the company's chairman and CEO, said will be available in 16:9 and 4:3 versions. He added that a switchable 16:9 and 4:3 model, which would include automatic adjustment of the viewfinder for the two aspect ratios, would likely be launched next year.

Hericourt added that the company has delayed introducing a high definition CCD camera until at least the end of 1993 because of "the slow down of the high definition market."

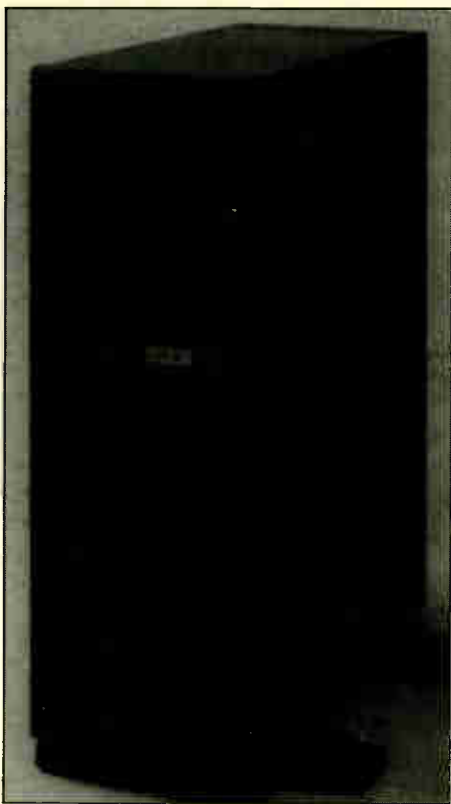
BTS was showing its portable LDK 93 camera, which is designed for studio or field applications.

Hitachi had a 13-bit signal processing family of cameras, the SKF2000, again with 16:9 and 4:3 switchability.

But perhaps the most exciting camera news at the show was announcements that several manufacturers, including Ikegami and Sony, were at various stages of development on disk-based camcorders. While still reporting difficulties with both hard disks and removable optical disks, such as a lack of robustness, high power consumption and the relatively small amount of data that can be recorded compared to tape, company spokesmen said development is progressing.

Switching to switchers

In the switcher market, Grass Valley Group played down the possibility of



Dynatech D2S2's DigiStore family of hard disk recorders attracted considerable interest from show attendees.

legal action against rival manufacturers that have launched what appears to be GVG switcher look-alikes.

"We regard it as a compliment that everybody is copying us," said Bob Wilson, president of GVG.

The company said its new switchers, the Model 4000 and widescreen-compatible Model 1000, have been sold to broadcasters and facilities throughout Europe. Sales announced at the ITS included two Model



Quantel's CLIPBOX tapeless on-air system

4000s to Norwegian state broadcaster NRK for use in the 1994 Winter Olympics, two more to Dutch broadcaster NOB, one to Flemish broadcaster VTM in Belgium and another to the U.K. OB facility VMTV. Model 1000s have been sold to the FIA Formula 1 World Championship organization and Rank Advertising in Egypt.

GVG also displayed its Sabre picture-based editing system, working with PAL signals. The company said the system would begin shipping by the end of 1993.

Abekas, which displayed upgrades to its component digital A84 switcher, was showing a cut down version, dubbed the 80-100, in a back room. The A84 was also shown working with Accom's much praised non-linear on-line editor, the Axial 2020, which could also be seen in the Dynatech stand, working with the Alpha Image 500 switcher.

Accom, for its part, launched its new compact Axial 2010 non-linear editor that is able to control 12 serial digital devices and is switchable between NTSC and PAL.

AVS Broadcast, which sells the Integra combined digital switcher and DVE, launched a new network control system called OmniBus. Based around a single workstation, the OmniBus was shown controlling all the main machines in an edit suite, including a DVE, a character generator and a switcher.

BTS showed its new Diamond-digital switcher range, first unveiled at NAB in April.

JVC launched a new multi-format component digital switcher, the KM-5000.

Sony unveiled two new switchers, the DVS-2000C and DVS-6000C, to connect with Digital Betacam.

And Thomson Broadcast launched another small switcher, the 9500, to complement the 9200, first shown at NAB.

Panasonic unveiled its first digital video mixer product for the European market, the component serial digital AS-D700C, designed to complement D-5.

A number of new products were also seen in the disk recorder area. Accom's 10-bit real-time hard disk recorder, Work Station Disk, made its European debut. First unveiled at NAB, WSD records 32 seconds of uncompressed 4:2:2 component digital video in 525 or 625 standards.

Accom is now working in partnership with GVG on hard disk technology, following GVG's decision not to develop its

own prototype recorder shown a year ago at NAB.

Dynatech, also aware of the possibilities of disk recorders, has set up a new subsidiary, D2S2, to launch hard disk recorder products. The new company, developed in a joint effort by Dynatech's Parallax, Alpha Image, da Vinci, Utah Scientific, Quanta, ColorGraphics, Cable Products Group and NewStar companies, displayed the first of its DigiStore family of hard disk recorders.

A version of DigiStore has been designed to act as a hard disk playout system for news, commercials and program operations. Software is also being developed that will connect DigiStore to traffic and master control systems.

The area of hard disk playout was also being targeted by products from several other manufacturers.

Quantel launched a new system, ClipBox, which can store 1.5 hours of CCIR 601 video and access it instantly for playout.

Avid was displaying AirPlay, a similar hard disk system designed for playout to air. U.K. news providers BBC and ITN, which have been Beta testing the system in London for several months, touted the system.

On the removable optical disc front, Pioneer claimed it had "stormed" Europe with its rewritable recorder, the VDR-V1000P, since its introduction a year ago.

Also shown was the ColorGraphics Mosaic-360 full bandwidth digital disk recorder that provides up to six minutes of uncompressed CCIR 601 record time with software selection of 8- or 10-bit data format and 525/625 line operation.

On the desktop

Desktop editing, meanwhile, has seen a blurring of definitions between on-line and off-line. However, a broad distinction can still be made between those systems that use a significant amount of compression, and those that do not.

Avid seems to have taken the lion's share of the non-linear market, with a whole raft of products from simple newsroom type systems, to the company's new top machine, the Media Composer 8000.

Curt Rawley, Avid's president and chief executive officer, said the company sold 1,200 systems in 1992, bringing in revenues of \$52 million, with 400 systems now installed in Europe. He added that Avid's Open Media Framework interchange proto-

the Future Bring?

col had now attracted 125 companies.

OLE Partnership, Avid's main non-linear competitor in Europe, launched a prototype version of Heavyworks, a bigger, more powerful version of its Lightworks system.

Paul Bamborough, OLE director, said Heavyworks will be on-line quality, with five times the bandwidth of Lightworks. The largest models of Heavyworks will be able to store up to 250 hours of video, using bit rate compression of only 6:1.

OLE also showed Digistation, a low-cost digitizing system that is designed to free the Lightworks editor for editing tasks while video is being transferred from tape. On the audio side, the company said it was working with AMS/Neve, makers of the Audiofile system.

Paltex, in cooperation with Editing Machines Corp. of the U.S., introduced DUET, what the companies dubbed a "between-the-lines" edit system. The system consists of Paltex's EDDi Pro vision tape-based editor tied to EMC's Prime-Time non-linear system. DUET is designed to offer the flexibility of random access for off-line and the quality of tape for on-line.

Other non-linear editing systems on display included new models of the Montage VideoStation with a new control board, and the Soft Image Digital Studio editing and graphics system. A new high-end on-line system, Aegis, was presented by CMX of the Pesa Chyron Group.

At the very top-end, Quantel, which has now stopped making Harry, announced new effects and edit control facilities for the Henry editor. There were also effects upgrades announced for the Hal compositing system.

Of equal interest was Micro Henry, the company's first foray in the lower end market, although at £140,000 (with a Paintbox as a £30,000 option) it is still substantially more than most systems. Micro Henry is designed to have the same interface and features as Henry, though using proprietary bit rate compression.

Graphic achievements

In the graphics world, the buzz word at the moment is resolution independence, meaning a system that is not tied to a particular standard, such as PAL, NTSC, HDTV or even film. Graphics machine manufacturers that had this ability were falling over themselves to demonstrate that their particular system achieved the desired "independence."

Discreet Logic's Flame system, a hit at NAB, was again causing waves, though it was not on the show floor. Intrepid attendees had a half-hour cab journey up a mountain if they wanted a demonstration.

But those who saw it praised the number of features available and Flame's apparent ability to work with any standard, even though, at more than £300,000 for a full system, it is aimed at the top-end of the market.

Parallax Graphics Systems had a new system, Advance, in a back room at the show. The system, which Parallax claims does "everything that Flame does" is being developed with an unnamed Los Angeles facility and was due to be launched over the summer.

For those wanting to work with film, Kodak's Cineon electronic effects system was launched in Europe; while Quantel said its first Domino system had been delivered to Cinema Research in Hollywood.

The U.K.'s GML, released two new products in its DTV (Desk Top Video & Audio) family. The DTV digital mixer and the DTV 3-D digital effects cards offer 4:2:2 processing, while the entire system is compatible with Microsoft Windows to provide full VTR control.

Conversion

Snell & Wilcox's booth attracted a crowd around its Alchemist motion-compensated standards converter, HD3100 HDTV "cross converter" with Ph.C (Phase Correlation) and new signal processing products.

Vistek and AVS Broadcast reached

agreement on joint development of motion compensated standards converter products. Also, Vistek introduced a Noise Reducer and Aperture Corrector option for the Vector.

While most manufacturers were busy touting their latest and greatest systems that are available now, there were also a fair number of tantalizing peeks at what the future has in store.

Away from the show floor, Sony was showing prototypes of a new HDTV DVE and switcher for the company's HDVS production standard. There was also an 1125-to-1250-line standards converter.

BTS and Toshiba announced an agreement to jointly develop 1125-line and 1250-line HDTV recorders.

But perhaps the two most fascinating glimpses of what will be were found in the Future Technology exhibition—a new

addition to the main ITS show.

Here, Japanese broadcaster NHK was displaying a 40-inch flat panel 16:9 HDTV display, which, with its casing, was only 80mm thick. The company said it was working on a 55-inch display, and hoped to have a product on the market within five years.

Thomson-CST's central research laboratory had a working prototype of a digital 8mm tape recorder simultaneously running three separate tracks of video at 20 Mbps, with real time switching capability between the programs.

Thomson said the system worked by using static heads instead of traditional rotating heads. The technology could be used to produce recorders capable of simultaneous record and playback of several thousand parallel tracks at a data rate of several gigabits per second.

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Wading Through a Strange Mix of Less

(continued from page 1)

100 yards is good enough for setting time zones and finding airports, but that fifth-inch accuracy suggests new frontiers in autofocus and autotracking, to say the least. If you were too busy at NAB, did you at least catch the SMPTE paper last fall on how NHK is using GPS tracking to generate yacht race graphics? Come on! Don't stop learning until you're dead!

Hither and dither

Anyway, the satellites were launched by the U.S. military, so, if they want to keep the sub-inches to themselves, who am I to tell them not to? Funny thing is: The U.S. Coast Guard seems to have something to say about it.

You might think the Coast Guard, with its guns and ranks and uniforms, is part of the Defense Department, but my telephone book says it's part of the Department of Transportation, and the phone company never lies, right? The USCG thinks a hundred yards just is not good enough for navigating narrow channels, so they looked into how the military was restricting the accuracy of GPS and came up with a way around it.

The military, to quote from the NAB paper (by Paul Galyean of Magnavox, telephone +1-310-618-1200), uses "dithering of the satellite clocks and off-setting of the broadcast satellite orbits to cause the received pseudorange measurements to wander in an apparently random way." In American, they mess with the satellites so the numbers come out strange.

So here's the Coast Guard idea: Put a GPS receiver where you know the exact location already, read what the receiver tells you, figure out the error, and transmit the difference, so any GPS receiver within range can correct itself. The Coast Guard is going to transmit corrections for all U.S. coastal waters, including the Great

Lakes. And Finland and Sweden are doing the same thing in the Baltic Sea and the Gulf of Bothnia (which have nothing to do—yet—with the Balkans or Bosnia). And Magnavox, which put in that system, was pushing the idea at NAB that it be applied to U.S. FM stations, which could transmit the corrections—blanketing the country—using RBDS. And the U.S. military doesn't mind.

I listened to all this, trying to make sense of it in the tiny brain sitting in my fat head. I reviewed the facts: The U.S. military thinks GPS is too accurate, so it spends money messing up the satellites. The U.S. Coast Guard thinks the messed-up GPS is not accurate enough, so it



by Mario Orazio

Masked Engineer

spends money sending correction signals for the messing, which the U.S. military doesn't mind. So why doesn't the U.S. military just stop messing with the satellites, which'll save the Coast Guard (to say nothing of Finland, Sweden, you and me) lots of money? Don't look at me.

Taking up space

GPS, when fully implemented, will consist of 24 spacecraft. The Voyager program had only two, of which (here are government minds at work again) the second one was launched before the first. I am *not* making this up. You can't make

stuff like this up.

Like the earlier Pioneer probes, the Voyagers were going to leave our dear old solar system, so we attached notes in case anyone (better make that *anything*) found them. The Pioneer notes consisted of plaques with pictures of a naked mixed-sex couple on them, with full heads of stylish hair, but no facial or pubic hair. With Voyager 2, we sent a better present: a sound recording.

The Voyagers were launched in 1977 (2 before 1—I kid you not), a few years before the introduction of the CD. That means that E.T. is going to play an LP (for those of you who came of age in the last 10 years, LP, in this case, doesn't stand for liquified propane; it stands for "long playing" record, a 12-inch hard disk without error correction that could

continuously deliver music for a fraction of the duration of a CD). I read somewhere that the astronomer who selected the music for the LP says it'll last longer than the earth (did Burwen ever make a meteor-pock filter for the extraterrestrial market?). I wonder where E.T. will find a phonograph.

What I wonder about here on terra firma is the opposite. I own a record player. All the people who have let me in their homes own record players, whether they're called turntables or phonographs. I don't know what percentage of homes have them (hey—there are more U.S. homes with

TVs than with either telephones or indoor plumbing), but someone who keeps track of such things tells me it's between 60 percent and 70 percent. To me, that's a lot of homes, but what do I know?

Fact of the matter is: I don't even know where to go to buy a new phonograph record. My local record store doesn't sell records anymore.

Number crunching

I decided to look into this. According to the highly prestigious Recording Industry Association of America, only 2.3 million LPs were sold in 1992, down more than 52 percent from 1991. In the same year, 407.5 million CDs were sold, up more than 22 percent. No shocker, right? Here's the punch line: The Electronic Industries Association says that, while 177 times more CDs than LPs were sold in 1992, considerably less than half of U.S. households could play them—around 42 percent by year's end. I am *not* making this up.

Let me do a quick recap before I leap off into the future of television: The military messes with you if you want to use GPS, but they have no objection to your spending money to get unmessed. Voyager 2 (launched before Voyager 1) is carrying a phonograph record of "The Sounds of Earth" to E.T., but you can't buy phonograph records *on earth* anymore, even though more than half of U.S. households have record players and less than half have CD players. Clear?

Phoning home

Good! Now I can enter the world of telco versus cable, but first a little bit about cellular phones. The analog kind (which is probably the kind you use) is pretty darned good, but the digital kind is a darned sight better. Among other benefits, it offers much longer battery life and, potentially, lower airtime cost, since it's so much cheaper for telcos to implement (and allows more customers in less spectrum).

There's just one problem with digital: The cellular standard (AMPS) is analog. I was talking to a sales engineer for a company that makes both analog and digital phones and the phone company equipment they talk to, and he was trying to sell me on the benefits of digital. One thing we talked about was the duplexer.

The duplexer connects the antenna to the transmitter and receiver, which operate 45 Mhz apart. It eats up a few dB, which makes it require a lot of power, which results in heavier batteries or less talk time. In TDMA digital cellular, TX and RX are on the same channel, and the duplexer can go bye-bye, which increases talk time, not even counting the reduced TX time of TDMA.

Then the salesman handed me one of his company's digital phones. It has a duplexer, because it can't roam if it doesn't have an analog AMPS section. Basically, given the universe of cellular phones already out there, telephone companies are going to have to continue to offer analog service, which is going to eat into digital benefits.

MAD about video

As far as the cable TV industry is concerned, that's just fine. You might have heard about how cable TV wants to provide phone service. Frankly, I'm not too sure cable TV really wants to offer you a

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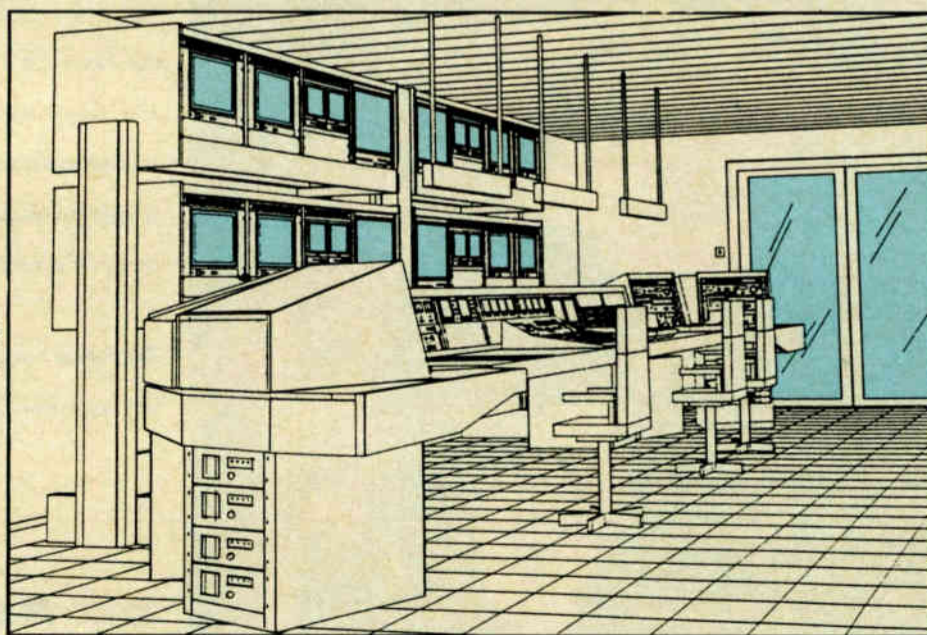
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Than Brilliant Ideas

dial tone, but they sure don't want to have the phone company offering you a *video* dial tone (VDT), and the cable TV weapon of mutually assured destruction to keep telcos from waging video war is called PCS (personal communications service).

If you want to think of PCS as cellular, go right ahead. Technically, the main difference is that PCS can't (yet) handle a high-speed handoff, which means, if you're moving between cells at 70 miles per hour, AMPS is for you. But if you're holding a phone in your hand, PCS and cellular will appear to be much the same thing, except the cable company will go digital right away (and achieve a few other economies), undercutting the heck out of cellular prices.

The way I see it, cable TV had to come up with that anti-telco bomb because telcos were pushing their own anti-cable bomb, VDT. But just what, exactly, VDT is is about as clear as a roll of gaffer tape.

You and I both know what dial tone is: It's that wonderful service that lets a telephone marketer, anywhere in the world, call you any time, for just a few cents a minute. If you read the stories about VDT in such magazines as "Time" and "Forbes," you come to the conclusion that VDT is dial tone with video added. A lot of attention is put on how to get video down a pair of wires, the theory being that that's the only obstacle. Combine digital video compression with an asynchronous digital subscriber line (ADSL) carrying 1.5 Mbps, and suddenly you can deliver video. But, the way I see it, you can't deliver *dial tone* video, and you never will.

Between the lines

There are millions of people in the hell

*... just what, exactly,
VDT is is about as clear
as a roll of gaffer tape.*

hole called New York and millions more in the mind melt of Los Angeles, but there are not millions of phone lines between them because the probability that millions of people will want to call between those two places at once is very high. Personally, I would be happy to live my life without calling either place, but there seem to be people who have to make bicoastal phone calls, so AT&T, MCI, Sprint and the rest of the telephone gang have a few paths between the cities, a number based on the probability of simultaneous calling.

Now let me add video to the picture (if that isn't being too redundant). The probability that someone's Aunt Gertrude in New York is going to want to make a video phone call to Aunt Trisha in L.A. is maybe even lower than without video. So far, so good. But what is the probability that someone will want to watch the seventh game of the World Series? When it comes to probability, *video* dial tone isn't exactly the same as dial tone. That's problem one. Here's number two:

It isn't easy figuring out how much phone calls cost, so I cheated and called an operator. This particular operator said a phone call between Los Angeles and

New York, at a cheap time of day, is 18 cents a minute. That's not bad. "Hello, Gert? Trish." "Hi, Trish, how are you?" "Fine. You?" "Fine. What's up?" "Nothing. I just wanted to say. 'Hi.'" "Thanks. 'Hi,' back to you." "Thanks. Well, bye." "Okay, bye."

If I talk fast, I can squeeze that call into about 10 seconds; if I talk slowly, maybe 30. So the second half of the last paragraph, sent by dial tone voice paths between Los Angeles and New York, currently costs between three and nine cents (if you believe my operator).

Once again, I'm going to attempt to stick video onto dial tone. The U.S. television

program "60 Minutes" lasts guess how long. So that's US\$10.80, if the video travels across the country and is not going to cost any more than voice. An evening of viewing would be US\$32.40. And you were complaining about cable rates?

Now, I don't want to get telephone company hate mail, so let me assure you right up front that I don't think any telco is going to charge US\$32.40 for an evening of entertainment. Heck—I think they're going to undercut cable rates. But that's because they're going to deliver a very cable-like service. It's not going to be anything-anywhere-anytime dial tone; it's going to be a bunch of hit movies and a bunch of popular channels, just like cable (or, at least, Cable of the Future), but maybe in a different regulatory atmosphere (E.T., take note for breathing apparatus).

Cable of the Future could be interesting,

too. AT&T (not a telephone company anymore) has been talking about near video-on-demand movies transmitted at five-minute intervals to allow some semblance of basic VCR controls (like "pause" and "rewind"). Some cable companies are talking in the same neighborhood. Let me see...20 hit two-hour movies at five-minute intervals is 480 channels, leaving the often-heard 500-channel cable system of the future with 20 channels left for ABC-TV through The Weather Channel.

I repeat: I do *not* make this stuff up. Some days I wish I did.

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 via electronic mail in MCI Mail at 581-6729@MCIMail.com.

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Lesson Three in Arm-Waving Math

Third in a Series

Editor's note: In June's issue (page 12), we began a series of articles using "arm-waving math"—a term used by mathematicians to describe derivations that are not absolutely complete and rigorous—to find such things as the distance to the horizon from the top of a tower and how to get dB figures without a calculator. This month, the author explains how to determine the required "dot pitch" of a monitor given the size of the computer monitor and the pixel count used.

Verily I say unto you, in the beginning there was hype. And it came to pass that there were computers. And the computers begat computer salesmen. And the computer salesmen begat *mega-hype!*

Have you been victimized by "mega-hype" from computer salesmen? Every computer, they say, is faster and better. And all software packages are easy to use, efficient and the best value. There is also much hype and possible misinformation about the monitor dot pitch required for various display standards.

We will never agree on any one best computer or software package. We can examine the claims for the dot pitch required for the color monitor. Dot pitch is the spacing between adjacent dot groups, or pixels, and has the units of "millimeters per pixel," usually written mm/pixel. A group of three color dots,

TECH TIP

by Larry Albert

called a triad, represents one color pixel.

Computer monitors are different from the video monitors I use for displaying NTSC signals. The computer video signals can be thought of as individual com-

ponent signals plus sync signals. It really is not this simple because the signals are not the same as those used by NTSC component systems. However, this oversimplification aids in understanding the difference. No, you cannot send the computer video to an NTSC or PAL component monitor. The video signals are as different as American bolts and metric bolts: They look the same, but, they aren't!

Another difference between the two types of monitors and how they display their signals deserves a quick mention. Video signals are usually overscanned with some information being lost behind the bezel. Computer displays are underscanned so that no information is hidden.

Have you been victimized by "mega-hype" from computer salesmen?

Sometimes this underscanning will leave a black border surrounding the video.

Computers generate digital information for specific pixels. A VGA video card converts this digital information to analog signals which are then sent to the monitor. If the screen has as many pixels as the digital signal is addressing, there should be no problem properly displaying all the data.

The 14-inch monitor is the most common size. VGA (Video Graphics Array) addresses 640 pixels for each horizontal line and 480 rows, or horizontal lines. We can determine the maximum pixel spacing for the monitor to properly display VGA. The calculation will ensure that the monitor will have 640 pixels on each horizontal line.

The "14-inch" refers to the total diagonal measurement of the picture tube, not the usable portion of the screen. Some

portion of the 14 inches will be hidden under the mounting bezel and therefore will be unusable. Monitor reviews in computer magazines indicate that the typical "14-inch" monitor has a usable diagonal size of only 12 inches. (Fifteen-inch monitors typically have only 12.6 inches usable.)

The problem has been identified. It is now time to find a solution. Let the Arm-Waving begin.

Known:

12-inch "usable" diagonal monitor
640 horizontal pixels required
Monitor has 3:4 aspect ratio

The diagonal is therefore 5 units.
(3:4:5 right triangle)

Solution by approximation:

Determine the Scale Factor for a 14-inch monitor. If you multiple each dimension of the 3:4:5 right triangle you would have a 12-inch diagonal.

Scale Factor = Diagonal Size + 5

$12 + 5 = 2.4$
(Scale Factor is 2.4)

$2.4 \times 4 = 9.6$
(Scale Factor x Width)

(Screen width is 9.6 inches)

We need the screen width in millimeters. This is because the dot pitch data is provided in mm/pixel.

$9.6 \times 25.4 = ?$
(9.6 ≈ 10) (25.4 ≈ 25)

$10 \times 25 = 250$
(Screen width is 250 millimeters)

We now know screen width, in mil-

limeters, and the number of pixels required. This data is adequate to determine the required dot pitch.

250mm will contain 640 pixels

$250\text{mm} + 640 \text{ pixels} = ? \text{ mm/pixel}$

Another approximation will make this calculation easier.

640 pixels ≈ 650 pixels

We will now claim:

250mm will contain 650 pixels

Divide both of these values by 25.

10mm will contain 26 pixels.
1mm will contain 2.6 pixels.

The needed dot pitch is (1 + 2.6) mm.

$1 + 2.6 = ??$

But: $1 + 2.5 = 0.40$

We now see that the needed dot pitch is slightly less than 0.40mm/pixel.

Monitors with a dot pitch of 0.39mm are readily available and might work. This value is so close to our approximation that exact calculations are needed to check this possibility.

Solution with calculator:

$12 + 5 = 2.4$
(The scale factor is 2.4)

$2.4 \times 4 = 9.6$
(The screen width is 9.6 inches)

$9.6 \times 25.4 = 243.84$
(Screen width is 243.84 millimeters)

$243.84 + 640 = 0.381$
(Needed dot pitch is 0.381mm/pixel)

It appears that a monitor with 0.39mm dot pitch will be marginally adequate for VGA displays. The dot pitch should be less than 0.381mm to display all the information available.

We have just calculated a correct number which does not address the real selection criteria. A 14-inch monitor screen with a 0.39mm dot pitch will display a coarse and grainy image at normal viewing distances. Perceived sharpness is greater when a smaller dot pitch is used. Although no increased information is displayed, the users prefer a "less grainy" image.

When started, this procedure was intended to calculate a number to guide monitor selection. The calculated number, while correct, is of no value.

This calculation could have been changed to one of the many possible SVGA formats. But, it was felt that this section should still be presented since it illustrates another important lesson. While we can calculate numbers, it is equally important to understand their true significance and relevance to the real problem.

The method shown can be used to calculate needed dot pitch for the numerous SVGA resolution formats and different monitor sizes.

Larry Albert is a television engineer at Murray State University in Murray, Kentucky. He may be reached at +1-502-762-4664. Or write to him at TV Technology.

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The V-LAN System Can Take Control

Given the array of video devices available and the rapid advances in video technology, video professionals and enthusiasts need an all-encompassing device control system now more than ever. However, it has become increasingly difficult to predict exactly what an individual needs from a device control system.

Therefore, device control system manufacturers must design systems that can provide maximum flexibility and frame accuracy, and offer a simple means for expanding and upgrading the system.

What Is V-LAN?

V-LAN, developed by Videomedia, allows you to frame-accurately control video devices through a computer. It is a software standard built into various hardware units that essentially makes all devices "look the same" to any controlling application.

A V-LAN network consists of V-LAN compatible transmitters and receivers. Each receiver connects to and controls a single video device. Each transmitter may connect to and control up to 31 receivers using a single coax cable that can run up to 4000' in length. (You may also route control of various devices to different control points using a simple patch panel.)

The controlling computer may connect to and control one transmitter per serial port. The number of possible setup options this creates makes a V-LAN system an extremely cost-effective solution for larger facilities that require multiple duty and/or remote location assignment of various transports.

In addition to Videomedia, companies such as Grass Valley Group, Tektronix, Chyron, Photron, Folsom Research,

Silicon Graphics, RGB Computer & Video, and AmiLink manufacture their own V-LAN compatible hardware. For the user, V-LAN compatibility provides the maximum number of choices for network setup because all V-LAN modules will co-exist on the same V-LAN network, regardless of their manufacturer.

Even hardware with different remote control characteristics or protocols may be freely mixed with other V-LAN compatible hardware. Older V-LAN hardware—even the first unit built—will co-exist on a network with the latest V-LAN

SPECIAL REPORT

by Bill Stickney

units because downward compatibility with older V-LAN units is a priority in the development phases of V-LAN compatible hardware.

To maintain complete flexibility, V-LAN also attempts to support as many different hardware devices as possible. V-LAN drivers exist for most video devices, including VTRs, videodisc recorder/players, production switchers, routing switchers, and general purpose interface (GPSI contact closure) devices. V-LAN also provides control over older types of VTRs that are no longer supported by their respective manufacturers, such as the Ampex VPR-2, Hitachi HR-200, Panasonic AU-700, Sony VO-5850 and others. In addition, V-LAN will work on all computer platforms: Macintosh, IBM, Amiga, Silicon Graphics, over a modem, even via a custom computer interface.

V-LAN is an ideal system for any application that requires frame-accurate device control: animation, editing, automation, remote control, desktop video, custom system and multimedia integration, and the like. For those who use animation software which inputs and/or outputs to videotape, V-LAN is an established industry standard. All major manufacturers of animation software supply drivers for V-LAN.

What is more, a V-LAN network may perform any and all of these applications, eliminating the need to invest in specific controllers or interfaces for each task. For example, the same V-LAN network may act as both an editing system and an animation controller. This multitasking capability makes V-LAN a cost effective solution for the long run.

Frame accuracy

Frame accuracy is of the utmost importance in a device control system. V-LAN, by nature of its design, is consistently the most accurate and reliable control engine available. There are several basic concepts that manufacturers of software-only or direct drivers have yet to acknowledge. The prime factor they overlook is referred to as "distributed intelligence," in which each and every video device has its own dedicated computer devoted to controlling it.

V-LAN uses distributed intelligence because a typical PC cannot possibly guarantee frame accuracy for multiple devices under anything less than ideal

conditions. A PC is simply not quick enough to make stringent "real-time" decisions required in a frame-accurate multiple transport control environment.

While it is true that direct drivers may frame-accurately control a single device for a single specific application, the instant you attempt to synchronize two or more devices (editing, tandem record, etc.), direct drivers fail to yield consistently frame-accurate results because of numerous and typical system variables such as transport servo variances, machine ballistics, tape pack, time code skew and other factors.

V-LAN places no timing constraints upon the controlling computer or application(s) running on it, which makes it attractive to developers. This is important because it is difficult for many application programs to deal with the real-time requirements of servicing several serial ports for reliable and consistent transport control. V-LAN provides total time constraint freedom because it is a time-line based system and accomplishes the timing completely external to the controlling computer.

Upgradeability

A device control system must be able to adapt to changes along the network if it is to evolve along with the system. Most V-LAN hardware accepts software-downloadable device drivers. Therefore, changing the network to reflect changes in hardware is as simple as copying a device driver to the V-LAN receiver, which will then control the new device. Videomedia is constantly updating device drivers in order to keep pace with the release of new video devices.

V-LAN is the industry standard device control system because it provides flexibility, frame accuracy and upgradeability into a single package. V-LAN is the common element through which manufacturers of applications software may effectively communicate with the wide variety of devices available to the user. Network setup is simple and designed to allow users complete control in creating a custom system that meets all their needs.

Distributed intelligence and a time-line based system provide consistent frame-accurate results. Simple upgradeability offers a valuable hedge against obsolescence. Cost effective and reliable, V-LAN can comfortably claim to be all things to all people.

Additional information

Videomedia has been manufacturing editing and post production equipment for more than 15 years. The V-LAN standard is supported by more than 60 manufacturers, and there are currently more than 50,000 V-LAN compatible units in the field with a documented failure rate of less than 1/2 of 1 percent since the first units began delivery over six years ago.

Additional in-depth technical papers regarding V-LAN may be obtained by contacting Videomedia.

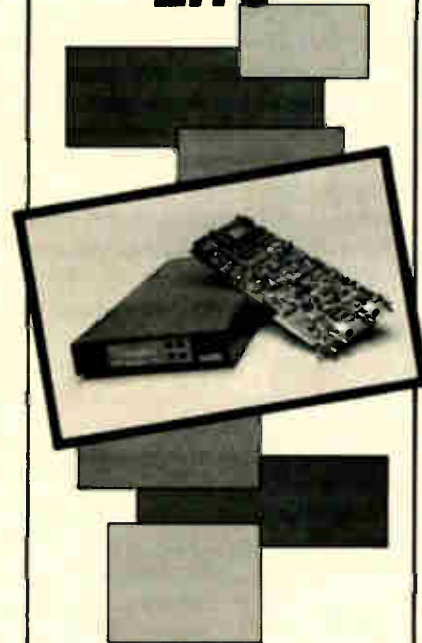
Software developers interested in incorporating V-LAN drivers (no royalty) should apply to Videomedia for a developers kit.

Bill Stickney is V.P. of engineering for Videomedia and has been with the com-

pany for 18 years. He has been active in the video industry for 28 years. Prior to Videomedia, he worked as chief engineer for a broadcast facility, applications engineer for Ampex, and systems manager for International Video Corp. Aside from Videomedia development, he speaks at conferences and has written several papers for SMPTE and NAB.

The opinions expressed above are the author's. For more information, contact Brian Conner at Videomedia Europe: +44-753-581596; FAX: +44-753-540612; Comuserve No. 100 137 1545; or circle Reader Service 77.

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V-LAN NEWS

Videomedia's V-LAN provides frame accurate transport control for all major manufacturers of computer graphics/animation/multimedia software and supports all popular videotape/videodisc recorders and players. . .

Videomedia recently introduced V-LAN-CX, a single receiver module designed to interface either to Sony Control-L, Panasonic 5-pin or Sony VISCA VTRs. V-LAN-CX allows V-LAN access to low-end computer applications such as digitizing in, real-time out and starter A/B roll editing. It offers a time code option that generates and reads both LTC and VITC. . .

Silicon Graphics (SGI) is marketing its IndigoVideo board with the IRIS Showcase 2.1 software, which supports the new board. The board ships with a "Video Library" that includes a driver enabling IRIS Showcase 2.1 to control V-LAN modules. . .

An SGI Indigo powers the new On-Line system from Soft Image. On-Line is an integrated editing system and animation compositing workstation. It uses V-LAN to control digital disks, switchers, audio mixers and VTRs for on-line editing. It also integrates the V-LAN T-Pod Shuttle/Jog controller into the editing control panel keyboard.

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

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BUYERS GUIDE

Telecine & Signal Processing

Molinare Opts for Trilogy's Digigen

This London Post House Found Flexibility with Its New SPG

by Hugh Waters, Chief Engineer
Molinare

LONDON Molinare is a well-respected post production house in London's Soho district. Our business is mainly long-form program editing, telecine, graphics and audio for broadcast.

This year, we decided to install a new digital edit suite to service our drama, pop promo and on-screen promotion customers.

The suite had to be designed to last in excess of six years and be as upgradeable as possible given the rapidly changing technical world of television.

Shopping for an SPG

A major consideration on the shopping list was the choice of sync pulse generator; a rather unexciting piece of equipment, but very essential.

While we immediately thought of turn-

ing to one of the U.S.-based manufacturers, a chance visit from a salesperson at Trilogy Broadcast Ltd. opened our eyes to their new line of equipment.

We were immediately impressed with the design of Trilogy's Digigen. In its basic form, it is a well-specified product: a good analog sync pulse generator (SPG) with three black and burst outputs, two color bar outputs, PLUGE (Picture Line Up Generating Equipment) and grille outputs. It also has outputs for PAL ID pulse, field one of eight pulse, subcarrier sinewave, BG, FD, LD, MB and MS.

Also, it is reasonably priced, and we have now purchased them as replacements in our analog suites.

One of the things that was especially attractive to us was the Digigen's range of options. In a digital suite, the timing of the various devices is a good deal easier to organize than in analog suites.

However, when a timing problem arises, it is usually because of some processing box, typically a decoder or encoder.

In these instances, we would have had to add distribution amps and delays to sort out the variations. Because we wanted to avoid systemic complexity as much as possible, the Trilogy's three black and burst outputs won our vote.

USER REPORT

Incidentally, the range over which these may be swung is vast—plus or minus four frames. That should suffice for most timing problems.

Black and burst adjustments

The three black and burst outputs are all individually and separately adjustable, which is an excellent feature when combined with the four user memories. We post several episodic programs, and the ability to make rapid changes to the suite's configuration is a strong advantage.

Being a fully digital suite, we are also in need of AES/EBU synchronizing

pulse generators. Again, the Digigen meets our needs because it is equipped with a fully loaded AES/EBU generator.

We were concerned about the lack of tight intertiming specifications between AES/EBU and serial digital video signals, and the fact that unlocked signals can produce clicks or short mutes. So we were pleased to hear that the Digigen was designed to provide properly locked clocking signals for both AES/EBU and video.

One of the things that was especially attractive to us was the Digigen's range of options.

But we wanted more than just an SPG with a huge timing range on several outputs and an AES/EBU reference generator. We wanted a source of test signals too.

The Digigen has an impressive array of options of interest to us.

We purchased the component test signal generator option that gave us a very comprehensive set of bars that can be split, 100 percent, identified and moved, which is a very handy feature. The movement is accomplished by a pair of moving white-on-black dashes that slide across the top and bottom of the screen, making it possible to see if a piece of equipment has frozen or not.

Up to the test

Other than bars, there are 21 test signals ranging from simple PLUGE to the SDI checkfield. These are more than adequate for the general purpose signals we needed from an SPG.

To date, we have not discovered any serious negative aspects of the device, although we would prefer that the front panel buttons were labeled a little more explicitly. Perhaps it would be handy if the test signals could be accessed independently of the bars, or if the AES/EBU had silence and tone outputs.

These are not significant criticisms, however. We are very happy with the device and have no reservations recommending the Digigen to anyone looking for a flexible analog PAL, YUV or digital SPG.

Editor's note: Hugh Waters has been a video engineer for 12 years, having started his career at Telecine. He is a member of the SMPTE and RTS.

The opinions expressed above are the author's alone.

For further information on the Digigen, contact Roger Stanwell at Trilogy (Telephone: +44-264-332-033; FAX: +44-264-334-806), or circle Reader Service 103.

CONVOCOM Gains New accESS

Rich Plotkin
Director of Broadcast
CONVOCOM

PEORIA, Illinois CONVOCOM is the corporate name for WMEC, WQEC and WSEC, three television stations (and a translator) operating out of one master control room providing public television service to west central Illinois.

We also operate an interactive microwave network for telecourses and teleconferences between eight college and university campuses.

As with most things, our equipment tends to malfunction at the most inopportune time. On Christmas Eve in 1991, for example, we found ourselves looking for a master control still store.

We wanted a basic unit that essentially represented an electronic slide projector. Cost and reliability were major factors; therefore, we needed a basic system—no bells, no whistles.

USER REPORT

The Prime Image accESS Model 500 gave us exactly what we needed. While most other still stores included some intricate digital effects or complex instructions, this unit simply saved and recalled our images with a few simple commands.

Recall time is about one second per image, and installation was simple.

House black and video-in are the two inputs, and there are two video outputs. The unit also has Y/C, RGB, M-II and Beta ins and outs. Front panel burst (coarse and fine) and horizontal phase controls provide easy adjustments.

The remote control panel is easy to operate; it took only about five minutes to learn the system. The user can dial in the number of the still needed for recall and press the "Next" or "Previous" buttons to skip ahead or back one image.

A sequence of stills, not necessarily saved sequentially,

can be programmed for recall. To save an image over an existing one, the operator simply deletes the existing still first, and it is impossible to accidentally record over an image.

There is also an option to save either a frame or a field. We purchased the optional larger hard drive that holds 400 frames or 800 fields. The images can be backed up onto 3.5-

The remote control panel is easy to operate; it took only about five minutes to learn the system.

inch floppy disks (two frames per disk), and there is also an optional tape drive backup unit available.

The only drawback to the unit is that the operator can actually see the next frame being read from the disk. It resembles a vertical wipe each time another image is called up. However, Prime Image has since come out with an optional second channel, which eliminates this problem.

The Prime Image accESS has been very reliable over the past year and a half. It locked up on us once, during an apparent power surge (as most computers will), but shutting it down and firing it back up solved that problem.

I guess the best thing that can be said about this unit is that we take it for granted. Like our sign-on person, it is ready to go every morning.

Editor's note: Rich Plotkin has worked in various capacities in broadcast and industrial television since the late 1960s.

The opinions expressed above are the author's alone. For further information on the accESS, contact Bobbie Hendershot at Prime Image (Telephone: +1-408-867-6519; FAX: +1-408-926-7294), or circle Reader Service 66.

Carlton Corrects Color with DPS

by Alan Gabrel
Engineering Manager
Carlton Broadcast Facilities

LONDON Carlton Broadcast Facilities has been using two DPS-750 component color correctors from Digital Processing Systems for more than two years in its edit suite 3 area.

During that time, I have become familiar with its numerous features and operations.

For one, the control panel is simple to use. The knob and button layout intuitively shows the operation of the unit. If the operator is not familiar with the unit, or it has not been used for a while, it is not necessary to check the handbook to set up a correction.

There is also a quick exit from correction by pressing the "correction off" button, or

"correction clear" for a fresh start. This is also helpful for fast operation. The correction off button also provides a useful way to check before and after correction.

However, the unit's most significant feature is that the controls have plenty of range, making them useful for special effects as well as the more usual color grading tasks, such as turning color pictures to mono-

USER REPORT

chrome and then adding a tint of color.

Colorizing of monochrome sources and increasing color saturation for music video promos, along with color matching, are among the device's main applications.

With its 100-page memory, it is very easy to experiment with a number of effects and then store and recall from the

keypad when a satisfactory effect has been obtained.

Because of the unit's flexibility, easy operation, range and stability, it is liked by both editors and clients.

The color corrector has been reliable and stable through two years of operation, which makes me confident that it will be available whenever we need it.

Editor's note: Alan Gabrel has worked at Carlton Broadcast Facilities for seven years, having previously worked for BBC Breakfast Time at the Lime Grove Tropical Production Center.

The opinions expressed above are the author's alone. For further information on the DPS-750, contact Brad Nogar at DPS (Telephone: +1-606-371-5533; FAX: +1-606-371-3729), or circle Reader Service 78.

BUYERS BRIEF

The 9050 processor from Thomson Broadcast is a 270 Mbps serial 4:2:2 unit with 10-bit processing and keying and mixing capabilities.

The unit accepts two picture sources (background and foreground) that can be keyed or mixed. It offers selection and adjustment of key and mask types, key level adjustment, three color matte generators, transition selection and fade-to-black.

The 9050 also includes a border generator for drop shadows, cast shadows and borderline and outline effects, offering control of the position, width, color and saturation of the border.

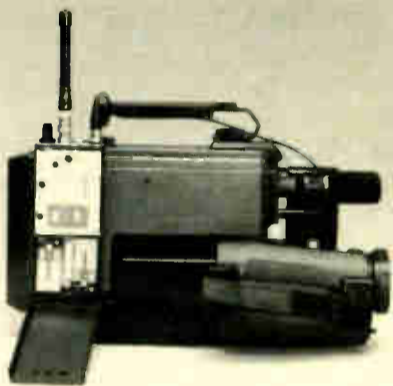
Four modules can be combined under a single 9050 control panel.

For further information, circle Reader Service 67.

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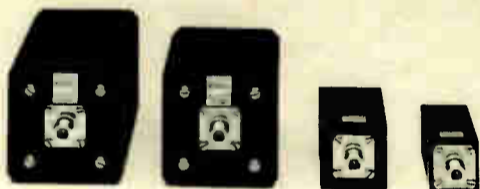


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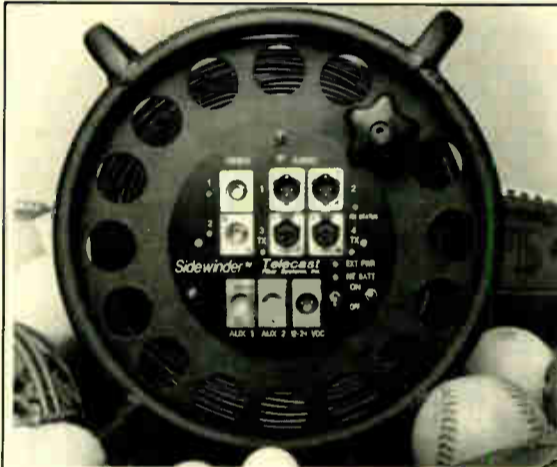


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by Per Lundblad
Director of Engineering
Kanal Goteborg

GOTEBORG, Sweden BingoLOTTO, the top-rated game show in Sweden, is a fast-moving, multi-image production that is viewed by more than 25 percent of the population.

At Kanal Goteborg, which produces the show, we have two Pinnacle Systems FlashFile still store devices in everyday use.

The first unit is in our main production control room where it creates, stores and transmits stills for BingoLOTTO. Our second FlashFile is in our master control room where it is also used to store stills and is a key programming element in our new national cable channel, Sweden TV-21.

FlashFile is strong on reliability and pictorial quality, and we enjoy the natural feel of manipulating the stored images.

Much of our production work is created on a Quanta Orion and processed in our Sony 3200 mixer before being transferred in component format to the FlashFile.

We find the space and storage capacity invaluable, with access to 200 frames in as little as half a second. We also like its future expandability to as many as 500 frames.

We use the instantaneous playback of up to eight images for fast response on BingoLOTTO, picking one picture from the menu and airing it. FlashFile lets us create a sequence and run with it in an instant.



Pinnacle Systems' FlashFile still stores are used every day at Kanal Goteborg.

FlashFile is strong on reliability and pictorial quality, and we enjoy the natural feel of manipulating the stored images.

Pinnacle has been excellent with software updates, and some early minor glitches were smoothed out quickly.

The FlashFile has evolved into one of the most useful tools we have. Even to the point when we get a new production challenge, the still store will show us new possibilities to solve the problem.

We are looking forward to the arrival of Pinnacle's new Flash Grafix

ability to network with our FlashFiles and import files from other file formats for greater networking flexibility.

Flash Grafix will be installed this summer. And we are taking a good look at Pinnacle's Prizm Video Workstation.

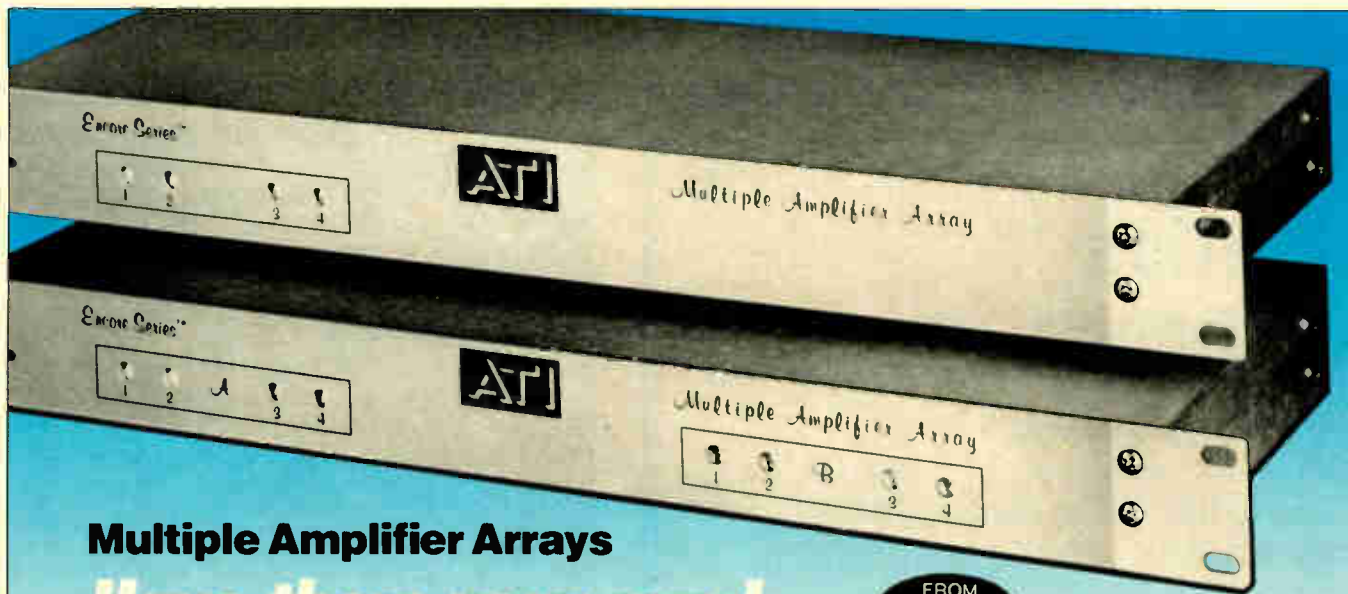
Editor's note: Per Lundblad joined Kanal Goteborg as chief engineer more than four years ago when it first started as a local TV channel. Since then it has expanded to offer TV 4, a terrestrial channel, and TV 21, a nationwide cable channel. It now produces game shows and news programming for the two channels. Engineering activities for both channels and the Goteborg production company are managed by Lundblad.

The opinions expressed above are the author's alone. For further information on the FlashFile, contact Walter Werdmuller at Pinnacle (Telephone: +1-408-720-9669; FAX: +1-408-720-9674), or circle Reader Service 107.

USER REPORT

Composer. We traveled specifically to NAB to look at the various news graphics systems. The clear choice was Flash Grafix because of its paint, typography, 3-D modeling, animation, still store and price combined in a single unit.

We were, of course, influenced by its



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BUYERS BRIEFS

Snell & Wilcox's Alchemist standards converter utilizes the company's phase correlation (Ph.C) motion estimation technology to compare fields in the frequency domain, rather than the spacial.

The unit features 10-bit, 8:8:8 processing and is capable of converting between all world standards.

Also included are digital noise reduction and a test pattern generator.

For further information, circle Reader Service 49.

The new HCP2000 TBC controller from Zaxcom Video offers TBC and VTR transport control, cue to time code, audio control and VTR synchronization.

The unit can be used with four VTRs, but can be coupled with the company's HUB2000 system for control of 16 VTRs from two edit rooms. With the HUB1000 system, 64 VTRs can be controlled from eight edit rooms.

The HCP2000 features 100 memories per TBC.

For further information, circle Reader Service 32.

The P165-40 TETRA standards converter from CEL Broadcast is a universal converter using 8-bit, 4:2:2 processing and a unique eight-field storage architecture.

The unit also utilizes an adaptive four-field motion interpolator and 4-8 line spatial filtering.

Other features include full proc amp control, color correction and full time base correction.

For further information, circle Reader Service 64.

The ESE ES-201 1x4 video distribution amp offers separate gain and equalization controls for each output.

A loop-through input and four isolated outputs are accessible through rear-mounted BNC connectors.

For further information, circle Reader Service 65.

The new 6PD2660 delay module from DTL Broadcast is the latest addition to the company's 2600 range of distribution amp products.

The module is an option for the 5AV2646 video amp and is programmable from 0 to 511 ns in 1 ns increments. The unit is available in 1- or 2-RU 19-inch frames or in portable cases for the field or temporary installations.

For further information, circle Reader Service 23.

The UDP-500P from FOR.A Corp. is a digital 4:2:2 noise reduction system featuring analog inputs and outputs with time base and color correction abilities.

The unit has both median and recursive noise reduction to eliminate FM sparkle, drop outs and low frequency noise.

Controls for processing amplifiers and color correction are built in.

For further information, circle Reader Service 51.

Max 9000 Protects Signal Integrity

Nathan Simmons
Project Engineer
Hollywood Digital

HOLLYWOOD, California At Hollywood Digital, we have created a full service post production facility with 15 suites where all signal processing is handled in the digital domain.

We have been able to capitalize on the new and unprecedented capabilities in video/audio image quality and effects made available through digital signal processing.

Like all new innovations, there is a time of transition from one standard to another. In this case, signals from our analog devices, such as one-inch Type C, 3/4-inch U-matic VTRs and color cameras, must be sampled or quantized into the appropriate digital signals. In addition, parallel digital signals are too costly and bulky to distribute throughout any medium-size plant, so serialization is as important as conversion.

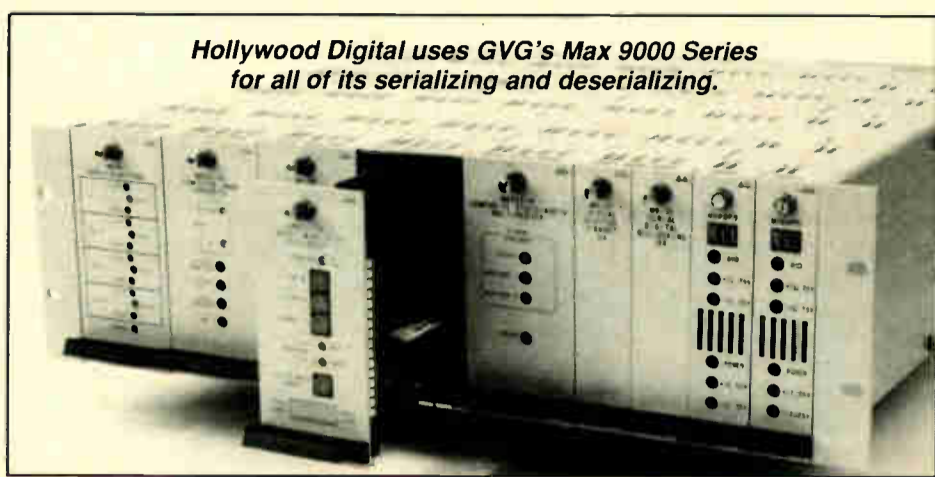
Analog-to-digital converters are the first and most important interpretation of the video signal because any errors in the conversion process will remain with the signal for its lifetime. To provide for the best interpretation, the A-to-D converter should theoretically have as many quantizing levels (know also as bit resolution or word bit sizes) as possible, and have these sample points evenly dispersed over the waveform being sampled, thus providing good linearity.

Hollywood Digital has been successfully utilizing Grass Valley Group's Max 9000 Series for all of our serializing and deserializing. We have a sophisticated router matrix ahead of our Kadenza component digital compositing room. Since the

for rack mounting, or those that are, are usually single-function devices. The design of the MAX 9000 Series allows for a more efficient and effective method of plant design and wiring.

Editor's Note: Nathan Simmons has more than 15 years of experience in television post production. He has acted in many capacities, including off/on-line editor, post production supervisor and systems design engineer.

The opinions expressed above are the author's alone. For further information, contact your nearest Grass Valley Group representative.



USER REPORT

Kadenza/Kaleidoscope system is all parallel input/output, we have used the Max M9102 and M9103 extensively to serialize and deserialize signals used by this room.

Both models are also used for our suites with GVG Graphics Factory 50's. The M9102 module converts parallel component to serial component, while the M9103 does the reverse.

Our A-to-D and D-to-A conversion applications for use on five one-inch Type C and 3/4-inch U-matic VTR's is also managed with the Max 9000 Series. The M9201-N accepts a parallel or serial composite video signal and allows for four NTSC analog outputs. The M9221-N converts the NTSC analog input signal and provides for serial composite digital video outputs and one parallel composite digital video output.

Grass Valley Group also includes digital line delay modules in their MAX 9000 Series. However, since all signals from our GVG 3000 and 4000 switchers are already auto-timed, we have not had to incorporate any additional line delay capabilities.


The modular design of this line of products has been especially appreciated. We can place specific modules within the standard MAX 900 tray easily and efficiently.

By using modular components within a single tray (typically six modules), there is no need to buy additional power supplies. Thus, we have been able to achieve greater density with less cost.

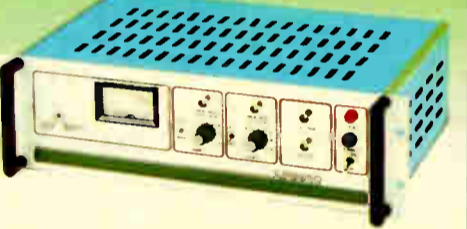
Many other modules are not designed

LINEAR


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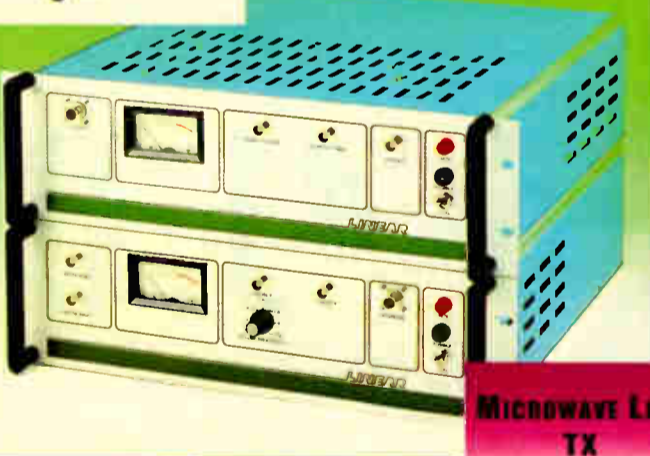
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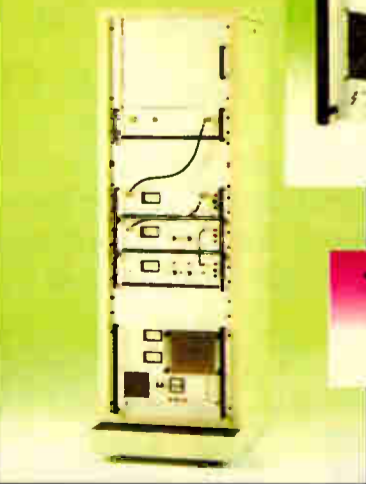
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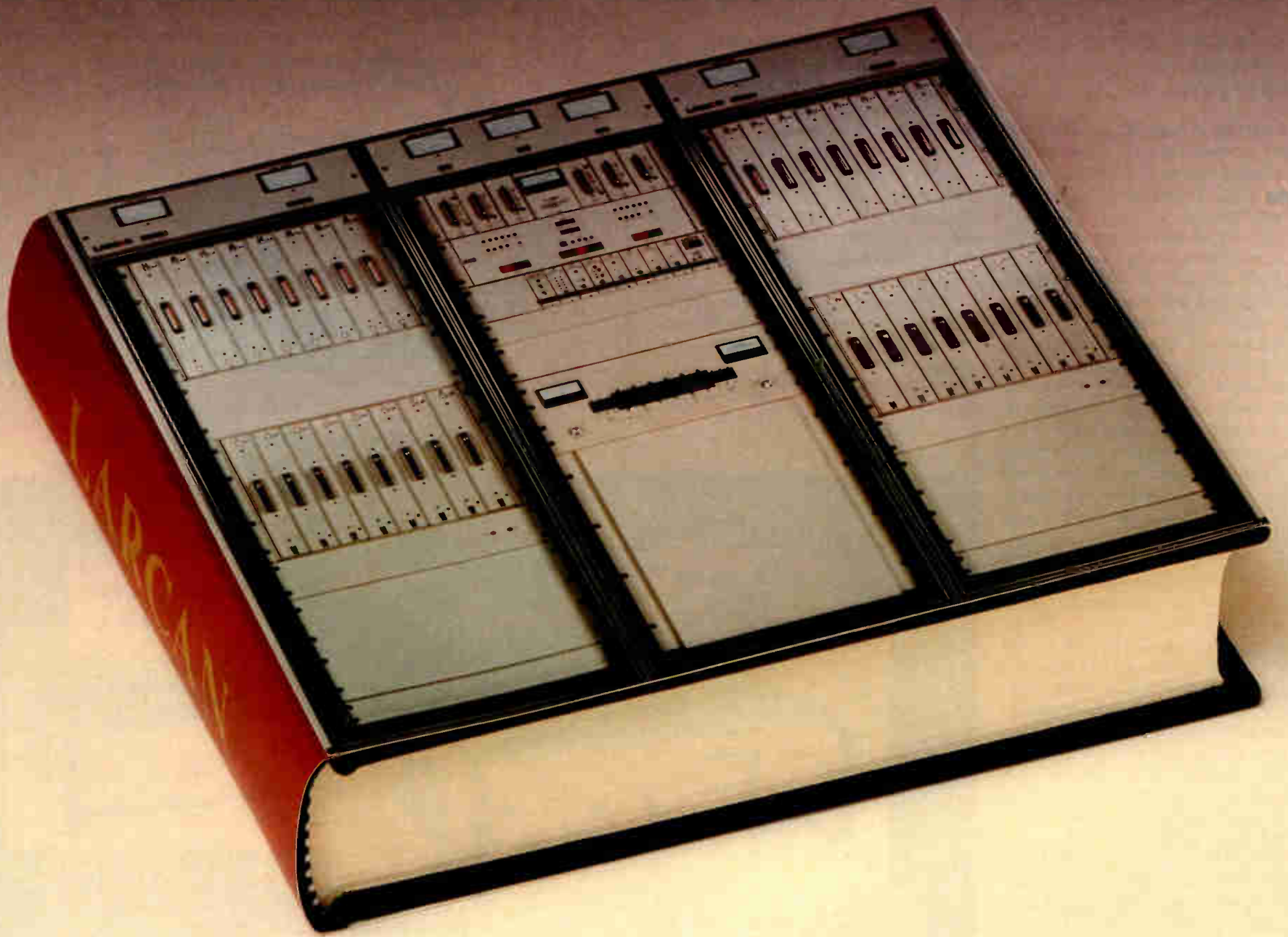
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Circle 39 On Reader Service Card

Channel Four Invests in Vistek VMC

by Peter Marshall, ACE
Channel Four Television

LONDON There was a time when the only way to get acceptable technical quality from the U.S. was on film.

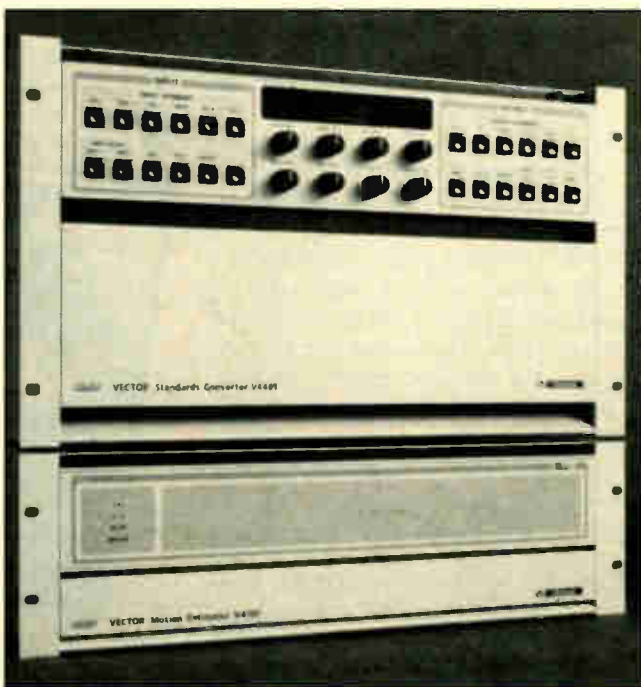
Some would say that is still the best way, but the world has moved on. There are few broadcasters today who can support a process that incurs additional print costs, shipping costs and telecine transfer costs without having to justify it very carefully.

In terms of feature films, most of the major U.S. film houses are now prepared to separately master on 525 and 625, often using D-1. That is fine for expensive feature programs that have been posted on film, but it is not a route

frame converters have become available, but not at a price that is attractive to us. If a distributor was prepared to put up the cost of a TK3:2 or DEFT conversion, then we might be willing to share conversion costs among several purchasers. But we certainly could not afford to carry the whole. The same holds true for tape originated programs.

So I was naturally enthusiastic when I saw early demonstrations showing what motion prediction could achieve. While some demonstrations tended to show skiers whizzing down mountains or motor racing and the like, in which the center of interest was being followed and thus tended to be nearly stationary in the frame, there were also shots of children playing in a park. These sequences featured gentle movements, sometimes unintentional camera motion, and the overall effect was like "turning on" true sharpness. One fails to realize how much movement there is in a "static" scene.

We persuaded WTN in London to buy a



Channel Four Television found it was not long before its purchase of a Vistek converter paid off.

Vistek VMC for their existing Vector converter for use with their satellite links and to convert a live talk show series from New York, as well as some guaranteed hours of tape-to-tape conversion.

It was not long before the machine began to show its worth. One show opened with an eye-catching Steadicam shot, starting on the street and flying through the theater doors and up onto the stage. While four-field interpolation would have resulted in a smeary mess, the VMC was fabulous.

But again it was the "static" shots which proved VMC's worth, improving sharpness in what would have otherwise been a blurred image.

Subsequently, we purchased Vector and VMC for ourselves and have now set a requirement that all converted programs should use motion processing or drop frame techniques as appropriate.

Motion processing is not a simple calculation, and occasionally a scene will fool even the best converter. For example, laser lights produce some very inter-

esting effects, and fades on beginning and end-of-part captions can be a problem.

We have always believed that conversions should be supervised, since it is the right place to correct black level and other source errors without a special pass and an extra analog generation. So for us, the occasional artifact has been no problem, and we are adept at slipping in and out of VMC for occasional problem scenes. And with successive software updates, this need has been reduced.

VMC is not, of course, designed for conversion of 3:2 pulldown 525 telecine. However, it is our experience that we are better off using VMC than interpolation, except when it comes to 30 fps film in which interpolation is the best available solution. Soon, we hope to see VMC software designed to handle original film.

It appears that format conversion will be in demand for the foreseeable future. Component digital will open the door to near transparent conversion in both directions, and with Europe seriously contemplating widescreen, the 625 master of the future will be a full height 16:9 anamorphic format, from which PALplus, letterbox or panscan will be dubbed.

Future technology will also require progressive scan sources. And with progressive scan CCD chip cameras likely to be rather expensive, I see a rosy future for interlace-to-progressive scan converters using motion prediction.

Editor's note: Peter Marshall began his broadcasting career at the BBC when the U.K. was on the 405-line standard. He has since been involved in the changeover to 625 lines, as well as the beginning of color service.

The opinions expressed above are the author's alone. For further information on the Vistek VMC, contact Robert Wright at Vistek (Telephone: +44-628-531221; FAX: +44-628-530980), or circle Reader Service 126.

USER REPORT

that is available for popular episodics, which are posted on tape, or for talk shows, current affairs programs and news items, which are produced entirely on video. These all must be converted.

525-line video production is mostly shot in composite NTSC, which inherently has lower horizontal and vertical resolution than 625 PAL. Also, the conversion source tape tends, in practice, to be an nth generation analog copy. So the quality is, in many cases, only marginally acceptable.

For film originated programs, drop

BUYERS BRIEFS

The VSP-7001 and VPS-7001 pair of serial/parallel converters from **Leitch Inc.** are now bundled in the company's MIX-7001 DK digital component DigiKit, designed as an inexpensive introduction to digital video.

The VSP-7001 serial-to-parallel converter is a component deserializer with one parallel output and four re-clocked serial outputs. The VPS-7001 parallel-to-serial converter is also component with four serial outputs.

The DigiKit consists of these two modules, as well as a serial component signal generator and a video monitor, all contained in a 1RU package.

For further information, circle **Reader Service 120.**

The NovaCoder Series from **Nova Systems Inc.**, part of the company's NovaBlox video processing system, is a line of plug-in encoders, decoders and transcoders.

The Ncoder-1 encoder card features RGB, RGB/Sync or Y/R-Y/B-Y inputs and Y/C and composite outputs, plus optional Genlock. The Ncoder-2 card offers Y/C input with active loop through and four composite outputs.

The Dcoder-1 decoder card features composite or Y/C inputs and RGB, RGB/Sync, Y/R-Y/B-Y or Y/C outputs. The Dcoder-2 card offers composite or Y/C inputs and Y/R-Y/B-Y and Y/C outputs.

Transcoder options include component to RGB, RGB to component and Y/C and U-matic dub.

For further information, circle **Reader Service 52.**

Tekniche Ltd. of the U.K. has introduced several new products to its Genesis family of digital conversion and interface equipment.

Among the new products are a 10-bit analog-to-serial digital (and vice-versa) converter, several audio inserters and extractors, and 10-bit serial digital-to-composite encoders with DAs.

Complete Genesis systems now incorporate automatic back-up power supplies, a host of visible warning displays and quieter cooling systems.

For further information, circle **Reader Service 25.**

The 2109P and 2209P digital comb filters from **Questech Ltd.** are single and dual channel devices that reduce cross-color and cross-luminance components in the composite waveform and provide full bandwidth recovery of the horizontal picture information.

The units detect vertical picture detail and adapt to the decoder operation to provide filtering across horizontal boundaries.

Two composite analog and one digital (D-2) PAL inputs are provided, while outputs include RGB, Y, Pb, Pr and two composite syncs.

For further information, circle **Reader Service 87.**

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Rushes' Prospects for URSA Gold

by Paul Grace
Director of Telecine
Rushes

LONDON As a high end post production facility concentrating on special effects for commercials, Rushes has a history of pioneering new products and developing them in-house.

For example, Rushes had the first Harry, CIS suite, URSA Gold and Accom Axial in Europe. Our Telecine Department features two custom-built URSA Gold type telecines with da Vinci 8:8:8 digital grading systems.

The role of the telecine transfer in post production is vital. The whole look of the work is achieved at this stage.

Sophisticated color grading, zoom, as well as squeezing and flipping of the image can all be achieved from film at the optimum quality here. We feel that there is a real need to push telecine technology to produce the cleanest, quietest, sharpest and steadiest images possible for successful keying and compositing in

16 million colors to more than 1 billion.

As in all 4:2:2 devices, previous Rank "Digiscan-type" telecines were restricted to an 8-bit data depth and a half-bandwidth chroma channel, limiting the dynamic range of the film scanner. In practical terms, this jump in resolution is invaluable for blue screen work.

On a 4:2:2 system, deeply saturated colors can end up with soft edges, making separation difficult. With the URSA Gold, the extra resolution can be fully exploited by advanced grading systems, such as the da Vinci Renaissance, to give clean, sharp, stunning images.

The URSA Gold is not an entirely new telecine, but an advancement from the current URSA. It includes all the URSA advantages that persuaded post houses like Rushes to choose the URSA route rather than alternative CCD film scanners. But it also answers some critics' comments by improving the bandwidth and the ergonomics.

The inclusion of individual control of red, green and blue aperture correction is great for sharpening images without bringing up blue noise. Also, the machine is now clad in a new case to give it a whole new look from previous Rank machines.

The cladding was designed for compliance with the latest EMC and safety standards, and the local controls are now side-mounted. A rear termination panel is fitted to ease installation.

Detail changes include new film backplates, which can handle both 16mm and 35mm film to avoid constantly swapping

backplates. The URSA is also now fitted with the latest generation demountable CRT package. This gives the same fast fitting time, but at a lower cost for replacements.



Rushes' Director of Telecine Paul Grace is confident in the URSA Gold's ability to handle new formats.

An hour meter has been built into the front of the package so the actual used hours can be easily monitored. This should provide clearer warranty claims with Rank Brimar.

Rushes has two acoustically treated telecine suites, both featuring URSA scanners mated to da Vinci 8:8:8 grading systems. Both rooms are identical, so work can be switched to either suite without compromise or fuss. The suites share a common machine room that is positively pressurized to reduce dust from entering the environment.

The colorists utilize Accom still stores and image enhancers with all equipment linked digitally to Rushes' serial digital matrix. Pictures from either URSA Gold telecine can be routed by touch screens to any area in Rushes, and the grading systems can work on any digital matrix source.

Both URSA's are heavily customized with unique features designed in-house that enable a more ergonomic and capable service. The URSA's are also blue-printed and modified.

Features such as dynamic focus pull, optical filter effects and customized gates are all unique to Rushes. The telecines are finished in a custom livery, and even small details such as the brake pedal have been replaced with improved full width items.

These changes specialize an already proficient telecine to the extreme demands of high end post production.

The URSA Gold is like having a sharp edge on a favorite blade.

With a design to handle new formats, such as 16x9, we are confident the URSA will remain the world's finest telecine.

Editor's note: In addition to his post at Rushes, Paul Grace is a member of VTAC, the Virgin Technology Advisory Committee.

The opinions expressed above are the author's alone. For further information on the URSA Gold, contact Richard Hobbs at Rank Cintel (Telephone or FAX: +44-435-830-988), or circle Reader Service 95.

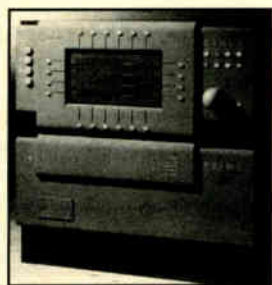
USER REPORT

the edit or graphics suite.

The URSA Gold 4x4, launched at Montreux and shown as a prototype at NAB, is another product pioneered at Rushes. It is an evolutionary re-design of the current URSA.

The video path now boasts true 4:4:4:4, 10-bit quality. This means that the color palette has been extended from around

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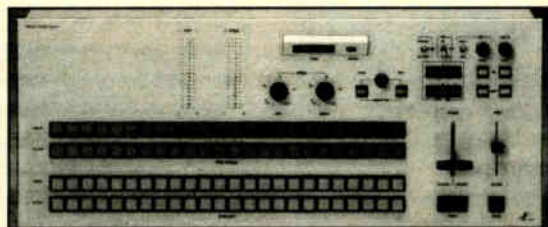


Standards converter

The Cyrus Prime motion compensated standards converter from AVS Broadcast converts all world standards with all-digital 10-bit decoding, encoding and core conversion. Cyrus supports all

variations of analog, digital component and composite in parallel and serial, including D-1/DCT/D-5/Digital Beta and D-2/D-3.

For information, contact Lyndsey Andrew in the U.K. at +44-81-391-5678; FAX +44-81-391-5409, or circle Reader Service 11.



Master control system

The Societa de Elettronica per Telecomunicazioni (SETEL) MCS-1 broadcast control system comprises a control console, a 24 x 2 video matrix and 24 x 2 audio matrix, and dual-key FTB video and FTS audio faders.

The console features video and audio bus selector push-buttons, audio and video level adjustment, preview and program audio LED-bar VU meters, single-channel preset-to-program mixer, FTB dual-key controls and a selection of six source keys.

The audio section includes fader control, separate left and right output level adjustments and

preset/program bus selector with volume control. The console also has a digital timer triggered by the video fader level or Take button.

For further information, contact Modesto Scavarda at SETEL in Italy at +39-11-994-1166; FAX +39-11-994-1155, or circle Reader Service 3.



CCD camera

Ikegami modified the Standard HK-355/P studio/field camera to a "D-Version" in cooperation with German

public broadcast stations.

The new version includes a seven-inch viewfinder with independent DTL and independent Focus Indicator, Y-Mix function, seven-inch Viewfinder for the HK-355P, linear matrix for the HK-355P and MCP-355 with integrated Ram-Card-Reader.

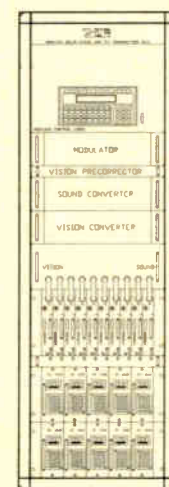
Another important aspect during development of the camera system was its compatibility for future formats, such as 16:9.

For further information, contact Ikegami in Germany at +49-21-31-1230; FAX: +49-21-31-10-2820, or circle Reader Service 74.

UHF transmitter

The Aquila 5000 W UHF Transmitter was designed for operation in the full UHF band and in all standards (negative vision modulation) and multisound systems.

The transmitter is operated and monitored by microprocessor logic unit, local or remote operation. It uses a liquid cooling system for power and contains solid state amplifiers. There is separate amplification of vision and sound carriers and broadband RF amplifiers.



The frequency range includes bands IV-V from 470 to 860 MHz. The transmitter operates at temperatures from -10 degrees Celsius to 45 degrees Celsius and at a relative humidity of 90 percent.

Differential gain is less than or equal to 5 percent and differential phase is less than or equal to 3 percent. Level/frequency response from vc-0.5 through vc +4.43 MHz is +/- 0.5 dB.

For information, contact Colle S. Giovanni in Italy at +39-863-995150; FAX: +39-863-995215, or circle Reader Service 56.

Camera lenses

The new J20aX8B IRS and the H20aX6 IRS lenses from Canon are the longest hand-held lenses available, particularly effective when used for sports or entertainment.

The lenses feature Canon's IF System, which mounts the focusing group separate from the front lens leaving the front element and barrel stationary. With these and optical accessories stationary, the IF systems offers greater focus speed and response time, reduced distortion and reduced aberrations.

The J20aX has a focal length range of 8 to 160 mm and a higher zoom ratio of 20:1. The H20aX has a focal length range of 6 to 120 mm and a 20:1 zoom ratio.

For more information, contact Eddy Meijer in the Netherlands at +31-20-545-8905; FAX: +31-20-545-8203, or circle Reader Service 131.

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TV Technology's Equipment Exchange provides a FREE listing service for all broadcast and pro-video end users. Brokers, dealers, manufacturers and other organizations who are not legitimate end users can participate in the Equipment Exchange on a PAID basis. Call +1-703-998-7600 for details. Submit your free listings on your letterhead and state the make, model number, a brief description, sale price and complete contact information and mail it to: TV Technology, PO Box 1214, Falls Church VA 22041 U.S.A.

ANTENNAS, TOWERS, CABLES

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Scala HDCA-5 (4) five element yagi antennas, for chnl 2 LPTV, \$2000 takes all. J Campana, 804-672-6565.

CAMERAS

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Sony AVC-3200 (2) w/lens, 4" VF & case, \$50/plus shpg & hndg. M Terry, IVP, 100 Garfield Ave, New London CT 06320. 203-437-1990.

Sony EDP-10P 2-CCD color video camera w/14p adapter, \$1500; Sony EVO9100 Hi-8 camcorder, \$2000. J Smith, UCSD, 9500 Gilman Dr, LaJolla CA 92093. 619-534-4869.

Panasonic WV6000 ENG/EFP camera, CG, 12X zoom, 2 batts, AC adapt, manual, case, stereo mic, BNC gen lock & video out, 1.5 viewfinder, excel cond, \$900. D Derkacy, Media Images, POB 3045, Bloomington IN 47402. 812-333-1812.

JVC BY-110 camera & all studio access & has mod for Y/C output, \$1200 or trade for switcher; JVC KY-1900 camera only \$400; w/studio access, \$700, all in gd cond, will trade for Targa & board. E Larsen, Metropolis Prod, 316 S Maple, Oak Park IL 60302. 708-848-3172.

Sony M7 3-CCD camera priced w/w/o lens. 614-882-2228.

Sony DXC-3000 w/Fujinon 10-120, Sony M3 w/Canon J15x9.5, Sony VO-6800 port 3/4" rcd, (2) Sony VP-5000 3/4" player, 1 RM-440 controllable, Sony RM-580 remote, Crosspoint Latch 6119 switcher, (2) Davis & Sanford small manual pedestals w/fluid head FM-25, all equip works, \$10300/pkg or BO. John, 215-493-4404.

Ikegami ITC 730A (2), 1 w/Fujinon 14X lens & 1 w/Fujinon 12X lens, 5" studio finder, sportsfinder, mic holder, AC pwr sply & padded shpg case, \$2500/ea or \$4500/Both. Dick, RW Productions, 313-945-9292.

Panasonic WV-555 (2) w/fresh tune-ups, (1) NV-B450 4-way charger/pwr sply, (1) WV-BC32 batt chgr, (2) NV-BP450 batts, (1) WV-PS37 batt, (1) WV-PS30 pwr sply, (1) NV-9450 3/4" port, \$3200 for pkg, may part out or trade. S Green, Creative Video Editing, 406 Westgate Mall, Madison WI 53711. 608-274-9944.

JVC KY-2700A color camera w/10:1 pwr zoom servo lens, 1.5" viewfinder, AC/charger, battery, hard case, hw hrs, gd cond, VTR cable, \$1200. J Bryan, 3148 Whitney Dr, Montgomery AL 36106. 205-832-4110.

Panasonic DM7010 MII camera/VCR dock system, (3) 2/3" CCDs, 750 lines, 62 db, digital processing, brand new, full warranty, \$13000. 607-687-0545.

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Bogen 3058 tripod w/116MK2 head, \$500. E Stevens, 215-328-4884.

Sony CMA-8A camera AC pwr sply & BC-1WB chgr, both new, Angenieux bdc Betacam lens, f1.6, 14x9 plus 2x extension. 614-882-2228.

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Canon L1 15X complete pkg w/5 batts, shoulder mount camera support, filter set, VE-100 Canon editor, new in box, \$1900/BO. John, 407-869-6266.

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ADO-100 3D single chnl, \$18000; CEL 147-12/151, \$800/as is. Otterson TV, 212-695-7417.

EDITING EQUIPMENT

Want to Sell

JVC CR850 edit system w/RM850, 400 hrs, \$6500. Glen/Ron, Sightsong Intl, 515 W 18th St, Orlando FL 32805. 407-425-1341.

Complete Turn-Key Edit Suite for sale, all equip in excel cond, one year old, very few hrs, equip can be viewed by appointment only, \$54288.50. Contact Chuck Ruhe at 714-957-0100. 3190-F Airport Loop Drive, Costa Mesa CA 92626.

JVC BRS811 S-VHS editor, very hw hrs, never used, like new, \$3200/BO; JVC BR710U S-VHS prof duplicator, very hw hrs, \$1100/BO. B Rego, 914-639-9128.

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Videonics Titlemaker char gen, port, high resolution, no jaggies, million color bkgrds & letters, many sizes & drop shadows, textures, locks to incoming video, superimoses or stand alone graphics, original box/manual, stores 100's of pages, dissolves, crawls, rolls, \$325; KORIG T-3 EX keyboard synthesizer/sample playback, HD disk drive, 50K note sequencer, 9 MD of on-board pianos, orchestras, synth, drums, choirs, etc, CD quality compositions for copyright free video use possible, original box/manual, \$1850/BO. G Higgins, 3759 Ashley Oaks Dr, Lafayette IN 47905. 317-449-4599.

Pallex Abner A/B roll editor w/time code reader, \$2500; Panasonic 34 pin parallel cntr cables (3), \$100/ea. Texsound AV, 713-821-3733.

JVC edit system, BR611V, BR811V, RM-G810V, complete w/cables, excel cond, clocks show 100 hrs use, \$6200. John, 407-869-6266.

Sony RM 440 cntrr, cables, \$850; Sony VO 5850 3/4" editor (2), \$3700/ea; Sony VP 5000 players (2), \$1000/ea; Sony RM 430 cntrr w/RM 410, cables, \$425; Panasonic NV 9600 3/4" & NV 9240 (2) w/cables, \$3000/all; Laird char gen 3600A, \$425; Sony RM 300, \$125. Video Photo Slide, 804-623-9440 or 804-481-5375.

JVC BR6400U source deck, 86U edit cntrr w/cables, vgc, \$750, ICM 2000P processor, \$1850. B Hines, IPS Inc, RD#1 Box 413A, Export PA 15632. 412-468-4115.

Videonics titlemaker, new in box, never opened, \$340. John, 407-869-6266.

LIGHTING

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Harris 550 TBC w/DOC, like new, \$725. 614-882-2228.

I-Den IVT-7 TBC, \$1550. Texsound AV, 713-821-3733.

SWITCHERS

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Sony BVS-3100 switcher, \$7500. Gordon, Magnolia Video, 704-688-3565.

Ampex 4100E switcher w/computer interface, like new, \$15500; Cross Point Latch 6119 switcher w/7200 computer interface, \$1800. Glen/Ron, Sightsong Intl, 515 W 18th St, Orlando FL 32805. 407-425-1341.

3M 3300 10 input, xlnl, \$800 G Larson, Advanced Media, 119 Ivy St, Henderson NV 89015. 702-565-TAPE.

ISC/GVG universal switcher interface, \$300/BO; Lenco converter interval 12-input routing switcher w/remote, \$300. Otterson TV, 212-695-7417.

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3M D2200 character generator w/4 discs of fonts, \$1500/BO; Sony RM 2500 program cntrr, \$150/BO; Nova 502 TBC, \$1000/BO; Quanta MG 100srsp character generator 1ch. spanish/english, \$900/BO. Gordon, Magnolia Video, 704-688-3565.

Laird CG 7000 Y/C character gen S-VHS compatible, new in box w/manual, \$1200. C Hefli, Creative Sound, RR3 Box 120, Carlinville IL 62626. 217-854-3400.

Shintron 641 port TC gen w/UB, \$500; Miller fluid head tripod, wooden legs, \$500/BO. Otterson TV, 212-695-7417.

Sony BVE-800 A/B roll editor, 3 serial cards, excel cond, \$2000/BO; Panasonic WJ-MX10 AV mixer w/digital effects & internal sync, vgc, \$850/incl hard case. R Cooper, 802-863-4033.

Chyron VP-2 character generator w/Multifonts, excel cond, \$2000. Dick, RW Productions, 313-945-9292.

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JVC KY210 camera w/case, Fuji 10:1 zoom lens, A/C pwr adapter w/1 batt & tripod adapter, modified for Y/C or composite out, \$2700; 25' 14 pin-14 pin cable, \$100; Panasonic WV-CA38 14 pin-4 pin Y/C cable, \$90; Fuji Servo zoom & focus hand cntrls, \$500. Texsound AV, 713-821-3733.

Sony V5000 Hi8mm camera/rcdr, 4 chnl digital/hi-fi audio, built-in TBC feeds VideoToasters, freeze/strobe/digital noise reduction, meters, S-video i/o, mint, box/manual, two for sale, \$1950/BO; Canon A-1 Mark II Hi-8mm camcorder mounted on Steadicam JR platform/monitor, stereo hi-fi, manual or auto iris/WB/shutter, 10X zoom, \$1500. G Higgins, 3759 Ashley Oaks Dr, Lafayette IN 47905. 317-449-4599.

JVC KY-310 excel cond, new tubes, Fujinon 12X lens, set of two clip on lenses, wide & super wide, battery, tripod adapter, 14 to 14 pin cable, AC/DC adapter & batt chgr, carrying case, service manual, board extender, \$4575/BO. Rene, Video-2000 Inc, 803-472-2000.

Sony EVU-300L Hi8 complete pkg w/Canon 13X lens, hard case, addl access avail, \$6650/BO. John, 407-869-6266.

Ikegami ITC 730 lens w/Fujinon A10-11F w/hard case, JVC AA-P47U battery charger, \$2000. B Callahan, Video TBN Prod, 6312 Ardsley Sq Ste 103L, VA Bch VA 23464. 804-523-9190.

Panasonic WV555B, ENG/EFP configuration, all accessories incl lens, battery, AC adaptor, mic, tripod plate, viewfinder, battery chgr, cables, manual, original case, excel cond, hw hrs, \$750. Universal Video, 618-457-0056.

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JVC edit system, BR8600, BR6400, RM86 cntr w/cables & program monitor, \$3900. E Stevens, 215-328-4884.

Knox K-60 character generator, 4 pgs, fair, \$100; Dynair Mini-Mop video equalizer (4), vgc, \$50/ea. A Ross, 8022 27th NE, Seattle WA 98115. 206-525-4624.

Sony BVH-3100 1" w/extra head, \$25000; Sony VO-9850, \$4000; Sony BVW25 Betacam port, \$2600; Sony PVU2800 BetaSP editor, \$12250; Sony PVW2600 BetaSP player, \$8000; Sony VO8800 port 3/4" SP w/tc, \$2500; JVC 4400LU port 3/4", \$500; JVC CR6650U 3/4" source/rcdrs, \$1100; JVC BRS810U S-VHS editor, \$2900, price negot. Otterson TV, 212-695-7417.

Hitachi HR-310 1" editors, 3-hour tape, dynamic tracking, (2), \$12000/ea; Sony VO-5850 U-matic editors, good condition, \$2000/ea. Ugly George, 212-969-0240.

Sony VP5000, \$650. Glen/Ron, Sight-song Intl, 515 W 18th St, Orlando FL 32805. 407-425-1341.

Sony LVA-7000 CRV disc R/PB deck with STAR flightcase, \$7000/BO. 415-882-7766.

Sony VP 2000; Panasonic 9100; Sony BVU-110 with time code & Portabrace case, \$950/BO. Gordon, Magnolia video, 704-688-3565.

Sony BVU 800 3/4" U-Matic, with TC-13, completely rebuilt, consider cash or trade for JVC BRS-811, 822. 602-545-0880.

Hitachi VMS 8200 new, full warranty, Super-V Hitachi, \$1000. J Winder, Market Place Prod, 122 N 2nd Ave, Alpena MI 49707. 517-356-9376.

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Sony VO 6800 port 3/4" with Portabrace, excellent condition, \$1025. T Griffin, St John Productions, POB 656, Brookline MA 02147. 617-562-1039.

Sony BVH 1100 1" editor with DT TBC 2000 included, excellent condition, take over lease payments. E Stevens, 215-328-4884.

Canon LX 100 Hi-8 camcorder package, system carry case, 2 battery packs, video light & more, \$1500. C Ruhe, 714-957-0100.

Tokyo's Onkion Haus Controls with Ensemble

by Oda Yasuteru, CE
Onkion Haus Inc.

TOKYO The TC400D TBC controller by Ensemble Designs is a machine geared toward post production work.

Capable of controlling four TBCs or D-2 VTRs, it is contained in a 1 RU frame. It can be interfaced with TBCs from numerous manufacturers and can also work with several tape formats, which makes it a very powerful piece of equipment.

The TC400D can be used to directly adjust video, chroma, setup and hue using front panel controls. The unit has dedicated knobs for each parameter that allow the operator to easily make fine adjustments.

The adjusted data can then be stored and restored into the memory register. The unit has 100 registers per channel, which eliminates any unsatisfactory results during normal editing operation.

The transition rate can be established from 0-99 frames in each register. When the rate is established, only the desired register is restored, and the transition is performed smoothly from the current value. This function can be used when altering the adjusted TBC value, such as with a moving camera.

Besides these four parameters, the TC400D provides adjustments for numerous other items, including sync phase, subcarrier phase, color frame, Y/C delay and video phase. These parameters can be stored as a default value in the nonvolatile memory, but they cannot be stored in the

register.

At Onkion Haus, we operate the TC400D with our one-inch and Betacam SP VTRs. Before we installed the controller, we checked our levels by rolling the tape back to the color bar. Now, because we can restore our previous levels from the register, operating efficiency has been improved remarkably.

In addition, the TBC level must be altered fairly frequently, according to the conditions collected from the taped materials. Since the TC400D is installed beside the editing machine, data can be transferred rapidly.

Several years ago, not much attention was paid to TBCs in Japan. Editing studios had to get by with remote panels that did not offer any memory functions. But since the introduction of products such as the Ensemble TC400D, interest has grown.

Presently, several varieties of these products are currently competing in the Japanese market. The TC400D gets high marks for its functionality, cost, expandability and reliability.

Editor's note: Oda Yasuteru graduated from the Japan School of Engineering in 1981, when he started his career as a video editor at Onkion Haus. He is a member of the SMPTE.

The opinions expressed above are the author's alone. For further information on the TC400D, contact Cindy Zuelsdorf at Ensemble Designs (Telephone: +1-916-478-1830; FAX: +1-916-478-1832), or circle Reader Service 94.



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JVC 6400U, source rcd, vgc, \$775. B Hines, RD#1 Box 413A, Export PA 15632. 412-468-4115.

JVC CR4900U 3/4" field deck w/AC adapter charger, 4 bats, Kangaroo case, tech/operating manual, excel cond, \$1350. D Derkacy, Media Images, POB 3045, Bloomington IN 47402. 812-333-1812.

Ampex/Nagra VPR-5 1" port rcd color stabilizer, batts w/charger, audio I/O, video & camera modules, A/C pwr, many more access, vgc, \$6500/BO. Mobile Video Prod Co, 2 # 11th St Ste 118, Edmond OK 73034. 405-348-6476.

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Onkion Haus operates Ensemble Design's TC400D with its one-inch and Betacam SP VTRs.

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Our Low-Power Television Systems Set Us Apart From The Crowd.



Why? Because only Harris offers complete, low-power television systems. Not just transmitters. Or translators. Or antennas. We provide everything. Including the technical assistance and training you need to start and maintain your broadcasts.

Take a look at our Navigator Series UHF transmitters. They feature 100% solid state design and distributed architecture. And they're available in power levels of 10 W to 1 kW. Nobody offers a more reliable, easier-to-operate UHF transmitter.

You prefer higher-power

transmitters? No problem. We carry them, too, in power levels of 5 kW to 10 kW. And ours feature solid state broadband driver amplifiers, which require no tuning.

Then there's our Navigator Series UHF translators. They boast the same superb quality found in our transmitters. Translation: Why look anywhere else for a UHF translator?

VHF transmitters don't come any better than our EL Platinum Series models. They feature 100% solid state design, and come in power levels of 500 W, 1 kW, and 2 kW.

You'll need an antenna to complete

your system. We've got them. Rugged, field-proven models that generate unlimited patterns, directional and omnidirectional, for VHF and UHF applications.

There you have it – everything that makes our low-power television systems stand out from the crowd. If you want your broadcasts to stand out from the crowd, you know where to look. Harris Allied.

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ALLIED