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 TV1 has also bought DCT edit controllers and switchers, while in the US, 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 8)
If your graphics need to be as good as your competitors'

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 specially programmed segments 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, GVC'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, GVC 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 financial 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 broadcast 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 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 (URNTA), the Arab States Broadcasting Union (ASBU), the North American National Broadcasters Association (NANBA), the Caribbean Broadcasting Union (CBU), the Asociacion Internationale de Radiodifusion (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 acquired by Keystone 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.
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 clamping down on 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 Samoff Research Center, North American Philips, Thomson Consumer Electronics, the NBTC 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 court-ordered 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 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 subgroup 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.

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.

Separate paths

As 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 DTT group in Europe—was being shown by Thomson and the U.K.'s BBC running four conventional television signals and one HD 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, avoids 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 Matsuaki, 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 1992 would be followed by five services from commercial broadcasters in or after 1997.

Despite this commitment, only 11,000 fixed receivers are being Hi-Vision broadcasters by March 1997.

Long analog life

Matsuaki 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."

Matsuaki also claimed that by 2015, ISDB (Integrated Services Digital Broadcast) on fiber optic cable networks would be used to distribute television signals, although the Japanese claimed that digitizing—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. The current cable systems sold in Japan are smaller and already 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 Prom. Telephone: +62-21-706-7777.

10-14 October 1993

VISION '93

Olympia, U.K. A new broadcast, film and video show for the U.K., Vision '93 is the result of a collaboration between the IABM, the BS1 Single Single and Philbeach Events. For information contact Orlando Kinner: +44-71-830-8477.

18-20 October 1993

European Cable Communications '93


25-28 October 1993

Broadcasting, Cable & Satellite India '93

Pragati Maidan, New Delhi. India's 1st International Broadcasting, Cable & Satellite India '93 exhibition and conference. 150 exhibitors from India, Europe, 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), 5th Floor, 1 Artillery Row, London, SWIP IRIT, England. Telephone: +44-71-222-2900; FAX: +44-71-799-1471.

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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, all came 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.

Sony supplied one of the cameramen, 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 CUC PAC; and a utility person to handle crowd control, cable handling and 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 lens 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 multiple 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 is going to 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 on board 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 its own audio tracks and we managed to chase the submixes around the ISO VTRs to get a very good stereo mix out of the program.

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

Southern Bell pulled fiber from our mobile unit to five different locations around the golf course. This fiber 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. Although technical devices 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, it was nice 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 smooth, shot 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 newrooms 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 similar, every demanding, than most Western newrooms. Newrooms, of course, are not new to the Far East. Singapore Broadcast runs a very extensive operation using newroom 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 newroom operating in ideographic languages. Operating in Chinese, Wharf will have access to all the same operational aids that all electronic newroom users enjoy.

Previously, newrooms used office systems or a few networked PCs to produce scripts and handle some of the advantages in data base capabilities, all newroom 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 newroom system to support the launch of a 24-hour news channel.

The broadcast system is of its kind in the world. Wharf Cable will be offering a package of entertainment, sports, learning, in Hong Kong, news and preview channels beam from some 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.

When scheduled to launch a trial run, including a test of its newroom, in September 1993, Tin and Tsuen Wan this summer. Territorial wide service is expected to be in full operation in October, and Wharf expects to reach between 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 newroom system 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 necessary to support newwork production. Asian broadcasters were especially interested in being able to edit in Chinese with a clean display of complex characters. Access to Chinese wire services was also a concern, as was integrated prompting.

To provide a newroom in the native language, BASYS has developed software capable of handling pictographic (also known as ideographic) characters. To reduce these ideographic characters in a computer environment requires a multitude of data banks to store characters.

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, or fully supported ideograms, BASYS software work just as easily with other pictographic languages, such as Kanji for Japanese journalists and Hungul 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, Fujiikese (Min), Amoy, Hakka or Hsiung.

The majority of Chinese characters consists of two elements, a signical (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, assignment functions, etc.

This is true for Asian broadcasters as well, but with an additional twist—the need to support user-defined characters. Local users want to be able to define their own characters, since the BIG 5 character set used in Hong Kong has a limited number of characters.

To do this, we had to develop a method to work with user-defined characters within the newroom while retaining the capability to drive prompters and printers. We also needed the flexibility to handle ETEN, another popular PC operating system in the region.

Another vital aspect is localized support. BASYS is fortunate in that, as part of a large multi-national computer company, Digital Equipment Corporation, we have a built-in support structure to help serve customers around the globe. In this instance, we will be working closely with Digital Hong Kong to support the Wharf installation and others.

Beyond the newroom

Newrooms 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-newsrooms 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 newroom goes Eastern.

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.
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 BCTS will badge and sell the format. BCTS, 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 flexibility.”

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

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 BWV-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 Hercour, the company’s chairman and CEO, said was 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.

Hercour 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 and 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 Begami 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 any offers for the division. But van Dalen added that “everybody is copying us,” said Bob Wilson, president of GVG.

“ITAN has some 16:9 and 4:3 switchable cameras, 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.

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Hercour added that the company has delayed introducing an initial definition CCD camera until at least the end of 1993 because “of the slow down of the high definition market.”

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**The Future Bring?**

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 HD TV "cross converter" with PR C (Phase Correlation) and new signal processing products. Visteck and AVS Broadcast reached agreement on joint development of motion compensated standards converter products. Also, Visteck introduced a Noise Reducer and Aperture Corrector option for the Vector.

While most manufacturers were busy playing 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.

Thomas 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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C o a s t  G u a r d  s e e m s  t o  h a v e  s o m e t h i n g  t o  t e l l  t h e m  n o t  t o ?  F u n n y  t h i n g  i s :  T h e  U . S .  g e n e r a t e  y a c h t  r a c e  g r a p h i c s ?  C om e  o n !

fall on how NHK is using GPS tracking to inch accuracy suggests new frontiers in range correction. The Coast Guard cause the received pseudo-range measurement of Transportation, and the phone its guns and ranks and uniform, is part of strange. men to wander in an apparently random setting of the broadcast satellite orbits to cause the received pseudorange measurements to wander in an apparently random way.” In America, 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 mess ing up the satellites. The U.S. Coast Guard thinks the messed-up GPS is not accurate enough, so it

spends money sending correction signals for the messaging, 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 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 home/y.

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 23.3 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 17 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 unmess ed. 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 damned 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
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
telecom fixations from waging war was 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 oth-
er 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 tel-
cos 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 tele-
phone 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
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. Personal-
ly, I would be happy to live my life with-
out calling either place, but there seem to
be people who have to make bicostal 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 prob-
ability 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 sev-
enth game of the World Series? When it
comes to probability, video dial tone isn’t
exactly the same as dial tone. That’s prob-
lem 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?” “Noth-
ing. 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 para-
graph, sent by dial tone voice paths
between Los Angeles and New York, cur-
estly 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 com-
pamy 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 any-
things—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 any-
more) 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 Ornizio 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 at
MCI Mail 851-6727@MCIMail.com.

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Circle 54 On Reader Service Card
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 dg 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 computer salesmen begat computer salesmen. And the computer salesmen begat mega-hype!

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.

Solution by approximation:
Determine the Scale Factor for a 14-inch monitor. If you multiple each dimension of the 3:4 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 x 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 x 25.4 = ?

(9.6 x 10) (25.4 / 25)

10 x 25 = 250

(Screen width is 250 millimeters)

We now know screen width, in millimeters, and the number of pixels required. This data is adequate to determine the required dot pitch.

250mm will contain 640 pixels
250mm x 640 pixels = 7 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 (1.26 mm).
1 + 2.6 = ?
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 x 4 = 9.6

(The screen width is 9.6 inches)

9.6 x 25.4 = 243.84

(Screen width is 243.84 millimeters)

243.84 x 640 = 0.381

(Needed dot pitch is 0.381mm/pixel)

It appears that a monitor with a 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.

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 component 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.

By Larry Albert

Edited and designed by George Borst

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OCTOBER 14•18, 1993 PROFESSIONAL EXHIBITION

Circle 81 On Reader Service Card
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. However, there is also the need for a device control system that can be expanded over time. Even so, it has become increasingly difficult to predict exactly what an individual needs from a device control system. Therefore, device manufacturers must be concerned about 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 V-LAN device. Each transmitter can 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 is so great that you can create a V-LAN system from an extremely cost-effective solution for larger facilities that require multiple day and/or local remote assignment of control.

In addition to Videomedia, companies such as Grass Valley Group, Tektronix, Chyron, Photon, Folsom Research, Silicon Graphics, RGB Computer & Video, and AimLink 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, devices that were the first units on the network, will also exist on the network with the latest V-LAN conditions. A PC is simply not quick enough to make stringent "real-time" decisions required in a frame-accurate multiple transport control environment.

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 service control, and even serial ports for reliable and consistent transport control. V-LAN provides total time constraint freedom because it is a time-line based system that accomplishes the timing completely external to the controlling computer.

Upgradability

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 and 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 can 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 upgradability 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 and producing 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% since the first units began delivery over six years ago.

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

Software developers interested in incorporating V-LAN drivers (no royalty) and applying to Videomedia for a developer kit.

Bill Stickney is V.P. of engineering for Videomedia and has been with the company for 18 years. He has been active in the video industry for 28 years. Prior to Videomedia, he was 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: Computer No. 100 137 1545; or circle Reader Service 77.

SPECIAL REPORT

by Bill Stickney

V-LAN NEWS

Videomedia's V-LAN provides frame accurate transport control for an entire video network of computer graphics/animation/multimedia software and supports all popular videotape/video disc recorders and players.

A newly introduced V-LAN-CX, a single receiver module designed to interface either to Sony Control-L, Panasonic 5-pin or Sonov ISCAS 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 Indigo Video boards based on 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 software. A single SGI Indigo powers the new On-Line system from Soft Image. They are an integrated editing system and animation compositing workstation. It uses V-LAN to control digital disk, switches, audio mixers and VTRs. It is also a V-LAN aware system. It integrates also the V-LAN T-Pod Shuttle/Jog controller into the editing control panel keypad.

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Molinare Opt's 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 production 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 turning 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 system 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 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 intermitting 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 easy 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 Bobbie Henderstot at Prime Image (Telephone: +1-408-867-6519; FAX: +1-408-926-7294), or circle Reader Service 66.

CONVOCOM Gains New accESS

Richard 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.

The new 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 in and out. 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 accidently 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: Richard 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 Henderstot 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 Gabriel
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 monochrome 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 Gabriel 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 Nagar at DPS (Telephone: +1-606-371-5533; FAX: +1-606-371-3729), or circle Reader Service 78.

**USER REPORT**

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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Kanal Goteborg Uses FlashFile

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 and 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 air it. FlashFile lets users create a sequence and run it in an instant.

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 usable tools we have. Even to the point where 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 Graxia.

USER REPORT
Composer: We traveled specifically to NAB to look at the various news graphics systems. The clear choice was Flash Graxia 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 ability to network with our FlashFiles and import files from other file formats for greater networking flexibility. Flash Graxia 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 evolved 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 Werdinhal at Pinnacle (Telephone: +1-408-720-9669; FAX: +1-408-720-9674), or circle Reader Service 107.

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Snel & 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 spatial.

The unit features 10-bit, 8x8 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 Zaxoxm 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 attack 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 60FD2660 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 Kadena 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-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.

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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 production 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 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. This 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-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 converter, then we might be willing to share conversion costs among several purchasers. But we certainly could not afford to carry the capital. 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 skis 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 Vistek VMC for its 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 interesting effects, and fades on beginning and end-of-part captions can be a problem.

We have always believed that conversion 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, but we are keeping in and out of VMC for occasional problem scenes. And with successive software updates, this need has been reduced.

VMC is, 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 PAL plus, letterbox or panarama will be dubbed.

Future technology will also require progressive scan sources. And with progressive scan, those cameras likely to be rather expensive. I see a rosy future for interface-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 Rob Wright at Vistek (Tel: +44-628-531221; Fax: +44-628-530980), or circle Reader Service 126.

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

TECHNICAL

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 VSP-7001 parallel-to-serial converter is also component with four serial outputs.

The DigiKit consists of two modules, each 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 NovaBox video processing system, is a line of plug-in encoders, decoders and transcoders.

The NovaBox-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 Decoder-1 decoder card features composite or Y/C inputs and RGB, RGB/Sync, Y/R-Y/B-Y or Y/C outputs. The Decoder-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 dual.

For further information, circle Reader Service 52.

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2 0 1 9 T E C H N O L O G Y
URSA Gold type telecines with facility concentrating on special effects has been extended from around 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 in blue noise. Also, the URSA Gold 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.

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

Both URSA Gold telecines are heavily customized with unique features designed in-house that enable a more ergonomic and capable service. The URSA Golds 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 liv- ery, 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 sharper edge on a favorite blade.

With a design to handle new formats, such as 16:9, 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 VSC, the Virgin Technology Advisory Committee. The opinions expressed above are the author's alone. For further information, contact Richard Hobbs at Rank Cintel (Telephone or FAX: +44-435-830-988), or circle Reader Service 95.

The color frequency includes bands IV-V from 470 to 860 MHz. The temperature regulates at temperatures from -10 degrees Celsius to 45 degrees Celsius and at a relative humidity of 90 percent. The front element is less than or equal to 5 percent and differential phase is less than or equal to 3 percent. Level/frequency response from 0.5 through 20 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.

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 offer greater focus speed and response time, reduced distortion and reduced aberrations.

The UHF transmitters have a focal length range of 8 to 160 mm and a higher zoom ratio of 20:1. The H20X 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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JVC BY-110 ITU, works on both, hard case, 95%, $100; JVC GR-55, 2" C-Format, S-VHS, charger, hard case, 95%, $150; VHS, 2" C-Format, Antares tape cassettes, cables $10 manual, $100, 175-472-7259 after 6pm.

A CHRYSON 4100E/B Kit Complete with Motion, Excellent Condition, as good as new, $25, Cheap as Chips under $100 freight 1-371-7111.

Sony EVU-300L, Hill complete pkg w/3Citron 13" lens, hard case, access controls, $250/box, $500, 417-725-4625.

JVC BY-110 3-D Set, works on buses, hard case, belt 3.5 pack, $200, JVC GR-55, 3" S-VHS, hard case, charger, $250, 3" S-VHS, 2" 150, 2" 110, 1" 35.

Sanyo BVM-100 kit includes, 3 different digitizers, 1K, hard case, $1,500, 322-413-9100.

JVC C2500 camera, 13" lens, hard case, $2,500, $2,900/box, $4,500/box, 303-441-2229.

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Tokyo’s Onokin Haus Controls with Ensemble

by Oda Yasutera, CE
Onokin Haus Inc.

TOKYO The TC-404D TBC controller by Ensemble Designs is a machine geared towards 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 TC-404D can be used to directly adjust video, chroma, setup and other 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 stored, 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 when moving a camera. Besides these four parameters, the TC-404D 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 Onokin Haus, we operate the TC-404D with our one-inch and Betacam SP VTRs. Before we installed the controller, we checked our clocks 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 tapped materials. Since the TC-404D is installed besides 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 TC-404D, interest has grown. Presently, several varieties of these products are currently being tested in the Japanese market. The TC-404D gets high marks for its functionality, cost-effectiveness, and reliability.

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

The opinions expressed above are the author’s alone. For further information on the TC-404D, contact Cindy Zeltzler at Ensemble Designs (Phone: 1-916-478-1830; FAX: 1-916-478-1832), or circle Reader Service 94.

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