From Camera to Booth to Truck with Telecast Fiber Systems
PAGE 21 ADVERTISEMENT

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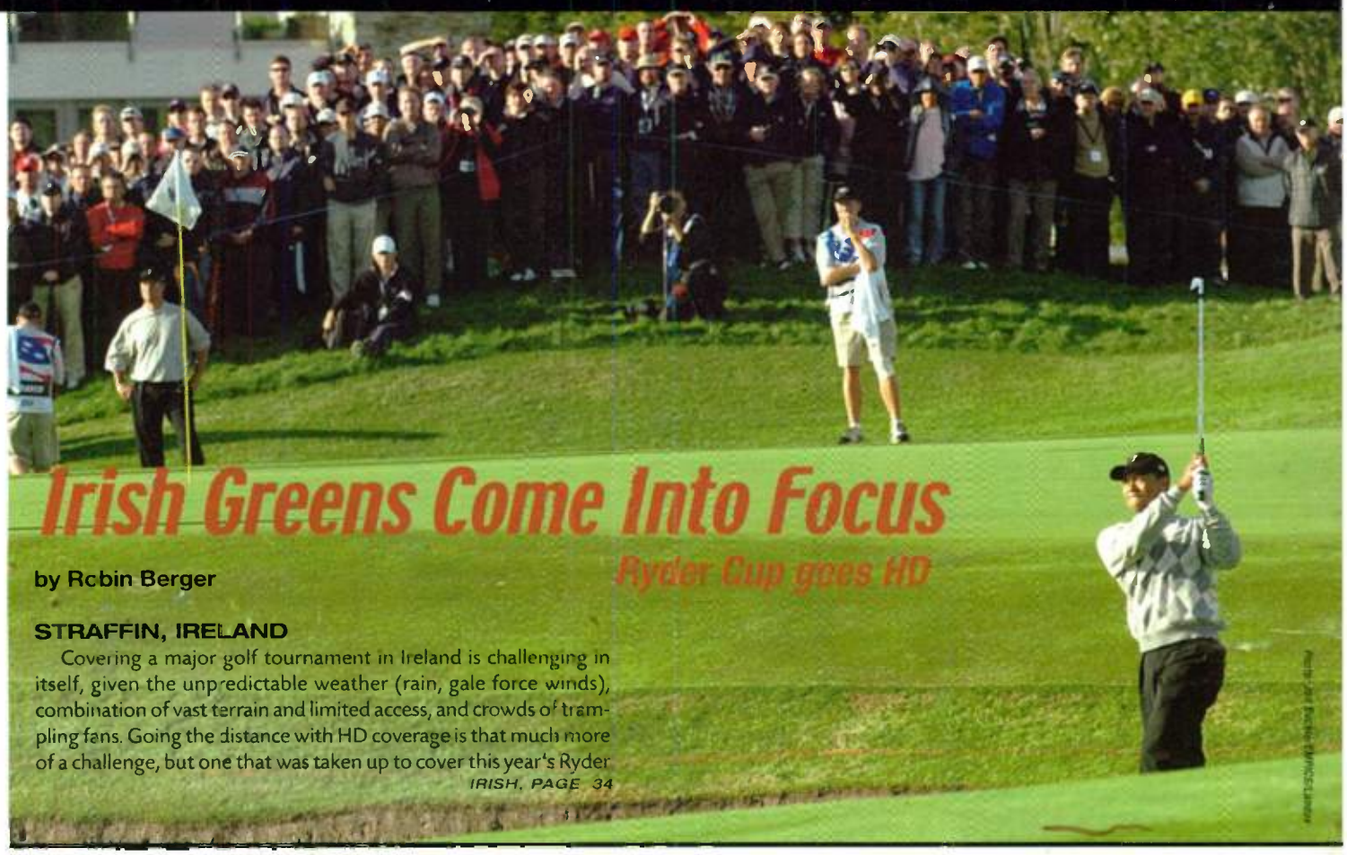
VOLUME 24, NO. 22 • OCTOBER 18, 2006

WHAT'S INSIDE



Irish Greens Come Into Focus

Ryder Cup goes HD

by Robin Berger

STRAFFIN, IRELAND

Covering a major golf tournament in Ireland is challenging in itself, given the unpredictable weather (rain, gale force winds), combination of vast terrain and limited access, and crowds of trampling fans. Going the distance with HD coverage is that much more of a challenge, but one that was taken up to cover this year's Ryder

IRISH, PAGE 34

WIPO Treaty Has Cloudy Future

Protection from cross border signal theft needed, proponents say

by Ken Freed

GENEVA, SWITZERLAND

A decision on an international treaty that awards broadcasters copyright control over their signals has been deferred until 2007, and even then the treaty may never happen.

The 183 member nations of the World Intellectual Property Organization, the United Nations special agency responsible for intellectual property treaties, voted Oct. 2 at the 42nd WIPO General Assembly in Geneva for the Standing Committee on Copyrights and Related Rights to hold two additional negotiation sessions in 2007 to iron out disputes over the proposed WIPO Broadcast Treaty.

If the SCCR sessions in January and June 2007 produce general agreement on the treaty terms among the member nations, a formal WIPO Diplomatic Conference will convene next November in Geneva to finalize the draft treaty. If no clear agreement emerges from the two SCCR negotiating sessions, there may not be a Diplomatic Conference, at least not in 2007.

NEW LAYER OF PROTECTION

Proponents of the WIPO Broadcast Treaty contend international action is needed to protect broadcasters from cross-border signal theft, asserting that broadcasters deserve copyright protection on the signals they transmit. They say the proposed treaty would update the 1961 Rome Convention on signal protection to address

WIPO, PAGE 28

#BXNNTRG ********AUTO**3-DIGIT 105
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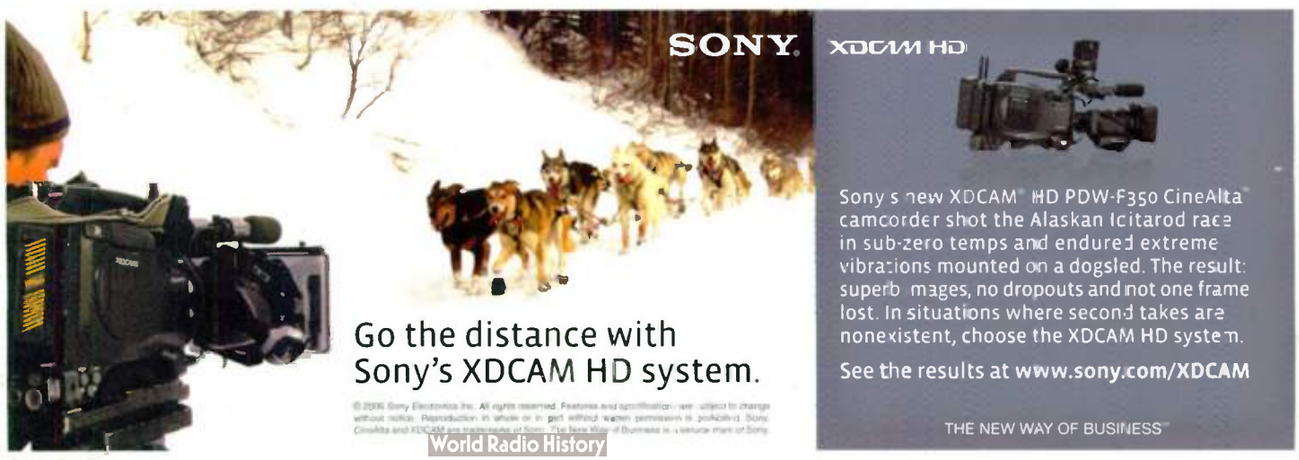

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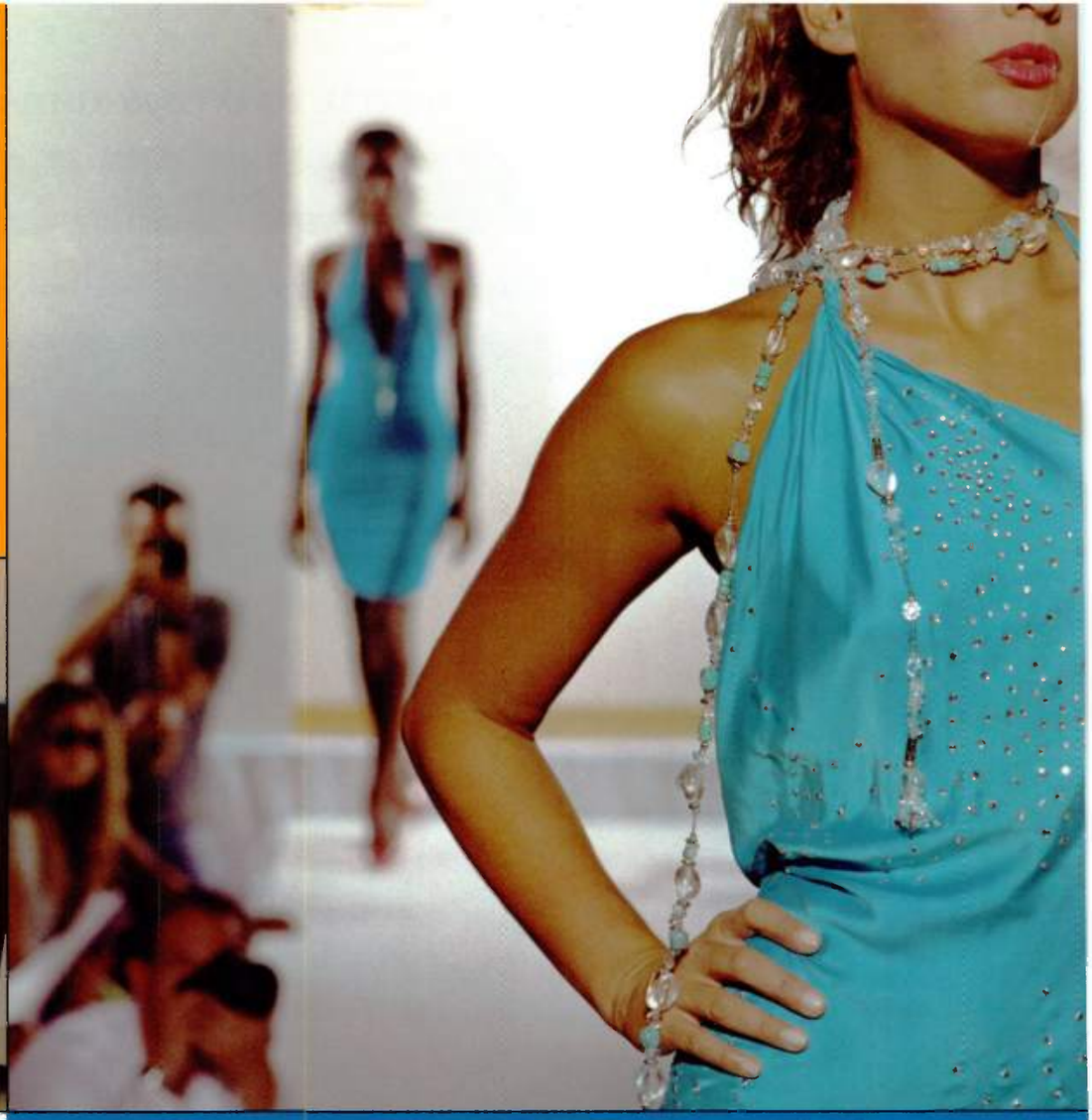

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HDGC

*Canon engineered its all-new **HDgc** line of affordable HD zoom lenses to support the new generation of economical mid-range portable HD camcorders and lower-cost POV HD cameras being introduced by all of the world's major professional camera manufacturers. These especially include the new tapeless HD camcorders that are lowering the cost of transitioning TV news and general programming to HD. Designed for budget-conscious HD production applications, these **HDgc** lenses leverage Canon's decades of expertise as a world leader in optics and as a manufacturer of superior HD lenses for portable ENG and EFP cameras. Featuring superior operational capabilities, these new HDgc lenses (four of which feature Canon's revolutionary digital eDrive technology) combine many of the best features of Canon's remarkable higher-end HD portable zoom lenses.*

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<$10K HDGC Tier 2 Economical Professional Cameras	KJ20x8.5B KRS	KH20x6.4 KRS KH19x6.7 KAS	KT20x5B KRS*

*Available late 2006

HDgc lenses:

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- Include lenses for broadcast/production: for 2/3-inch, the KJ16ex7.7B IRSE* standard lens; for 1/2-inch, the KH10ex3.6 IRSE wide-angle lens, the KH21ex5.7 IRSE telephoto lens, and KH16ex5.7 IRSE* standard lens; all of which have Canon's exclusive digital eDrive technology and 2X extenders. (* Available in late 2006)
- Will include more broadcast/production 2/3-inch HDgc lenses, to work with GVG's Infinity, Panasonic's HD P2, and other lower-cost camcorders and cameras.
- Include lenses for professional video: the KH20x6.4 KRS lens for 1/2-inch HD CCD cameras; the KT20x5B KRS lens for 1/3 inch HD CCD cameras; and the KJ20x8.5B KRS lens for 2/3-inch HD CCD cameras. All three feature a new ergonomic drive unit and Canon's exclusive Shuttle Shot function, an advanced servo system for zooming back and forth between any two focal-length positions.
- Includes the KH19x6.7 KAS, which incorporates the digital interface to Sony's auto focus system.
- Includes the KH19x6.7 KTS for remote-control applications.

World Radio History

IN THIS ISSUE

P.22
king the right
nnection

P.56
mmy-winning editing

P.62
ameras, lenses &
ccessories

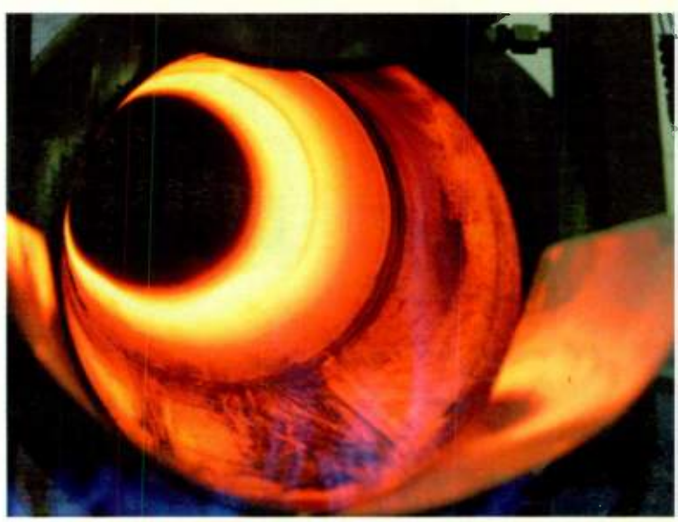
NEWS

FEATURES

BUYERS GUIDE

EQUIPMENT

P.40
Made in America: L-3 Communications



CONTRIBUTING WRITERS

Will Workman

Inside Broadband

The radio star lasted more than a half century until, according the Buggles, video killed it. But the video star is looking mighty old at 25.

MTV, that purveyor of teen culture pop, launched in 1981. Now counting nearly half a *billion* households.. p. 50

Charles W. Rhodes

Digital TV

The FCC issued a timetable to authorize sharing of broadcast spectrum with unlicensed devices in the so-called "white spaces." So whether Congress passes the telecom reform act this year or not, the FCC will complete its rulemaking.

Unlicensed devices will be... p. 52

Craig Johnston

Production Manager

I've heard it said (and probably said it myself) that most jobs in television are 10 percent inspiration and 90 percent perspiration.

Those on the creative end, producer types, often find they have to fight the urge to spend more than... p. 57

World Radio History

FROM THE EDITOR

Your Attention, Please

As long as there have been broadcasters, there have been advertisers trying to get their messages to listeners and viewers. New technologies begat new ways of grabbing the viewer's attention. A recent survey by the Ball State Center for Media Design sheds some new light on what actually happens during that most traditional of TV viewing habits, the "commercial break."

In their study, "Remotely Interested: Exploring TV Viewers Advertising-Related Behaviors," CMD researchers shadowed 49 Muncie and Indianapolis area residents in their homes as they watched three to four hours of prime-time television. The average observation was 3.7 hours, resulting in 179.2 observed viewing hours. The researchers examined the impact on television viewing as people diverted their attention from ad breaks by surfing channels, leaving the room, talking, reading and using electronic program guides. Data was compiled via touch-screen devices that allowed viewers to record, in five-second increments, changes in channel, television content types, use of EPGs and other behaviors.

The good news, according to the researchers, is that nearly a third of television commercial breaks are watched in their entirety; the bad news is that almost half of the viewers surveyed spent 60 seconds or less watching such ads before they became distracted with other activities.

The study concluded that the average ad break exposure was 2.2 minutes, with 32.7 percent of the study's ad breaks watched in their entirety. In addition, nearly half of the ad breaks were watched for one minute or less, with 15.4 percent of commercial blocks viewed for 31-60 seconds before interruption. About 45 percent of ad breaks were interrupted by scene shifting behaviors, including channel changes (50.5 percent of scene shifts), EPG use (31 percent) and leaving the room (18.5 percent).

What can the average broadcaster take away from this research? Well, for one, viewers are probably spending more time in front of the television set, ads or no ads; and that in order for the advertiser to get the viewers' attention, ads will probably need to be shorter in length or well-placed (i.e., first).

One time-tested method that has proven successful time and again is the silent ad. When was the last time you watched TV and turned away during a commercial break but turned back toward the TV when you didn't hear any audio? On the other hand, when was the last time you dove for the mute button when the commercial break ensued, particularly on a channel where the broadcaster has failed to control the difference in loudness between programming and the commercial breaks?

As more and more viewers move toward a DVR-based existence and abandon "appointment television," advertisers are scrambling to find new ways to grab and hold their attention. In the U.K., for example, Fox is experimenting with a new ad targeting viewers who like to fast forward through the ad breaks on their DVRs. It's a rather simple method: The ad consists of a static image from the Showtime program "Brotherhood." Viewers fast forwarding through the ads see the image for several seconds, while those who don't fast forward, see the static image while audio from the show plays in the background.

Tom Butts
Editor
tbutts@imaspub.com

ERRATUM

In the article "So You Want to Edit in HD," in the Sept. 6 issue of **TV Technology**, Jayme Wing was referred to as Kristen Cox's project partner. Mr. Wing is a partner in ownership with HD Vision Studios, a company Ms. Cox free-lance produces for.

LETTERS

Send to Editor, TV Technology at e-mail *tvtech@imaspub.com*

Manual Alternatives

Dear Andy Ciddor:

I fully agree with your article in the July 12 issue of **TV Technology** ("You Can Always Read the Manual," Let There Be Lighting), and offer this suggestion to manufacturers.

Do what the Corvair Society of America did when printed material had disappeared on this 35-year-old vehicle. They printed a manual and a CD that goes with it. This is very helpful as you can print the pages that you need and take them to where you need them. You don't have to worry about damaging the manual. This would be helpful if current manufactures of broadcast equipment would do the same!

Robert Harvey
Las Cruces, N.M.

Regulating Behavior

Dear Frank Beacham:

Your article on 'Net issues in the Aug. 9 issue of **TV Technology** ("A Decade Later, 'Net Issues Remain the Same," Net Soup) evoked a string of thoughts.

The effect of laws is to make the behavior to be regulated or prohibited sufficiently expensive that it will be discouraged. This applies to jaywalking as well as to murder. The opposite is also true. An activity that is expensive will fall from popular use, just as though it were prohibited by law (which it is, if it is sufficiently expensive).

Please recall the window taxes, chimney taxes, and so on that beleaguered Great Britain at two points in their history. People removed windows rather than pay the tax. People removed chimneys rather than pay the tax.

Increasing the cost of Internet service by taxing it will surely have the effect of making the 'net accessible only to those who care to pay the additional burden, should one be legislated into existence. It will have the effect of making Internet use illegal for people who cannot or will not pay the taxes. The impact on freedom of expression should be obvious to a third grade student.

God save us from second graders who happen to populate the halls of Congress.

Tom Norman, CPBE
Centennial, Colo.

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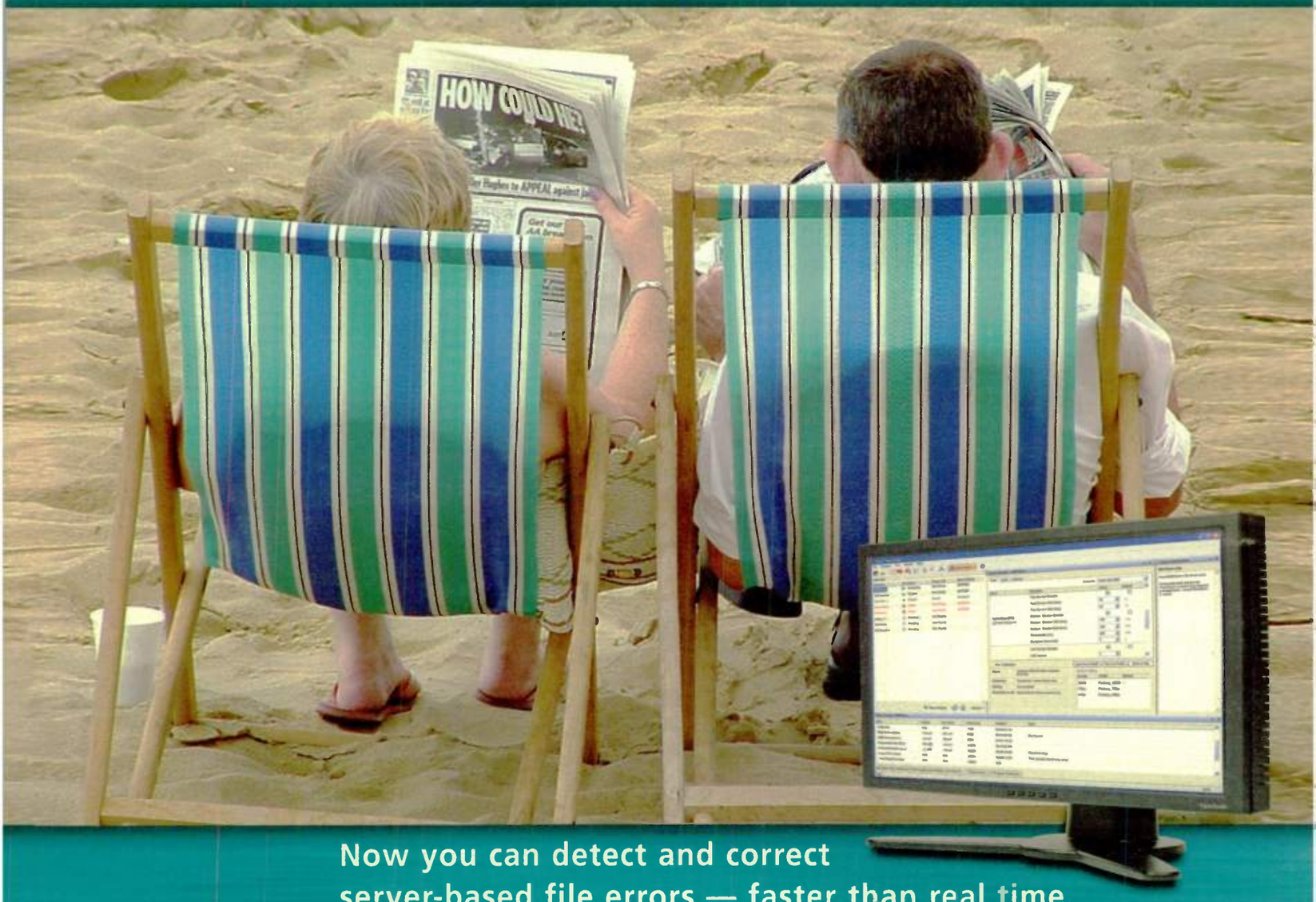

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Cable Innovator Wendell Bailey Dies

DULUTH, GA.

Wendell H. Bailey, director of Wegener Corp., a provider of equipment for television, audio and data distribution networks, has died.

Bailey served on the Wegener Corp. board of directors since 2003. The cable industry veteran served 17 years as the National Cable and Telecommunications Association vice president of science and technology. He also served as the chief technologist of advanced broadband technology for NBC for five years and previously held positions at AT&T and MCI.

Bailey authored more than 100 articles and papers in the fields of television and telecommunications technology. He was also a member of the ATSC Committee Executive Board and was vice chairman of the FCC Advisory Committee on ATV. CED Magazine named Bailey "Man of the Year" in 1988 and he was named "Fellow" of the Society of Cable Television Engineers in 1997.

"Wendell is an icon of the cable industry and was admired and well liked by all that knew him," said Ned Mountain, president of Wegener.

Obituary

FCC Focuses on Kids and Security

WASHINGTON

Last month, the FCC approved kid video rules for digital TV, established a task force on childhood obesity, and created a homeland security bureau.

The kid vid rules require broadcasters to run three hours of children's programming on all of their multichannels, including 24/7 weather and news feeds. The original rules established by the FCC in November 2004 had the same requirement, eliciting objections from broadcasters, some of whom run weather radar maps on digital multicasts. The 2004 rules also laid out strict parameters on advertising within kid programming.

The commission stayed its 2004 order while the broadcast industry hammered out a compromise with kid TV advocates. The new FCC Report and Order on kid vid reflects that compromise, most of which applies to advertising and program preemptions.

The 2004 order held that promos for other kid shows or educational programming counted against the 10 to 12 minutes of ad time allowed in kids programming by the Children's Television Act of 1990. Under the new order, such promos are not considered to be advertising.

The new Report and Order also does away with the cap on the number of preemptions allowed for breaking news. Preemptions will be considered on a case-by-case basis. Other details about the display of Web addresses and host selling were also clarified. The rules likely will take affect some time in December (60 days after publication in the Federal Register).

While kids are glued to the tube, the FCC will be watching them, particularly with regard to their weight. At the urging of lawmakers, including Sen. Sam Brownback (R-Kan.), the commission is participating in a joint task force to study the link between TV and childhood obesity. The group includes representatives from Disney, the Parents Television Council, the Beverly LaHaye Institute (LaHaye is founder of Concerned Women for America), and Children Now. The task force will start meeting next year.

On the public safety front, Katrina and 9/11 were catalysts in the creation of the new FCC Public Safety and Homeland Security Bureau. It will responsible for public-safety functions that were "previously dispersed among the other bureaus and offices," according to the FCC.

The bureau will be organized into three divisions: Policy will draft, develop and administer 911/E911 and other public safety rules; Communications Outreach & Operations will be responsible for coordinating the FCC's emergency response procedures; and the Communications Systems Analysis Division collect and analyze disaster data.

Deborah D. McAdams

FiOS Expected to Turn a Profit by 2009

WASHINGTON

A year after launching its FiOS fiber-optic based video service, Verizon released new details on where it's been and where it's going.

The nation's largest telco painted a rosy picture for the future of the service, for which it's shelling out a total of $18 billion dollars between 2004 and 2010. Verizon expects FiOS—which encompasses both a broadband Internet service and separate video service—to become profitable by 2009, that is, if it gets 7 million FiOS broadband customers and 4 million FiOS TV customers by the end of 2010.

"Our FiOS targets are based on what we view as achievable customer take rates, reasonable pricing levels and conservative estimates of customer retention metrics," said Doreen Toben, Verizon executive president and chief financial officer. "Based on our experience deploying fiber, we see declining cost-trends to pass and connect homes, and we see significant ongoing operating expense savings."

The company said it expects to pass 6 million premises by the end of this year, and 3 million each year through 2010. By the beginning of 2009, Verizon predicts that FiOS will be available to 18 million premises, or more than 50 percent of the approximately 33 million households in its 28-state wireline coverage area.

For its FiOS TV service, Verizon has set a target of 175,000 subscribers by the end of 2006, out of a potential 1.8 million households, representing a market penetration rate of approximately 10 percent. By 2010, the company hopes to have a 20 to 25 percent market penetration rate—or from 3 million to 4 million FiOS TV customers, based on its estimate, that approximately 15 million households will be video-ready by then.

Monthly churn rates of 1.5 percent for FiOS TV mirror those of its FiOS broadband Internet service. Verizon said it now spends $1,806 in average capital expenditures to pass and connect one home to FiOS and hopes to reduce that to $1,730 per home by the end of the year.

All of these predictions for FiOS TV, at least, could be greatly affected by existing franchise laws. In most states, the telco has to go through the same process as cable operators, although, it has been battling such franchise laws on both the federal and state level. Currently, Verizon has 161 local franchises in New York, California, Texas, Florida, Maryland and Virginia. And despite spending reportedly $19 million in lobbying to overturn franchise rules just in California, for example, Verizon officials said such regulations are not slowing the progress of FiOS TV.

TelcoTV

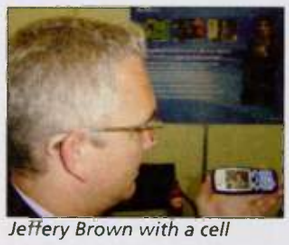
MediaFLO Marks Network Launch

SAN DIEGO

Oct. 1 marked the network launch of MediaFLO, Qualcomm's wireless video service. Verizon Wireless, the first major cell phone carrier committed to carrying the service, is expected to debut MediaFLO in early 2007.

The San Diego-based chipmaker has spent more than $800 million building out the service, which Jeffery Brown, director of international business development for MediaFLO terms "the largest mobile broadcasting network in the world."

"We are rolling out a nationwide multichannel pay television service—it just happens to be delivered to a mobile phone," Brown said. "The addressable base for this service is so much greater than the number of television households. When the network is completely built out, the addressable base is the number of wireless subscribers in the U.S., in excess of 200 million."



Jeffery Brown with a cell phone receiving MediaFLO.

The multichannel service features QVGA resolution, with less than two second delay in changing channels; other potential services include digital premium radio and datacasting, according to Brown.

The network was launched when MediaFLO reached a potential 75 million subscribers, Brown said. Although the service is now available nationwide, it is not yet contiguous, as some portions of spectrum in certain areas have not yet been cleared, according to Brown.

Other carriers interested in carrying the service include BSkyB and Vodaphone, an investor in Verizon Wireless.

Mobile Video

World Radio History

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Kevin Cullen, President
Water Productions Corporation
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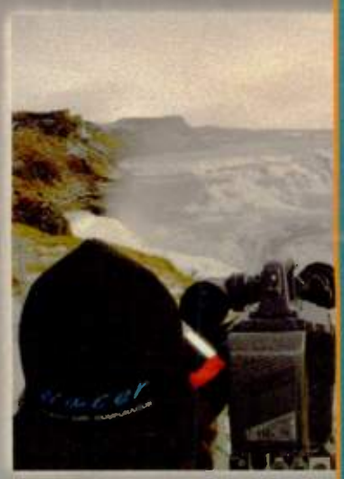

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World Radio History

VidTrans to Focus on IPTV

ORLANDO, FLA.

The Society of Motion Picture and Television of Engineers and Video Services Forum have joined forces to put together VidTrans 2007, a conference that will focus on IP television. The event will be held at the Buena Vista Palace Hotel in Orlando, Fla. Jan. 21-24, 2007.

According to a recent report by market research group iSuppli, the number of subscribers to IPTV services will hit 63 million by 2010, with forecasts putting overall revenue from IPTV services at $26 billion by the same year.

"As broadband applications continue fueling consumer demand, it's incumbent upon organizations such as SMPTE and VSF to prepare professionals for the many technological transformations that will be affecting delivery over IP," said SMPTE Editorial Vice President Pete Ludé.

He said many of these changes would be covered during the conference's technology sessions, which run Jan. 22-24.

The SMPTE and VSF joint conference will also showcase the latest applications, technologies, and products in its exhibit hall. The exhibition kicks off with an opening night preview Jan. 21 and runs through Jan. 23.

To register, visit *www.smpte.org/conferences/vidsm07.cfm*.

Events

Sony Launches New HDV Camcorder

NEW YORK

Sony has added a new camcorder with 24p capture and a new hybrid-recording feature to its HDV line.

The HVR-V1U features 24p progressive screen capture, and uses three of Sony's ClearVid CMOS sensor chips combined with Sony Enhanced Image Processor technology that uses a diamond-shaped design to provide greater sensitivity, higher resolution, lower noise and a wider dynamic range.

"We have pushed the limits of sensitivity and resolution by using a very clever diamond CMOS design," said Hugo Gaggioni, chief technology officer for the Broadcast and Production Systems Division of Sony Electronics.

The design consists of three 1/4-inch ClearVid CMOS sensor chips that capture images at native 24p, 30p or 60p at full 1080p resolution at reduced power consumption.

According to Bob Ott, vice president of marketing for the Sony Electronics optical and network systems group, combining the ClearVid CMOS chip with Sony Enhanced Image Processor technology achieves wide dynamic range by using an algorithm that separates image data into its texture patterns and brightness components, allowing the camera's sensor to produce natural and rich tones for light and dark areas of an image.

Another feature that results from combining these technologies is "smooth slow rec." (recording) that uses the speed of the camcorder's signal processing to capture video images at very high speeds (up to 240 fields per second), allowing quick movements to be recorded in precise detail with no artifacts or signal degradation.

The camera also introduces hard-disk recording to Sony's HDV camcorder lineup, using a 1.8-inch drive with a 60 GB capacity and offering up to 4.5 hours of recording time in either HDV or DVCAM/DV.

The unit features "Smart Protection," which, when combined with a built-in shock absorber, automatically protects the camcorder at a force of up to three Gs. If the sensor detects that the unit is being dropped, it immediately turns the power off and retracts the head to help prevent damage to the media.

The camcorder uses a Carl Zeiss Vario-Sonnar T lens with extra low dispersion glass and a 20x optical zoom lens with *f*/2.8 at the telephoto end for greater light sensitivity and long-range image acquisition for maximum shooting flexibility.

Sony expects to begin shipping the HVR-V1U camcorder and an accompanying HVR-DR60 hard-disk recording unit in December at suggested list prices of $4,800 and $1,800 respectively.

Equipment

MPAA Lets the Dogs Out

WASHINGTON

The film industry lobby has employed DVD-sniffing dogs in its fight against content piracy.

The Motion Picture Association of America brought the two black Labradors, Lucky and Flo, to its headquarters last month to show their talents to customs officials and others who want to use them to sniff out optical discs being shipped illegally. After D.C., the MPAA is taking Lucky and Flo on to Los Angeles, the United Kingdom, Singapore, Hong Kong and Dubai.

The tour is an effort to raise interest and demand for these specially trained canines in assisting those who guard U.S. airports, ports and borders.

Lucky and Flo have been trained to detect the smell of DVDs, but are unable to distinguish between CDs and DVDs and pirated discs. The plan is to have the dogs detect the DVDs and to have customs check the discs against the items people have legitimately declared.

The dogs are part of MPAA's multipronged approach to fighting piracy, which it says cost the industry $18.2 billion last year. Of that number, MPAA said more than $11 million is attributable to hard goods. Other approaches the MPAA is taking against piracy includes educating people about the consequences of piracy and taking action against Internet thieves.

The K-9 project began in 2004 when the MPAA took on a limited feasibility study to determine whether dogs could be trained to detect polycarbonate and other chemicals used in optical discs. Lucky and Flo were trained in Northern Ireland and put to the test in June 2006 after eight months of training. Their first test at Stansted Airport in Essex County, England, was a success.

"Lucky and Flo have helped us prove that if we think outside of the box, we can find new and interesting ways to assist law enforcement and customs officials around the world to stop illegal shipments of counterfeit DVDs from making their way across borders," said Dan Glickman, chairman and CEO of the MPAA. "These two animals are armed with an amazing scent that can help us in our fight against optical disc piracy."

Piracy

Marker Commemorates Farnsworth

PHILADELPHIA

The accomplishments of the late television pioneer, Philo Farnsworth, have recently been recognized by the Pennsylvania State Historical Commission. Last month, the organization erected a large roadside plaque at the site of the inventor's experimental television station, which was located at 1260 E. Mermaid Lane in the Wyndmoor section of Philadelphia.

Farnsworth is credited with developing the first all-electronic television system, displaying images from his image dissector pickup tube on a cathode ray tube screen as early as 1928.

Farnsworth's first work in television was done in California. He moved to Philadelphia in 1931 to develop a television system for Philco.

After the relationship ended in 1933, Farnsworth remained in the Philadelphia area and constructed one of the first electronic television broadcast stations in the United States. The station license was issued in December 1936 and broadcasting operations started in January 1937 with the call sign W3XPF.

Farnsworth engineers built and operated the world's first electronic video switcher at the station. The station went dark in 1939 when Farnsworth moved his base of operations to Ft. Wayne, Ind.

People

World Radio History

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IBC Focuses on Myriad Multimedia Options

HD, mobile video take center stage

by Tom Butts

AMSTERDAM, NETHERLANDS

At a time when broadcasters, cable programmers, satellite companies, telcos and Internet companies are all staking their claim to the latest incarnations of video entertainment, organizers of IBC2006 were kept busy juggling an increasingly diverse number of themes, from high-end applications such as HDTV, digital cinema, digital signage and even 3-D, to IPTV and third screen devices for mobile video.

All of these market segments are posing even tougher challenges for companies like Harris Corp., which has greatly expanded its presence in the electronic media marketplace over the past several years. Knowing where to focus research and development these days is more critical then ever.

"There isn't one market opportunity—it's very fragmented," said Tim Thorsteinson, president of Harris Broadcast. "Even within a set of customers; even within a group… there are different market opportunities dependent on the business needs of the station."

A common theme, however, for companies like Harris is the increasing emphasis on workflow, illustrated by the company's announcement of an OEM partnership with Isilon Systems to link the Isilon IQ clustered storage system with the Harris Nexio video server platform.

"With the proliferation of new media distribution networks and multiple media formats, the broadcast industry is undergoing one of the most significant transformations in its history and requires new digital IT infrastructures at reduced costs to capitalize on this opportunity," said Steve Goldman, president and CEO of Isilon Systems, a Seattle-based developer of clustered storage technology.

As a European-focused electronic media show, IBC has also doubled as an annual progress report on the state of HDTV on the continent. With high-profile events such as the FIFA World Cup and Wimbledon marking their high-definition debuts in 2006, media executives were pleased with progress on the hi-def front.

Take the United Kingdom, for example. When the BBC speaks, people listen. Launched during the summer, its HD beta tests foretold the success of HDTV in one of Europe's largest media markets.

Beginning in June, the BBC HD channel test will run for a year; it features simulcast programming from BBC1 and BBC2. Available as part of the BSkyB satellite channel package, BBC HD is being streamed as an MPEG-4, 20 Mbps bitstream; in MPEG-2 on the Telewest cable service in the United Kingdom, and as downloads via broadband on iPlayer, the BBC's interactive media player. Over-the-air MPEG-4 broadcasts of BBC HD are being offered to 450 lucky viewers in the London area.

"We're running the signal at 1080i, but we may run at 720p to see what the differences are to the consumer," said Richard Waghorn, controller of distribution for the BBC. "We're exploring all of the potential routes we could do to roll out HD service on DTT."

As the world's largest public service broadcaster, Waghorn said the BBC must look at HD through the prism of public funding, while staying true to its roots as a technology innovator.

"The BBC needs to be involved in the development of HD to be sure it stays relevant," he said, adding that depending on one's point of view on production or distribution choices, costs could go either way.

PROGRESSIVE PREFERRED

On the standards front, progressive video continues to make inroads into the European production market, keeping in line with the EBU's preference. Several new HD cameras made their debut at the show, including the HVR-V1E camcorder from Sony, which includes support for 25p (a 24p version was subsequently introduced for the U.S. market), and the LDK 8000 from Grass Valley, with support for 1080p/50/60.

Sony's HD presentations drew large crowds at its booth at IBC2006

Sony Europe also announced that it had sold more than 14,000 XDCAM units worldwide; it also unveiled an agreement to integrate the next generation of the Front Porch Digital DIVArchive archive management solution with the Sony SAIT PetaSite tape storage systems.

Another advanced storage technology—holographic—got a leg up in the broadcast industry with Ikegami's OEM announcement to sell high-capacity holographic storage data-archiving systems from InPhase under the Ikegami name, supporting the company's Editcam tapeless storage systems.

VIDEO ON THE GO

With cell phone market penetration numbers equaling or exceeding those of anywhere else on the planet, Europe is out in front of the burgeoning mobile video industry. IBC's Mobile Zone, now in its second year, doubled in size and featured exhibits from Harris, Snell & Wilcox, Axcera, Digital Rapids and Grass Valley, which launched its Elite line of transmitters, targeting mobile video. As part of a complete mobile-broadcasting solution available from Grass Valley, the power-efficient Elite transmitter is available in high and medium power ranges and is designed to fill in the gaps in areas characterized by transmission dead spots.

With the launch of its Helios software-based conversion platform at NAB2006, Snell & Wilcox signaled its increased focus on advanced production technologies for mobile video. The company expanded on this initiative at IBC by announcing the iCR, an automated content mastering and repurposing workstation that allows users to create high-quality digital masters of their content and then repurpose these for distribution on multiple platforms.

Show officials said IBC2006 drew a record 44,808 attendees and 1,289 exhibitors. ■

IBC TV Covers the Floor

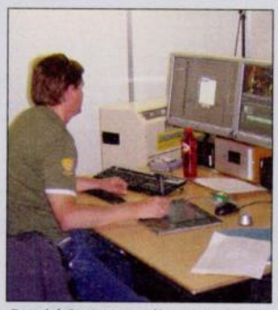
AMSTERDAM, NETHERLANDS

Attendees at the world's second largest electronic media show had numerous ways to get their show news. Whether it was Internet, cellphone or traditional TV set, IBC TV had all media options covered.

Volunteers manning the microphones, cameras and editing systems had an opportunity to put new technologies being shown on the exhibit floor into practicable applications, according to Dick Hobbs, a U.K.-based consultant and writer for television and film, who served as an advisor for IBC TV.

"It was a pretty slick operation," he said. "We used multiple formats—DVCAM, P2, HDCAM, HDV. It was basically anything in, anything out."

In addition to using Sony XDCAM, DVCAM and Panasonic P2 cameras—as well as Nokia cell phones—to capture video, IBC TV enlisted Grass Valley as the primary partner this year. The company supplied cameras, servers and editing systems to produce five days of programming. The show marked the first time Infinity cameras were used to shoot and transmit footage in a programming environment, according to Hobbs. Editors used to an Avid editing environment were quickly won over by the Grass Valley Edius editing systems, he said.



David Spence edits IBC show floor news on a Grass Valley Edius NLE.

"They were worried about the learning curve and it took them much less time than they expected," Hobbs said.

Sue Robinson, executive producer of IBC TV News, said, "They thought [Edius] was fantastic. They were totally converted."

While the IBC TV News team was producing programming to be delivered over multiple devices, the primary target was the attendees watching the programming from their hotel room as they prepared to hit the exhibit floor for another day.

"We're very conscious that it's a breakfast program and that people are watching it as they come out of the shower," he said. "We tried to avoid too many talking heads and tried to make it bright and lively. We try to reflect that IBC is an experience."

For the Web, IBC TV used Digital Rapids encoding systems for the third straight year to encode and deliver news stories to the IBC Web site, which hosts programming from the show year round. To view the programs, visit *www.ibctvnews.com*.

Tom Butts

World Radio History

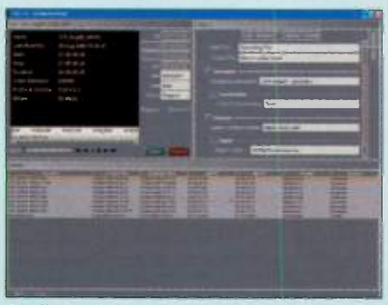
World Radio History

IBC Products in Review

Snell & Wilcox iCR

iCR is a scalable content repurposing workstation that automatically creates, packages and repurposes content for multiple distribution platforms.

iCR's concurrent processing capabilities eliminate the need for separate encoding and transcoding processing steps. iCR performs these as part of a single workflow, allowing multiple, simultaneous transcode processes to start as soon as master encoding is underway. As a result, users can complete all mastering and repurposing tasks in about the same time it would take to perform a single encode/transcode operation using a conventional system.



Snell & Wilcox iCR work screen

Evertz 7711UC-HD

The 7711UC-HD high-definition format up/downconverter converts SD signals with noise reduction to common 1.5 Gbps HD video formats, or downconverts HD-to-SD with detail enhancement and gamma correction.

The 7711UC-HD has 10-bit processing, and two HD serial digital outputs and one OSD output, plus external genlock. The 7711UC-HD also provides seven reclocked HD or SD outputs with the +DA option. The converted output can be externally looped to the onboard distribution amplifier in order to provide the additional reclocked outputs.

Evertz 7711U-HD up/downconverter

With the software option, the 7711UC-HD can accept two groups of SMPTE 299M embedded audio on the input and re-embed them into the serial video output. The re-embedded audio is compliant to SMPTE 299M with delay adjust.

Miranda Technologies Kaleido-X

Kaleido-X combines multiroom, multi-image display plus HD and SD routing in a single, expandable chassis.

The Miranda Kaleido-X

Each chassis can display 96 HD, SD or analog inputs any number of times, in any size, across eight displays of any resolution and orientation, without blocking or grouping restrictions.

As a router, Kaleido-X offers switching of 96 unprocessed inputs to 48 HD and SD outputs for feeding monitors, test equipment and master control or production switchers. The router outputs can be controlled by on-screen menus, a remote panel, the iRouter application, and by master control auxiliary bus controls.

Grass Valley LDK 8000 HD Camera

The LDK 8000 camera offers 14-bit A/D sampling and 24-bit resolution digital signal processing at all of the current HD formats. Support for 1080/50p or 60p is included.

The new camera uses a new generation of the HD-DPM+ CCD imager that, together with advanced signal processing, delivers a sharper picture, but since the LDK 8000 shares similar image characteristics with the LDK 6000, it allows them to be used together on productions.

Grass Valley LDK 8000 HD Camera

Similarly, the LDK 8000 uses the same industry standard triax and fiber connectivity as today's cameras, allowing them to be used with current installed and portable cables.

The LDK 8000 development program includes a new high-bandwidth fiber system, which will adopt leading edge IT technology to deliver images over 10 gigabit Ethernet.

Canon HD Lenses

The KH16ex5.7 IRSE lens for portable HD cameras using 1/2-inch CCDs, and the KT20x5B KRS lens for portable HD cameras using 1/3-inch CCDs are new additions to the Canon HDgc line of hi-def professional lenses.

The KH16ex5.7 IRSE features a 16x zoom ratio and a wide angle of 5.7mm for a focal length of 5.7-92mm (11.4-184mm with built-in 2x extender).

The KT20x5B KRS HDgc lens features a 20x zoom ratio and a wide angle of 5mm for a focal length of 5–100mm and is 16:9 and 4:3 switchable. The KT20x5B KRS also includes the Canon Shuttle Shot feature.

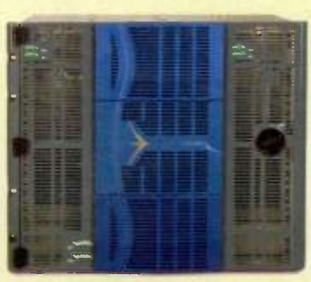
Canon's HDgc line now includes: the KH16ex5.7 IRSE, KH21ex5.7 IRSE, KH10ex3.6 IRSE, KH20x6.4 KRS, and KH19x6.7 KAS lenses for 1/2-inch cameras; the KJ20x8.5B KRS lens for 2/3-inch cameras; and the KT20x5B KRS lens for 1/3-inch cameras.

Canon KH16ex5.7 IRSE

Canon KT20x5B KRS

Harris Platinum MX

The Platinum MX line of routing switchers extends the Platinum line of large routers into medium-scale configurations.



Harris Platinum MX routing switcher

Designed for configurations up to 128x128 in a 9 RU frame, Platinum MX features the same advanced capabilities of the larger 256x256 and 512x512 Platinum routers.

Platinum MX supports a mix of any signal—video and audio, analog to HD—all in the same frame. It also features built-in processing, which allows signals of different types to be automatically converted from one format to another as needed.

Platinum MX provides flexible control capabilities, redundant power supplies, controllers and crosspoints.

IBC PRODUCTS, PAGE 14

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Tandberg Television
MPEG-4 AVC HD and SD Encoders

The EN8030 MPEG-4 AVC SD and EN8090 MPEG-4 AVC SD/HD ultracompression broadcast encoders, alongside the new MPEG-4 AVC HD and SD ultracompression encoding modules for the Plex range of multichannel encoders, comprise Tandberg Television's next-generation compression platform.

The new encoders enable HDTV services to be delivered at data rates below 6 Mbps, with similar improvements to SD services, and are designed to enable operators to deliver HD and SD multichannel and single channel services across cable, satellite, telco and terrestrial networks.

The Tanderg Television EN8030

Network Electronics
Flashlink Micro

Flashlink Micro is a comprehensive line of standalone products based on Network Electronics' N-Box enclosure.

Network Electronics Flashlink Micro

Functions include audio and video conversion, processing and synchronization; distribution amplifiers; fiber conversion of SDI and HD-SDI signals; datacom interfaces; and automatic changeover modules for redundancy.

Flashlink Micro comes with an inline brick power supply. Standard control features on all modules include onboard status LEDs and GPI interface, as well as RS-422 interface for GYDA.

Broadcast Pix
Slate 2100 Switcher

The Slate 2100 production switcher includes built-in graphics, a dual-channel clipstore, monitoring and fail-safe switching. It is the third product in the Broadcast Pix Slate switcher family, joining the Slate 100 and the Slate 1000 control panel based systems.

The 2100 features 8-12 live video inputs, a fourth keyer, tally and AES/EBU audio. The Slate 2100 includes an intelligent Break-out-Box, or iBob, which provides secure I/O connections with BNCs for all video, as well as XLRs for audio.

Broadcast Pix Slate 2100 switcher

Blackmagic Design
HDMI Editing Card

Blackmagic Design Intensity HDMI editing card

Intensity is an HDMI capture playback card that instantly switches between 1080i, 720p, NTSC and PAL video standards. Intensity plugs into a compatible PCI Express Windows or Mac OS X computers, and users can get uncompressed video via HDMI from cameras, decks and set-top boxes. Users can capture to disk arrays for high-speed uncompressed video, or when disk speed and space is tight, choose from a range of professional compressed codecs.

Intensity switches between HDTV 1080i/59.94, 1080i/50, 720p/59.94, 720p/60, 720p/50, NTSC and PAL video standards, and is fully compatible with Adobe Premiere Pro, Apple Final Cut Pro, Adobe After Effects, Adobe Photoshop and any DirectShow or QuickTime-based software application.

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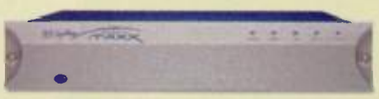


360 Systems Image Server Maxx

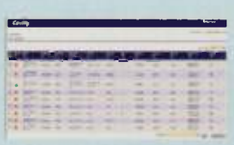
Image Server Maxx is a new high-performance video server providing an expanded set of advanced features that includes fast FTP transfers to other servers, NLEs and network-attached storage; embedded audio; remote workstation software for operation from PCs; as-run logs, Sony IMX file compatibility, and improved operation with MXF files.

Maxx provides speed and compatibility with file-based workflows, but also maintains traditional video standards with baseband composite video and SDI ports. New time-stamps create as-run logs for reconciliation of playlists. The server's internal RAID array provides Maxx with up to 170 hours of storage.

Tektronix
Cerify 3.0/CerifyLite

Cerify 3.0 and CerifyLite are the two newest additions to the Tektronix Cerify automated verification system for file-based digital video and audio content.

Cerify 3.0 now supports GXF and MXF. It also includes CeriTalk that enables integration via XML between Cerify and broadcast automation systems. Cerify 3.0 tests for encoding errors, format, bitrate and frame rate, as well as for closed captions, teletext and CableLabs VOD compliance.



Tektronix CerifyLite

Tektronix Cerify 3.0

Tektronix now offers CerifyLite for content producers who need to verify content but who do not need an enterprise networkable product.

CerifyLite software can be installed on a standard PC, runs on Windows XP and can test files on the local hard drive. It tests play time, signal levels, black frames, audio peak and minimum levels, audio loss and test tones.

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DIGITAL JOURNAL
Bill Hayes

Great Expectations

When dealing with vendors for any project, first impressions can make or break a deal

JOHNSTON, IOWA

Last May, IPTV endured what has to be one of the worst events that can ever happen at KHIN, our station that serves the southwestern portion of Iowa. A tower crew working on the tower had an accident that resulted in three workers falling from over 1,000 feet to their deaths.

As bad as this experience was, it was made even worse because the workers that lost their lives were local people that have worked with IPTV and the other stations in our area for years, so to many of us, they were also friends. To even further compound the situation, the crew was replacing parts on the high intensity strobe lighting system that had been installed a few years earlier and had been performing so poorly that IPTV was giving up on it and was in the process of seeking funding to replace the strobes with LEDs and painting the tower.

So I personally have at times struggled with the "if only" scenario where I have asked myself if only I'd given up earlier, would this accident not have happened. I know there is no value in doing this and I believe I have for the most part moved past this phase, but I still have my moments.

However, with human nature being what it is and the fact that at this time we have a crew modifying our tower in Iowa City, a crew beginning construction of a new tower in Fort Dodge, a crew constructing a new tower in Mason City, as well as performing tower analysis on all our translator tower for displacements, I am pretty darned nervous.

BREAKING THE SILENCE

Recently we've been generating RFPs for our Mason City and Fort Dodge tower sites and once that process starts state purchasing rules will prevent me from discussing the projects once they are out for bid to maintain fairness to all potential bidders.

Another reason that I have been silent is that I haven't really had a lot of good news to report. Some of the bad news is the result of miscues from the vendors we have been dealing with. I don't mean to pick on any particular vendors or companies but I think it is worthwhile sharing some of our experiences in the last few years.

As a professional you have to believe that the professionals who are responding to you know their business, have done their due diligence and are providing accurate cost estimates and time estimates.

One project I hope will be completed soon is our antenna change out in Iowa City. Station KIIN operates on analog Channel 12 with a CP for digital companion Channel 45 at 316 kW and 922.3 kW ERPs respectively. Although our long-range plan has been to return to Channel 12, we knew that our old GE helical antenna was not going to be used.

Our initial plan was to replace the helical with a traveling wave and side-mount a UHF slot. Before any real commitment could be made to antennas, Dielectric introduced its TUV dual-band antenna that would require less tower modification than adding two separate antennas and would not require us to essentially throw away a fairly new UHF antenna. Once a few of the TUV antennas were in the field and their performance was verified, I was comfortable specifying the unit. I think this was probably the point where things started to go awry.

We commissioned a tower study to analyze the structure to provide all of the details necessary to allow any tower company to respond to the RFP for the modifying the tower and installing the antenna system. We do these things as RFP because it allows us more flexibility to evaluate the response based not just on price but also on the technical qualification and specification of the respondents.

This process doesn't necessarily guarantee success however. In this case, the company that finished the lowest in the technical scores so undercut the pricing that they still were awarded the contract. At this writing they are two months behind schedule and if they can adhere to their latest revision to the schedule they will finish three months behind schedule. Now as with all tower projects there are potential delays associated with weather but a review of how this project has proceeded clearly indicates that much of the delay is the result of poor planning by the vendor.

DEVIL IN THE DETAILS

I also have to take some responsibility. In this particular situation, as the RFPs were being evaluated, we were quite surprised about the huge price differential between the other respondents and the winner. However, you have to believe that the professionals who are responding to you know their business, have done their due diligence and are providing accurate cost estimates and time estimates.

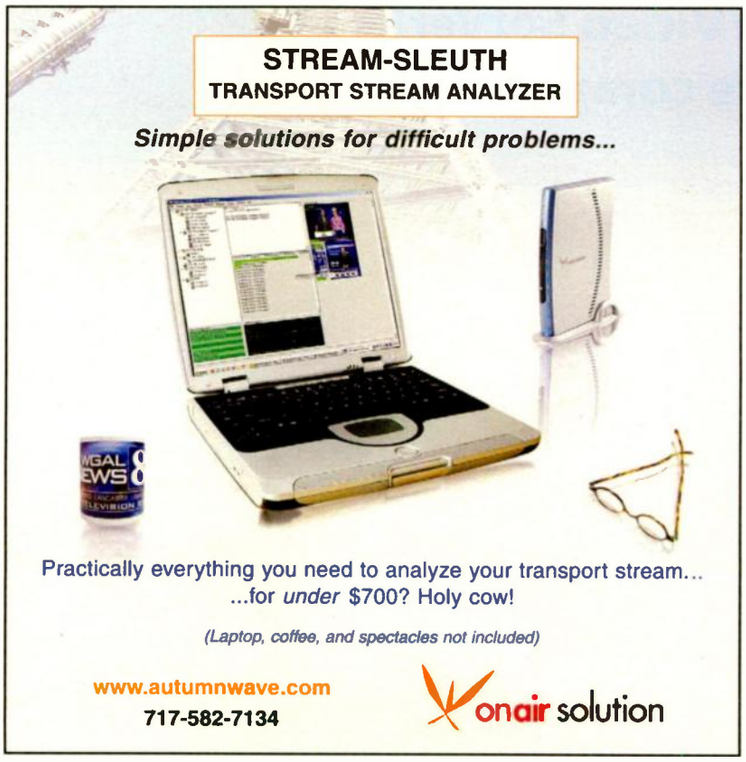
They are, after all, responding to an RFP in an area where they are the experts.

Given the number of occasions we have had to point out to the vendor places in their responses and in the contract where they have agreed to comply with the condition, when they have objected, I have wondered if they even read the requirements and contract before they signed. The next time we see such a huge disparity in pricing we'll need to have an independent expert evaluate the responses and provide a professional opinion as to the veracity of the response, especially when four or five of the respondents are reasonably close in their pricing and one is way off.

And it is not just the big projects that seem to suffer from what I can only describe vendor "head space;" and it is not just one vendor. Earlier this year we had a project to take down a 478-foot translator tower in Ottumwa and replace it with a new 500-foot tall tower. In Ottumwa we operated a translator on Channel 33 with an ERP of 13.1 kW.

The translator was displaced by a DTV assignment in Kirksville. We worked with Greg Best Consulting and were able to not only find an in-core replacement channel but were also able to increase our ERP to 100 kW, which allows us to supply service to an area of Iowa that was underserved. This was another instance where we issued an RFP and after reviewing the technical and financial proposals the contract was awarded. In this case the responses were fairly close in price but again it appears that the winning respondent failed to read and understand what they

EXPECTATIONS, PAGE 20



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The Cheetah DRS, PESA's newest multi-format audio router, uses patent pending distribution technology to route audio over Gigabit Ethernet with either a single CAT-5 or Fiber cable for multi-frame connectivity. This creates a Distributed Routing System (DRS) scalable from 64X64 (occupying 1RU frame in one location) up to 2048X2048 (in 36RU of space in one or many locations).

Cheetah DRS allows broadcasters to place input frames in equipment racks near satellite ingest from receivers, VTRs, or servers, while placing output frames closer to studio gear for distribution into audio consoles, or master control. This keeps cable runs extremely short, preserves signal quality and reduces cable costs, time of installation and maintenance. Additional inputs or outputs can be added by changing cards or increasing frames in any location. Format flexibility in the Cheetah DRS allows a mix of AES and Analog, Synchronous and Asynchronous audio, with support for Dolby-E.

Cheetah DRS

Winner of TV Technology's 2006 STAR Award

Winner of Television Broadcast's 2006 Top Innovation Award

Simple, Fast, Reliable

Cheetah DRS frames supports redundant power, redundant control, and quick access front-loadable, hot-swappable matrix cards.

Versatile Connectivity

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World Radio History

White Space Debate Heats Up IEEE Event

Opinions clash on using unlicensed devices in broadcast taboo channels

by James E. O'Neal

WASHINGTON

Things got lively at the 56th Annual IEEE Broadcast Symposium this year when the talk turned to white spaces.

On the second day of the annual three-day event, presentations dealt with operation of unlicensed devices in the television broadcast bands, with representation from both advocates and foes of the plan.

"Repeat after me, 'he is not the enemy,'" said Carl Stevenson from WK3C Wireless LLC, as he launched into his report on the progress of the IEEE 802.22 standards group.

The goal of the group is to establish operating standards for proposed wireless regional area networks—WRANs—aimed at delivering broadband communications to rural and remote urban areas of the country.

Stevenson told the audience of mostly broadcast engineers that his group is "picking on your bands" because the FCC has suggested that a lot of space for WRAN communications exists there, and because the propagation characteristics in the white spaces there are ideal for such networks.

Presenters at the panel on white spaces included (L to R) Carl Stevenson, WK3C Wireless, LLC; Victor Tawil, Association for Maximum Service Television; Alan Waltho, Intel Corp., and Khalil Salehian, Communications Research Centre.

"Using higher frequencies would require six to eight times as many base stations for equivalent coverage," Stevenson said. "Nominal base station coverage radius would be 30 to 40 kilometers."

"It's pretty clear from both the FCC and Capitol Hill that some other use of these channels will be permitted," he said, adding that broadcasters and broadcaster groups including MSTV, NAB, Fox and CBS have been actively participating in the work of 802.22, "making sure that we get it right."

Countering remarks by Stevenson that cognitive radio device technology would enable television signals and unlicensed devices to coexist, Dr. Oded Bendov, a consulting engineer, presented information indicating that harm could result from such devices.

"Interference to DTV by unlicensed devices will be insidious because consumers will need a spectrum analyzer to identify it," Bendov said. "At least two unused TV channels must separate unlicensed devices from licensed TV services. Even a single device, fixed or portable, in compliance with FCC rules, will cause unacceptable interference."

Bendov recommended packing all DTV channels into a contiguous spectrum after the 2009 digital broadcasting transition.

Khalil Salehian, representing the Communications Research Centre in Ontario, Canada, said that two basic problems exist with allowing unlicensed devices to operate in TV channel spectrum—desensitization of DTV receivers and adjacent channel interference due to in-band emissions.

Another proponent of allowing consumer devices to operate in white spaces was Alan Waltho from Intel Corp. He said that cognitive radio technology would allow low-power devices to operate in white spaces, provided that rules are followed.

Waltho said that with proper technologies in place, white space for the operation of unlicensed devices exists even today.

"Even in areas like New York, Los Angeles and Chicago, there are some channels that are available today with potentially more [spectrum] after the transition," Waltho said. "There are some five channels available today in New York."

Waltho did express concern that the operation of wireless microphones could result in interference as they operate with a power level of a few milliwatts and bandwidths of 200 KHz. He said that "they might be difficult to detect," but felt that there was a solution.

Victor Tawil, representing the Association for Maximum Service Television (MSTV), reminded the audience that the proposal to use television white space was the first attempt to allow Part 15 devices in that region of the spectrum, and said that limits in Part 15.209 of the commission's rules are not sufficient to protect TV operations. Tawil said that he thinks the FCC numbers for out-of-band emissions are incorrect.

"Tests show that 100 milliwatt unlicensed devices can cause interference to adjacent channel DTVs up to 780 meters away," Tawil said.

The subsequent question-and-answer session elicited a number of remarks from the floor.

'OUT OF YOUR MINDS'

"This is a disaster. You guys are out of your minds," said Mark Fehlig, director of engineering for Georgia Public Television.

Fehlig said that he advocated repacking the television broadcast channels, and doing it like the BAS transition; "have someone who will benefit come in and pay the freight."

Bill Hayes, director of engineering at Iowa Public Television, also questioned the white space proposal, asking if someone couldn't hack unlicensed devices to defeat any sort of cognitive power limit control.

Bill Meintel, with Meintel, Sgrignoli & Wallace, asked about how much spectrum would be needed to support unlicensed communication devices.

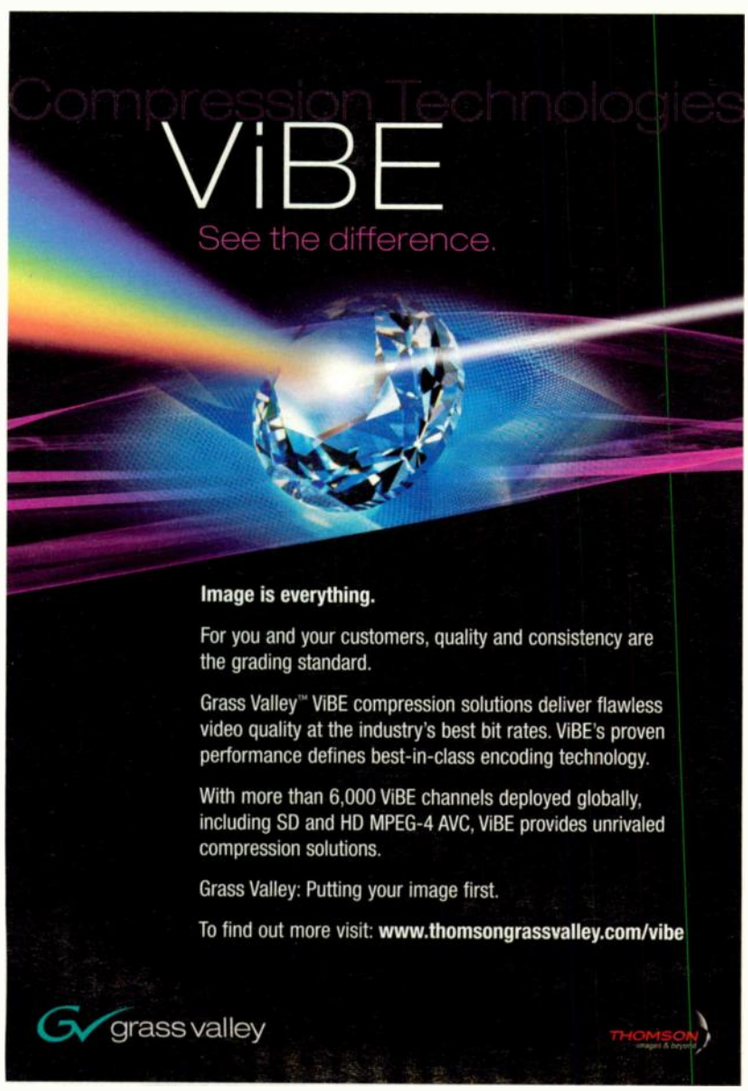
Intel's Waltho responded that if HD transmissions were contemplated, then probably six to eight MHz would be required to accommodate such a data rate.

IPTV AND MOBILE VIDEO

Other topics covered included IPTV, mobile video, digital television standards and systems engineering. One luncheon program featured a report by David Young, Verizon vice president, on the progress of his company's FiOS fiber-optic high-speed data and television delivery service.

The final day included presentations on distributed TV transmission systems, an awards luncheon and several papers dealing with the latest engineering technologies in radio broadcasting.

The three-day event drew 167 people from 11 countries. ■



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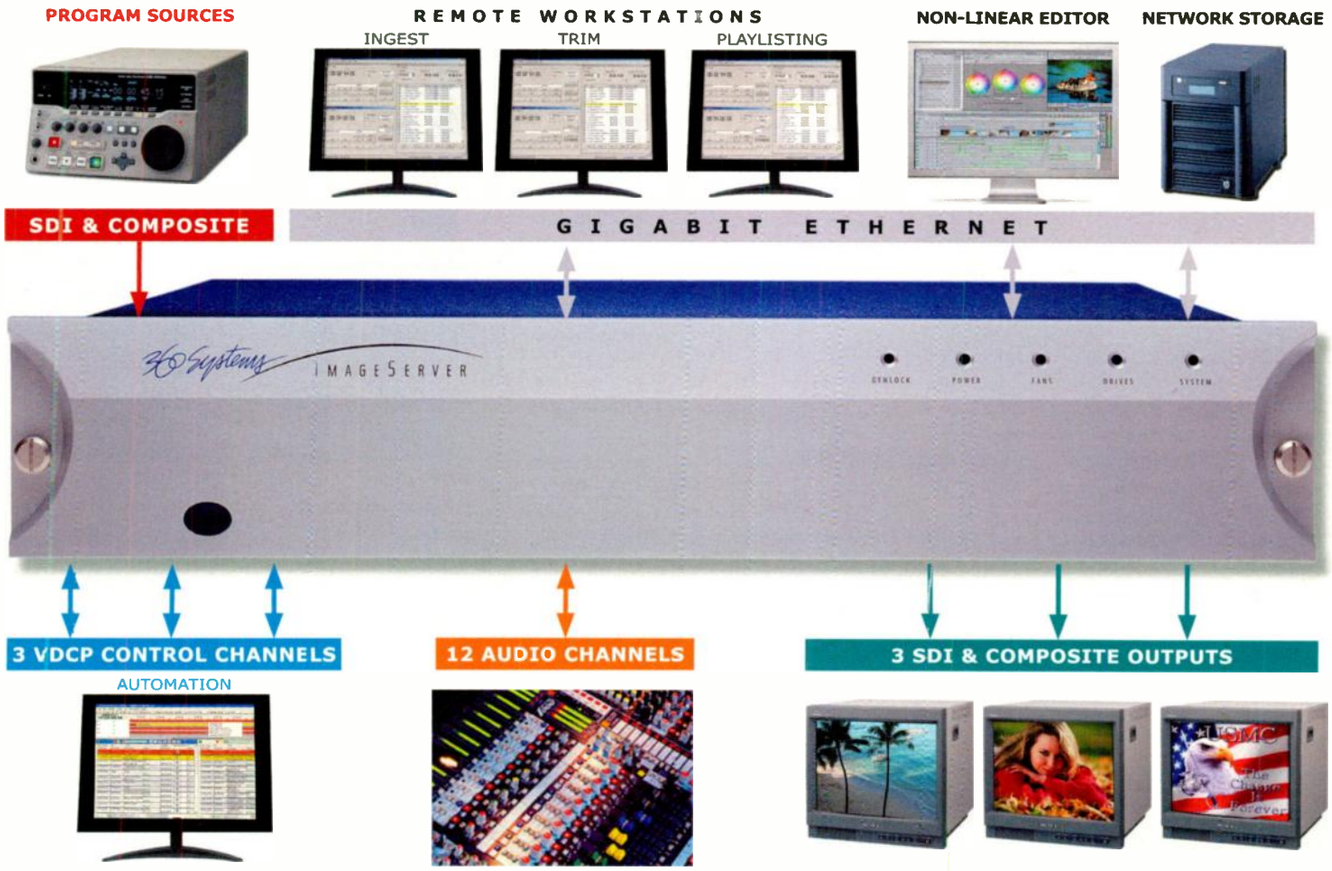

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Fiber Optics, The Long and the Short

Live hi-def coverage drives demand

by Mary C. Gruszka

NEW YORK

For HD to go to any great length, fiber is a necessity. "Fiber is no longer an option. It is really the only way to cover the distances involved," said Joe Commare, vice president of marketing and international sales for Telecast Fiber in Worcester, Mass., who commented on the company's recent work covering golf's Ryder Cup in Ireland. For the Ryder Cup, "fiber gives broadcasters the ability to go all the way back to the first hole."

That's important for this golf match between Europe and the USA because it has a different format than regular tournament play.

"In regular golf formats, the end of the day is always at the 18th hole" Commare explained. "In match play," the play format of the Ryder Cup, "the match is over when one player has won more holes than there are holes remaining."

So it could be possible, although rare, for a match to end after just the tenth hole.

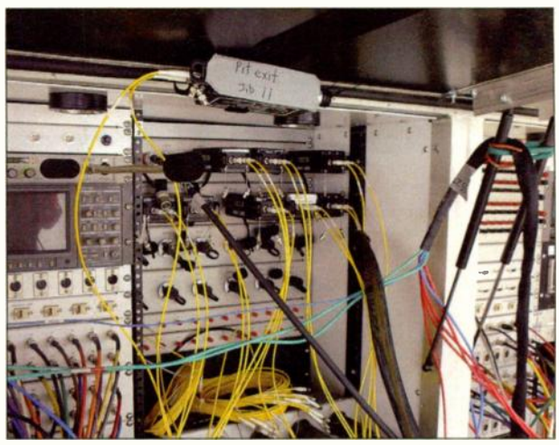
RYDER SHEDS

At this year's Ryder Cup, entities like CTV, Telegenic, Observe (for RTE), TV3 (Ireland), Digital Space, Tournament TV, BBC, and Total RF (U.S. rental company for NBC) used a variety of Telecast Fiber products for covering the three day competition. Included were Cobra and SHED/HDX for cameras, Python II and Diamondback II for trunking digital and analog video and Adder for audio.

"SHEDs are SMPTE Hybrid Elimination Devices, and are small adapters for HD cameras that allow operation on a single mode fiber," Commare said. "The camera can be locally powered or powered with the HDX unit connected to a hybrid tail cable. Several cameras with SHED units can feed into multi-core one fiber cable."

In places along the Ryder Cup course, a combination of fiber and RF was used, according to Commare.

"The K Club in Ireland [where the game was held] is not a traditional links course," he said. "It's more a U.S. resort-style course with rolling hills and many trees. So they had to bring in multiple cranes set up as microwave receive sites for the cameras, as well as audio from on-course roving commentators. The outputs of the receivers then fed into fiber to the trucks."



NEP plugged its Telecast SHED units plugged directly into the access panel of its production truck to cover the Daytona 500.

In typical golf production, fiber is just temporarily laid along the fairway, Commare said. But the Augusta National Golf Club in Augusta, Ga. laid permanent fiber underground through conduit. The fiber cable emerges through a PVC pipe sticking

LONG, PAGE 21

Expectations

CONTINUED FROM PAGE 16

were committing to. Some of the stuff is simple and not necessarily earth shattering but is indicative of a loose and nebulous trend in doing business.

As an example, in the initial RFP documents we clearly state that the vendor, prior to any payments or beginning any construction, must supply to IPTV a schedule in the Microsoft Project format. We don't offer this as an option because we import these schedules into a master project schedule and with so many complex projects going on and a limited number of personnel, this helps us ensure that we have people we can dedicate to the projects.

This doesn't seem to be an unreasonable request so we were somewhat surprised when the required date for supplying us with the schedule came and went and no schedule was sent, despite several phone calls and e-mails. Finally an e-mail arrived with the schedule. Unfortunately it lacked enough detail to allow the vendor, let alone us, to schedule any resources. In addition, the schedule was done as a spreadsheet since the vendor didn't have Microsoft Project, yet a quick review of the RFP requirements and their responses clearly indicated that they would comply with this item.

This was just one of many small items that indicated that there was no real comprehensive plan for the project. My team made several trips to the site, only to find that the crew wasn't coming and since this was the first time we had done business with this company, clearly they felt no need or desire to make any kind of good first impression.

The next time they respond to an RFP from IPTV, they will be scored low in a number of key areas that will in all likelihood result in them not receiving the award. Is there that much business out there that meeting the requirements and expectations of the customer is no longer considered important?

These two projects demonstrate a failure on the part of the companies that have responded to our RFPs to understand what they are responding to. Now the vendor has a contractual commitment to meet the expectations and the costs of miscues are absorbed by the vendor. Each mistake reduces the profitability of the project for the vendor and often results in pressure being applied in the field to work faster, which can lead to mistakes at the site. Those mistakes can not only be expensive but also fatal, and as much as I love this business, there is nothing we do that is worth the cost of a life. ■

Bill Hayes is the director of engineering for Iowa Public Television.

World Radio History

Long

CONTINUED FROM PAGE 20

up from the ground at all the greens and is protected from the elements with a common plastic food container with a hinged lid.

The cameraperson wears a SHED unit that's connected to the battery-powered camera and at each green plugs a short fiber cable into the fiber connection in the ground allowing for the first time HD hole-to-hole coverage.

RACING RUNS

Other venues also lend themselves to fiber because of distances involved.

Take racetracks. Durrell Sports, a Nashville, Tenn.-based audio production company has used the FiberPlex LightViper VIS-1832 fiber optic audio snake system for the past two years to cover the Iroquois Steeplechase Races in Nashville.

The FiberPlex LightViper

"They had long runs of around 1,200 feet, through drainage pipes, and even running underneath the racing track to get the audio back to the broadcast truck," said Buddy Oliver, director of pro audio for FiberPlex Inc., a developer of fiber-optics technology in Annapolis Junction, Md. "The truck was positioned on the track's infield and needed to receive and send many wireless and hard-wired audio signals back and forth between the venue's main audio mix position in a permanent tower in the middle of grandstand seating and the truck. Other feeds included various announce booth locations that were situated all along the track."

Besides solving the distance problem, the fiber-optic snake also isolated the different interconnected audio system from ground loop problems, Oliver said.

The FiberPlex LightViper VIS-1832 consists of a 32x8 audio input stage box and a 1RU Model VIM-1832 located at the main house audio mixing position. These units are interconnected with lightweight tactical grade military spec fiber-optic cable. Options for splitting the signals (up to three splits) are available on the stage box, according to Oliver.

"Making fiber snake boxes as easy-to-use as copper is our goal," Oliver said. "We try to be transparent. There's no computer needed. It's just plug and play."

Hollywood Park Race Track in Inglewood, Calif. upgraded its older copper-wired video transmission system with fiber optic systems from Opticomm, a San Diego-based developer of fiber optic and optical communications systems for video, audio and data. The park operates a centralized television production control room that captures video from 15 cameras strategically placed throughout the facilities.

The fiber-optic network incorporates Opitcomm DVX-5000 and FMV-564 systems, according to Allon Caidar, vice president of business development for Opticomm. Included are five uncompressed SDI systems that send multiple video feeds from the production room to a super-large 21-by-38-foot screen located on the track's infield and to 2,800 sets throughout the facility via closed circuit TV.

The video feeds are sent to a remote satellite transmission facility

LONG, PAGE 24

"Making fiber snake boxes as easy-to-use as copper is our goal... We try to be transparent. There's no computer needed. It's just plug and play."

—Buddy Oliver, FiberPlex

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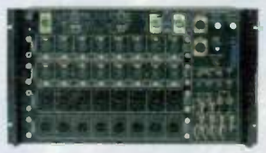

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Connecting Fiber Optics

Advanced engineering techniques make fiber-optic connectors user friendly

by James E. O'Neal

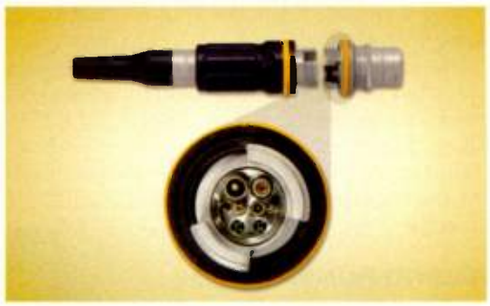
FALLS CHURCH, VA.

For broadcasters, the early 1980s marked the first hands-on experiences with fiber-optic technology for television. Fiber-optic video systems were welcomed by the industry and applications were many and varied. Grass Valley had begun marketing Wavelink equipment and with this and similar gear from other vendors, the broadcast industry buckled down to putting fiber to work.

One of these early uses, for example, involved moving analog audio and video signals back and forth between a microwave hub on top of a 10-story office building and the associated basement control and monitoring point.

The building had no A/V cable risers or other direct paths, so cabling had to follow a zig-zag route and wound up about 1,000 feet on the side. There was also another factor in the equation—the penthouse location of a rather large utility company substation, tied to the power company with 14.4 kV feeders. These feeders entered the building at basement level and ran the entire height of the structure.

The Canare FC hybrid fiber/copper connector



The Stratos Hx1080

To deliver quality analog video, these conditions pushed coaxial cable technology pretty hard and fiber was a natural choice.

However there was only one small hitch.

After the equipment was delivered and the fiber bundles pulled, the installation people had a small question.

"How do we install the connectors?"

ORDEAL BY EPOXY & WATER

This was first-generation fiber technology, and even after numerous calls to the connector vendor's help desk, the installation people, skilled as they were in "connectorizing" copper cables, were still having problems.

Finally an on-site representative was dispatched for training. The hands-on training paid off and when the day was over, the crew could compete with the best of them.

The transition from installing connectors on copper lines to connectorizing fiber was not easy; it involved some 15 to 20 steps that had to be performed correctly. These included outer jacket stripping; replacing fiber strand rigid buffer tubes with flexible tubing; cleaving fiber strands with a special diamond-tipped tool; removing plastic cladding from fiber strands with acetone; threading-on of assorted connector parts; mixing two-part epoxy and cement strands to connector barrels; cleaning spilled epoxy from hands, work surfaces and cloth-

ing; waiting for epoxy to cure; trimming the cemented fiber strand; fitting polishing dies; polishing fiber ends under water with three grades of abrasive papers; inspecting all ends with a special microscope; crimping the ferrule; and hoping it was going to work.

If you were really good, you could do all of the above in maybe an hour or so. A special and very expensive polishing machine could be purchased, which could cut a few minutes from the ordeal.

A fairly large toolset was involved and it was easy to spend quite a tidy sum on those specialized tools.

Fortunately, much of that is now behind us, as fiber engineering people have been hard at work, making vast improvements in fiber connectorization technology.

Thanks to some superb engineering and design work from the likes of ADC, Belden, Canare, Fischer, Lemo, Stratos and others, the fiber installation technician doesn't have to be a master of many trades or spend an entire shift or longer in connectorizing a moderately sized fiber bundle.

"We can embed fiber to the circuit board level and terminate the ends in any standard connector. It's all glass—no copper."

—Dave Mullin, Stratos International

NEW BREED OF CONNECTOR

The evolutionary process has produced a new breed of connector making life easier for everyone. A good example is the Optimax connector from Belden. According to Bob Sebesto, business development manager for fiber optic products at Belden, the Optimax was designed to minimize the amount of time to connectorize fiber-optic cables.

FIBER, PAGE 23

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Fiber

CONTINUED FROM PAGE 22

"It's really user friendly and can be installed in less than two minutes versus 15 to 20 for other connectors," Sebesto said. "There's no expoxy or polishing. It's available in SC, ST and LC configurations and is very easy to learn to use."

Choices in this new breed of connectors are quite varied, and in addition to cutting installation time, the technician's fiber-optic installation toolset has been reduced in size and bulk also.

Fischer Connectors in Alpharetta, Ga., has also been designing user-friendly fiber-optic fittings.

Dick Bickford, national sales manager for Fischer, is especially proud of the company's 1053TV HDTV connector.

Lemo 3K.93C SMPTE connector

"Our connector can be fixed in the field, as it uses a pre-polished contact from Corning," he said. "The SMPTE-standard connector has puck and polish contacts that require epoxy. The problem is that if you ever have a failure, you have to chop off the whole connector, and you have to have a very clean environment to put things together. You don't have to do this with ours."

The Fischer connector requires no epoxy for assembly and does not need a polishing operation, which results in less time spent in connectorizing and lowered labor costs.

> **"People are tending to move toward smaller profile connectors."**
>
> **—Jeff Peters, ADC**

Jeff Peters is program manager for broadcast and cable MSO products at ADC, a Minneapolis-based company that has been involved in fiber-optic technology for a number of years and has played a role in the connector evolution. Peters observed that, as with most everything, smaller is better.

"People are tending to move toward smaller profile connectors," he said. "The LX.5 connector is about half the size of a standard SC connector."

This shrinkage allows the density of fiber connections in a given area to be doubled.

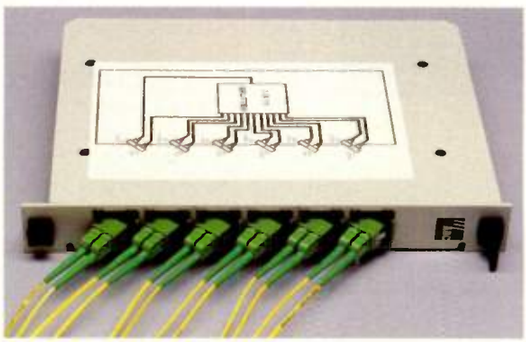
Peters also points out the safety features of the LX.5.

"It has a cover to prevent damage to the end face, dust contamination and possible laser blinding to people," he said, noting that the high-level in-frared laser emissions can't be seen, but have the potential to do serious damage to the eye.

"The cover protects people from hurting themselves and we invented it. Several others are making it now," he said.

ADC provides a complete line of fiber installation hardware and accessories, including connectors that can be installed in less than three minutes.

Some additional innovations in the world of fiber connectorization have come from Stratos International Inc. in Chicago. The company has been involved in fiber-optic connector technology for 20 years and produces a line of connectors designed for harsh environments based on "expanded beam" technology.



The ADC LX.5 connector

There is no physical contact between mating surfaces, making the connector less susceptible to vibration and dust. Instead of directly butt-joining fiber strands, the Stratos connector uses a spherical lens at the end of each strand, expanding the area of the light beam up to 900 times from what it was in the fiber. The expanded beam is difficult to misalign and the lenses can be easily cleaned.

Stratos is also involved in fiber embedding technology.

"Optical flex circuits are something that few people can do," said Dave Mullin, director of project management for passive products at Stratos. "We can embed fiber to the circuit board level and terminate the ends in any standard connector. It's all glass—no copper—and has been available for five years."

FIBER USE GROWING

While the ability to convey broadband signals over long distances and freedom from EMI worries have always been considerations for installing fiber, the proliferation of high and higher data speeds and ever-increasing bandwidth requirements are driving more and more users to fiber.

This is reflected in the direction old-line copper cable companies are heading. Canare has been around for quite some time, but only recently got into the glass business.

"We first introduced our FC series of connectors at NAB2005 and business is growing," said Beth White, marketing specialist at Canare in San Fernando, Calif. "We're making an effort to grow our fiber-optic line. It's something of a priority with us and we're pushing ahead."

Targeting camera applications, the Canare FC connector is hybrid in nature (two fibers, two copper control lines and two power conductors). The connector is designed with a detachable alignment sleeve and insulator that facilitate easy and efficient cleaning. ■

World Radio History

Long

CONTINUED FROM PAGE 21

that broadcasts to wagering sites in California and to off-track betting outlets worldwide. The TV facility also handles the distribution for imported horse racing feeds that are displayed around the track.

While the long cable runs first brought fiber from the production trucks into these various venues, shorter fiber runs for interconnecting between production trucks are starting to catch hold. Here weight is the important issue, although system ground isolation factors in here as well.

Stratos VMCR-16

"That weight translates to another camera or video player," said Mark Benton, director of product management video for Stratos International in Chicago. By reducing the weight of the interconnects, the OB truck companies "can add more revenue-generating equipment and provide additional services to the customer," added Scott Nardelli, Bexel Broadcast Services, the Stratos U.S. distributor.

Large-scale productions typically require more than one mobile unit to house such operating areas as production control, graphics, camera control, video playout, and transmission.

NEP Super-shooters used Stratos miniature video me-dia converters (M-VMC) and video media converter racks (VMCR) for interconnecting its trucks for its coverage of the PGA Pro Golf Tour. NEP also provided pool feeds via fiber.

M-VMC provides media conversion from BNC-equipped 75-ohm coax equipment to a fiber link for between 30 and 40 video feeds between the trucks. The VMCR kits provide 1-RU housing, power, and diagnostics for up to 16 channels of BNC-to-fiber conversion.

NEP inserts one signal per fiber, Benton said. "But we also have the capability of multiplexing these signals —up to 16 full-bandwidth HD down one single mode fiber."

The VMCRs provide a housing platform for managing the power, monitoring and cabling on both coax and fiber side of high-density broadcast video transport networks, Benton said. "The unit features a built-in digital diagnostic monitoring interface for identification and monitoring of the VMC on the rack front panel. These include LED indicators that provide an instant read on VMC installation and function status inside each unit port as well as power supply and temperature status LEDs."

"We take light out of the glass fiber and put it in a lens to make a bigger beam. This shines to the other lens [in the mating connector] which focuses it down to the fiber."

—Peter Munday, Stratos International

SHINING THE LIGHT

Stratos employs expanded beam technology in its products. Peter Munday, video product manager for Stratos explained the process.

"We take light out of the glass fiber and put it in a lens to make a bigger beam. This shines to the other lens [in the mating connector] which focuses it down to the fiber. The EB physical design of the connector is a very flat surface where the lenses are mated and it's very easy to clean. The lenses are recessed so there is no physical contact and no damage or wear to the optical path over repeated rigging and de-rigging. And with the larger light area, a speck of dust will not cause total failure."

But there is a tradeoff. The EB connectors have higher insertion loss than standard physical contact connectors. "But that insertion loss will remain constant over the life of the connector," Munday said.

Sports doesn't hold a monopoly on fiber deployment. Major news events like political conventions also have their own distance and cabling issues.

For the Democratic and Republican National Conventions in 2004, CBS News used Multidyne DVM-2700 two-channel video, eight-channel audio fiber optic multiplexers to connect its skybox and other venue sites to the production trucks.

A total of 26 video and 144 audio channels were multiplexed using CWDM technology, according to Jim Jachetta, senior vice president, sales and marketing for MultiDyne Video & Fiber Optic Systems in Locust Valley, NY.

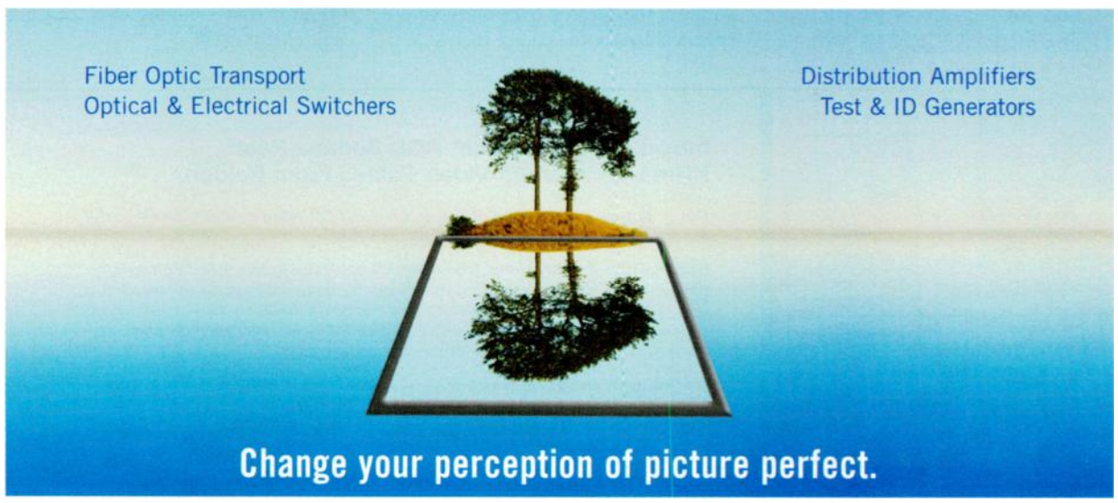
The video and audio transport payload was split over multiple fibers and automatic optical switching provided redundancy in case there was a cut in the fiber.

In addition to the audio and video feeds, the Multidyne HEMC-400 Series was used for Ethernet and LAN fiber connections, and the CTOT-800 series of broadband CATV fiber transport was used for an internal cable TV network.

CBS Newspath used several Multidyne DVM-2000 12-bit video/24-bit audio fiber-optic multiplexing systems for video, audio, intercom and IFB fiber connections from camera positions on the convention floor to the skybox.

Fiber connections between the skybox and the outside production tent were made with DVM-2700, DAM-2200 and DTM-2200 systems for a total throughput of 24 video, 96 audio and 16 phone channels. The IF-209 IF fiber transport and the DTV130 SDI fiber transport were used for sending the IF and DVB/ASI program signal to the satellite uplink.

Fox News also used Multidyne DVM-2000 systems at these same events. ■



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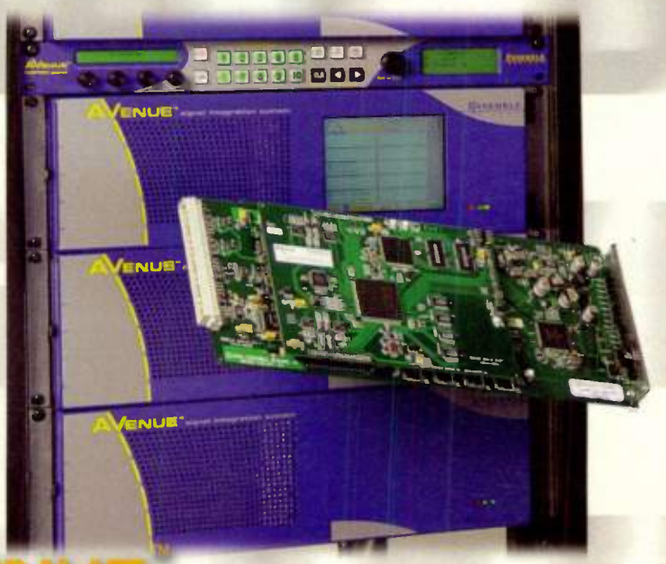

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World Radio History

Editing for Sports: HD All the Way

Speed, versatility drive demand

by Jay Ankeney

LOS ANGELES

For years, live HD sports broadcasts have drawn countless fans who appreciate high definition and has been a driving factor behind sales of HDTV sets. This hasn't always been true for the edited portions of sports shows, however. But now network video editors are using a variety of NLEs to cut their packages in HD.

"For CBS's 'NFL Today' show we have been using three standard definition Avid Media Composer Adrenaline systems fed by 14 TB of footage from an Avid Unity shared storage system," said Arthur Harris, vice president of broadcast operations at CBS. "But once the show premiered in high definition on Sept. 10, we realized the set's monitors needed to display HD images. Up to now we have been using an outside New York production house, Vidiots, to cut our packages in high definition but to save costs we are soon going to upgrade one of the Avids to HD capabilities."

Harris said CBS Sports' choice of Avid edit systems was based on their editors' familiarity with it.

"We have more qualified editors on the Avid than on other systems," he said. "and since they can all access the Unity's storage it reduces the time it takes to access historical footage as well as ingesting material from the different games over a weekend."

David Schleifer, vice president of broadcast and workgroups at Avid Technology agrees that time is of the essence when editing live sports in HD.

"When it comes to the need for a quick turnaround on a sports story, we have built many features into Avid edit systems for just that purpose," Schleifer said. "For example, our edit systems had a huge presence in NBC's HD broadcast of the winter Olympics in Torino. In addition, once our new Interplay nonlinear workflow engine gets its first installation this month, the collaboration between all levels of post production will be greatly enhanced."

Sports editor Ryan Leimbach cut live broadcast bumpers during Super Bowl XL, using the AJA KONA 3 card on a Mac G5 running Final Cut Pro.

Another NBC sports show, NASCAR racing, seen on NBC and TNT from July through November, is also featuring HD packages cut on Avid systems. Jeffrey Cline, senior editor for NBC/TNT NASCAR edits all the feature pieces for the prerace show on an Avid Media Composer Adrenaline HD along with insert segments introducing the drivers during the race itself. One feature he finds most useful is Avid's DNxHD codec.

"We stay HD all the way, but compress the signal of our edited packages down to 140 Mbps with DNxHD to save storage," he said. "The picture quality is excellent and it lets us transmit the elements we cut over standard definition infrastructure."

For the on-location editing needs of NBC's Sunday Night Football, however, the show's producer, Fred Gaudelli, chose Apple's Final Cut Pro software-based editing system.

"It gives us a high-end edit system in our remote trucks with high-end effects and beautiful graphics that can turn elements around in a very short time," he said. "Back in the studio during the week we may use Avids, but when editing our high-definition pieces at the remote location we are exclusively using Final Cut Pro."

The Fox network has also been using Apple's editing software since they broadcast the major league baseball playoffs in 2003.

"When it comes to the need for a quick turnaround on a sports story, we have built many features into Avid edit systems for just that purpose."
—David Schleifer, Avid

"Final Cut Pro gives you a tool that serves multiple functions," said Jerry Steinberg, vice president field operations for Fox Sports. "We use it as our editing package on all our HD coverage of racing, baseball and the NFL. Three years ago one of our features producer, Chris Long, who is now the vice president of production for the Speed Channel, convinced us to try Final Cut Pro and it has gotten much more sophisticated for high-definition editing over the years."

Final Cut Pro is the editing component of Apple's Final Cut Studio, and the whole software suite was used extensively by Japan's NHK and Mexico's TV Azteca in their coverage of the Winter Olympics in Torino, according to Paul Saccone, senior manager pro applications marketing at Apple.

"We have built Final Cut Studio on open standards with an eye toward extensibility," he said.

That allows Apple to be supported by third-party vendor products such AJA Video boards. That, and the use of XML, allows data from other systems to get in and out of Final Cut Pro, Saccone said.

"In addition, a third-party software from Gallery called Picture Ready allows incoming video feeds to be captured to Apple's own Xserve RAID storage system over an Xsan network and the editor can start cutting with those HD files while the feeds are still coming in," he said. "This can be crucial for editing during live events."

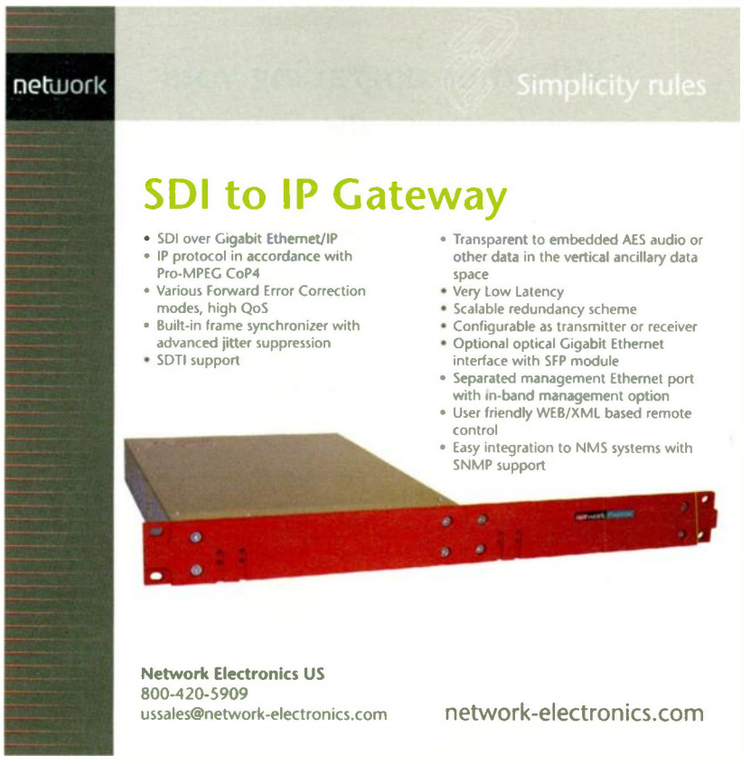
TIME COMPRESSOR

A third contender, Sony's Vegas editing software, has also been making inroads into sports editing. Freelance editor Eric Falkner edited pregame teases and full-feature packages for Fox Sports Net last spring during the NHL hockey playoffs on FSN South using a Hewlett Packard ZD8000 series Pentium 4 laptop. Falkner found the Excalibur Multicam Wizard plug-in created by Edward Troxel and Gary Kleine let him cut editing time significantly.

"I would set up my incoming feeds as iso camera sources and use the hot keys on my laptop to cut between them," he said. "Working in a hotel room, we were able to knock out in about 14 hours the same amount of material that would have taken three days on other systems back in the studio. The stock effects in Vegas were key for that. Using nested timelines, I could rough cut a sequence on one timeline and then add the effects when polishing it on another timeline."

Falkner was using Vegas 6, but the newly released Vegas 7 gives him even more options.

"Vegas software is an excellent platform for sports editors," said Dave Chaimson, vice president of marketing, Sony Media Software. "With the new Version 7, the ability of Vegas to work natively with various types of footage, either DV, HDV or XDCAM HD, on the same timeline within the same project makes it one of the most flexible workflows for high-definition sports editing available." ■



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World Radio History

WIPO

CONTINUED FROM PAGE 1

changes in broadcast technology that make piracy a greater problem then ever before.

Treaty opponents point out that the U.S. is not a signatory to the Rome Convention, so its terms should not apply to U.S. broadcasters. Further, opponents claim, the proposed rules would unfairly override the rights of TV content creators without actually stopping signal theft. They charge that the treaty artificially creates a new layer of copyright protection to justify creating a new source of revenue for broadcasters.

The Oct. 2 decision was a setback for treaty backers because the WIPO General Assembly rejected a proposal by the SCCR chairman for "silent approval" of a plan to convene a 2007 Diplomatic Conference, despite stiff opposition to the treaty, including demands by the heavily lobbied U.S. delegation for an easy escape clause.

Without a formal Diplomatic Conference to finalize the treaty, it cannot be offered for ratification by WIPO member nations, which means it would not be enacted.

An additional setback for proponents was that Webcasting and simulcasting were dropped from the treaty, which would have placed Internet transmission under the same rules as over-the-air transmission. Cablecasters are still included in the proposed treaty, however.

"We need to be able to serve our audiences without fear of our signals being stolen."

—Jane Mago, NAB

The six-point plan approved by the WIPO General Assembly declares, "The scope of the treaty will be confined to the protection of broadcasting and cablecasting organizations in the traditional sense."

At the root of the debate is the Revised Draft Basic Proposal, called "Document SCCR/15/2," submitted to the WIPO General Assembly by the standing copyright committee. The January and June 2007 meeting of the SCCR are tasked in the Oct. 2 agreement to base all discussions on this existing document.

"It is understood that the sessions of the SCCR should aim to agree and finalize, on a signal-based approach, the objectives, specific scope and object of protection with a view to submitting to the Diplomatic Conference a revised basic proposal, which will amend the agreed relevant parts of the Revised Draft Basic Proposal," reads point 4, adding, "The Diplomatic Conference will be convened if such agreement is achieved. If no such agreement is achieved, all further discussions will be based on Document SCCR/15/2."

"While proponents of the Broadcast Treaty hail this as a victory," said Robin Gross, executive director of IP Justice, "the General Assembly's refusal to rubber-stamp the decision of the SCCR Chairman is the real victory at WIPO. The two-letter word 'if' in the decision to convene a Diplomatic Conference makes an enormous difference in the outcome. A Diplomatic Conference is now contingent upon member States reaching consensus where there are currently great differences, such as the inclusion of anti-circumvention measures in the treaty and outlawing Internet retransmissions of programs."

Gross continued, "Another important achievement is the General Assembly's decision to narrow the scope of the treaty to a 'signal' based approach, something that a majority of member states and NGOs had called for in the SCCR meetings. The SCCR Chair's draft proposal instead would create eight brand new intellectual property rights for broadcast companies. Member States will now have to define key terms, including the term 'signal' in the next draft."

NO PROTECTION

Broadcasters have an urgent stake in seeing the draft proposal approved next year, said Jane Mago, senior vice president and general counsel for the National Association of Broadcasters (NAB). "Broadcast signals are being used in an unauthorized way, such as retransmitting a sports signal from Florida across the Caribbean," she said.

Such unauthorized retransmissions violate the copyright of the programmer, so why not leave enforcement to the content copyright holder? Mago replies that programmers can take action against violators, "but that does not provide any protection for the broadcaster who loses advertising revenues" that should have been paid if the total audience is larger. "Advertising is how we make our money," she said. "This is how we conduct our business."

Mago stressed that the treaty would not cover recorded broadcasts shared among friends, as some critics have claimed.

"Our concern is unauthorized use. If USA Today provides newspapers to a hotel for free distribution to hotel guests, but the hotel sets up a stand in the lobby to sell those same papers for 25 cents, when the papers are sold on the street for 50 cents, that's obviously an unauthorized use."

Asked for an example of such unauthorized use in the broadcast space, Mago cited the case iCraveTV.com, which redistributed live U.S. broadcasts from its Canadian Web site. The service was shut down in February 2000 after only 62 days of operation through a copyright lawsuit filed by the Motion Picture Association of America.

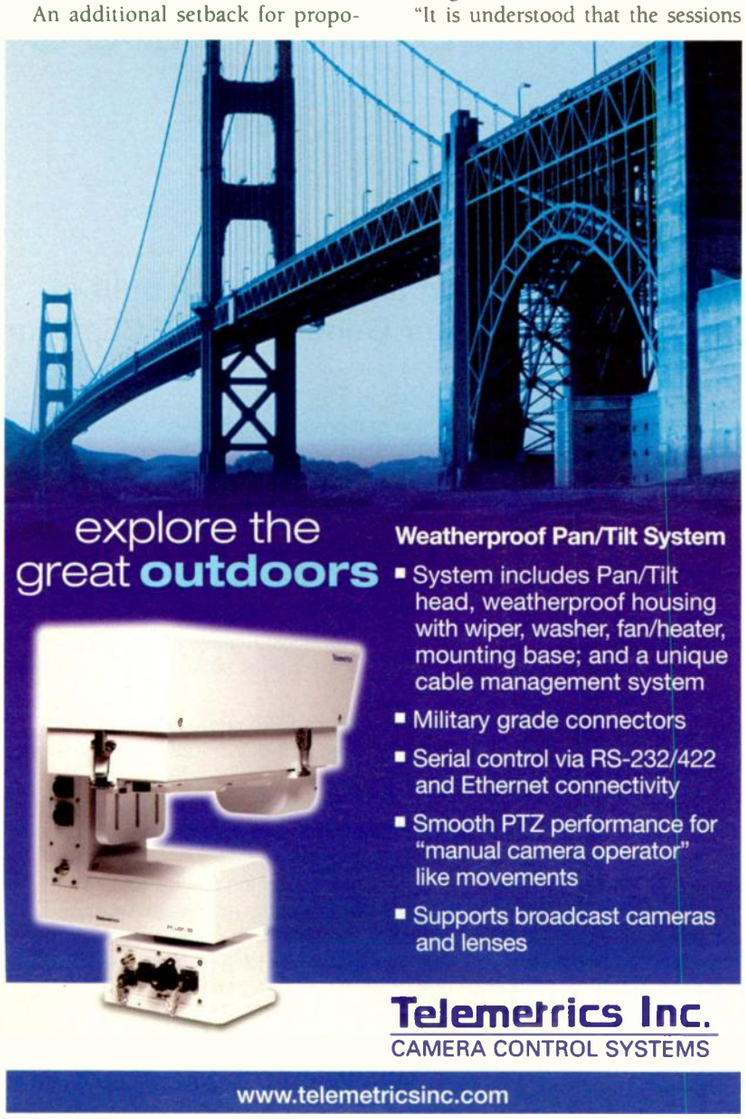
"What iCrave did was legal under Canadian law," Mago said, "but international law was unclear. This is why we need a worldwide treaty."

The iCrave case was a clear-cut signal theft and copyright violation, agreed Gigi Sohn, president and cofounder of Public Knowledge in Washington D.C. "But iCrave was stopped with existing international laws, so why do broadcasters need an additional layer of copyright protection on top of what already exists? Since they haven't cited any other gross violations cases beyond iCrave to justify their position, I think the proposed treaty is a solution in search of a problem."

"I believe broadcasters want a legal basis to charge for retransmission of their free broadcasts, so they have another revenue stream beyond advertising," said James Burger, an attorney at the Dow Lohnes law firm in Washington D.C., which represents Hewlett Packard, Dell, TiVo and other digital companies opposing the WIPO Broadcast Treaty.

Burger said the proposed treaty could have a direct financial impact on cablecasters, who now "must carry" local broadcast signals without having to pay for them. "But cable representatives have not shown up at any of the SCCR meetings, so far as I know. This surprises me, since I'd think cable would be more outspoken about anything that would plainly give broadcasters additional leverage in retransmission consent negotiations."

"We need to be able to serve our audiences without fear of our signals being stolen," countered Mago at NAB. "We do not put out broadcasts for them to be taken without authorization, and existing international copyright laws just are not enough protection." ■



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World Radio History

CNN Pipeline Looking for a Landslide

Pay site woos news junkies with multiple feeds, special features

by Sanjay Talwani

ATLANTA

New candidates for office have high hopes for November's elections. At CNN.com, constituents also have new choices, with the news giant bulking up its Internet video offerings in expectation of a day of historic importance and record-setting demand for media.

CNN Pipeline has four main "pipes" available on its interface.

The Web site's pay section, CNN Pipeline, is campaigning for viewers with free access to its many features on Election Day. CNN promises to make the site the tool of choice for viewers who want multiple video streams, on-demand archival and recent footage, user-generated content or a trove of election data from the hundreds of races around the country.

"You start combining all those elements, and the interest in this election and what it means for our country, and what it means for our economy, Iraq and so forth, I think it's going to be a huge event," said David Payne, senior vice president and general manager of CNN.com.

PHASING IN

CNN figures that more voters than ever will watch video on the Web, and it's been phasing in special election features as the season picks up, with an eye toward a benchmark experience in the way people watch major news events. For the fifth anniversary of Sept. 11, CNN also opened Pipeline to the public for free, with features including a nonstop replay of CNN's live coverage of that day.

The promotion attracted a high of 168,000 concurrent viewers, with 1.2 million users in all watching 8.5 million videos. That's up there with CBS.com's Web broadcasts of NCAA March Madness in 2006 and the Live8 concerts of summer 2005, the top two similar mass viewership events ever on the Web.

What's more, Web viewers of the Sept. 11 commemoration stayed on the site an average of 25 minutes, a figure Payne called extraordinary. "Remember, this is people at work," he said.

OPENING THE PIPES

Launched in December 2005, CNN Pipeline has four main "pipes" available on its interface, with Windows Media Player built in. The four channels typically include features such as a headline roundup plus extended live or taped footage ranging from NFL practices to international events to press conferences. There is also access to an archive of CNN clips, with easy access to the day's recent and top stories.

CNN, PAGE 32

"ABC, recognizing a revenue opportunity, has now defined the role of streaming video in network strategy: to expand audiences beyond the regular TV schedule. The rest of the TV industry must react."

—Josh Bernoff, Forrester Research

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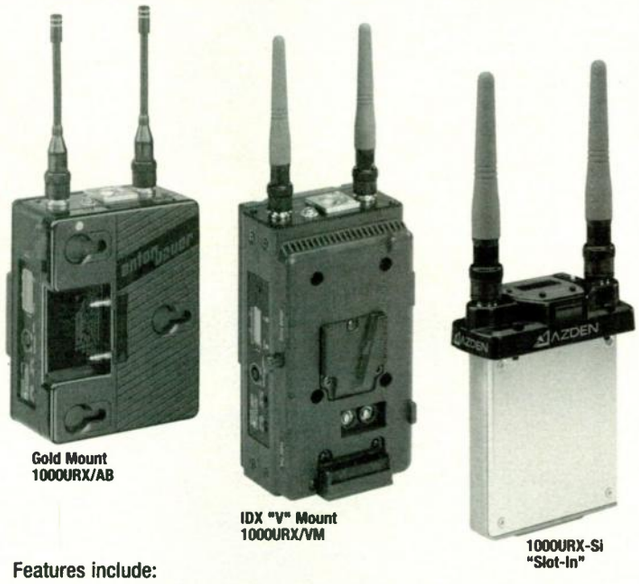

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CNN

CONTINUED FROM PAGE 30

CNN is just one of several major media organizations trying to get on the Internet video bus before it heads off without them. ABC made episodes of some shows available last year, and News Corp.'s purchase of MySpace.com gives it a major portal for the media conglomerate's numerous assets.

"Ad-supported Web video is the future," Forrester analyst Josh Bernoff said in an April report. "ABC, recognizing a revenue opportunity, has now defined the role of streaming video in network strategy: to expand audiences beyond the regular TV schedule. The rest of the TV industry must react."

As a news organization, CNN is used to quickly shifting resources—reporters or computer servers—where they're needed when something big happens.

"From a serving standpoint, we certainly had to prepare for a high level of serving and using our servers, Akamai and LimeLite and other providers, to make sure we could sustain it."

CNN.com plans for "10-x" events, Payne said, or events with 10 times the normal traffic. Should there be another news event comparable to 9/11, Payne said, the Web infrastructure is more likely to survive the load than five years ago, when nearly all major news sites froze under the demand.

"The Internet choked on that day," he said. "So that was a wakeup call not only for the country but for people running Internet sites."

Preparations include standing up additional servers, having extra bandwidth capacity under contract for emergency purchase, and having technical teams and protocols in place for the unexpected. Should demand skyrocket, CNN.com can publish its pages in the lightest format possible, with ads stripped.

CAMPAIGN FOR VIEWERS

Among CNN's campaign news tools is the CNN Election "Express Yourself" tour, involving a bus with small crews and no correspondents, which allows ordinary voters to speak candidly to the camera.

The public—and the campaigns—will have the opportunity to get footage on CNN as well, as CNN has already begun soliciting materials, and its "I-Report" feature allows easy uploads of video files. CNN.com's broader election program, "America Votes 2006," has already begun providing information on races and several interactive elements.

In addition to quizzes and other features, a second phase of America Votes 2006 includes a "funds tracker" that allows viewers to view campaign spending state by state. The program also is adding a "Community Caucus" feature, quizzing people on issues and tracking their responses in a discussion forum.

CNN Exchange, the free interactive portion of CNN.com, is hosting blogs, soliciting political humor, and launching a blog-like political news ticker.

On Election Day, Pipeline's four channels will probably cover both Democratic and Republican camps, with ample opportunity to pipe in breaking news and the day's highlights, such as concession speeches and polling-place fireworks.

For this news event, CNN has plenty of warning, but the day will be another test run of its ability to meet a huge spike in demand for Internet video.

"On 9/11, people always tell me where they went to watch the one TV in their office," said Payne. "I think for the next big major news event, people are going to talk about where they went on the Web. Huddling around one TV in their office when everybody has a desktop computer, is just not going to happen." ■

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Irish

CONTINUED FROM PAGE 1

Cup at the K Club in County Kildare on Sept. 22-24.

"It was a question a year ago whether we could even do it in hi def—the tools weren't there," said Hamish Greig, technical director for CTV Outside Broadcast, the production company that provided coverage for Sky Sports and host feeds to the rest of the world.

Then, all of a sudden, this spring there was access to the requisite "fiber interfaces, numbers of Sony HD cameras, [and vast] amount of fiber cable," he said.

In addition, said Greig, there was "a great feat in code writing" by RF provider Link Research Ltd. Its processing and decoding of the ASI stream limited delay to 1-1.5 frames, he said.

Still, Greig admitted there were still equipment constraints, as the Ryder Cup took place "in the middle of high sports season," competing with soccer and cricket. CTV acquired 52 Sony HDC 1500s (including nine converted for remote coverage); Sky booked another eight HDC1500s for studio production, and Irish broadcaster RTÉ another six, said Greig.

There was also the challenge of interfacing all the components to satisfy the requirements expected from a host: covering every stroke of every match in HD, SDI and analog.

CTV personnel used a fleet of golf buggies to move RF cameras around the course at the K Club.

A satellite antenna from Advent Communications provided the uplink for the U.S. feed at the Ryder Cup.

ROAD MAP FOR HD RF

Previous tests indicated that the crew could not rely on fiber alone to relay signals from the remote HD cameras to the broadcast center. They needed a mix that "would give us the robustness of triax and the quality of fiber," said Greig. Luckily, the HDC1500s had TX100 and FX100 adapters to convert the signals passing from fiber to triaxial cable and vice versa.

"With Sony, we found we could run up to 800 meters on triax and another 800 meters on fiber," said Greig. "By having a satellite hub of cameras, we could have most of the cameras running on triax on manageable lengths, and then we fibered the signals back at a 20-camera flypack by the 18th."

Signals were relayed from the 18th hole "on heavy-cast Telecast Pythons," said Greig. Doing it this way, he explained, extended the transmission path to about 1,400 meters (approximately 4,593 feet).

Four 90-degree 18DB high gain antennas received the signals, which were converted, sent to splitters, and fed into receivers that produced the ASI streams, said Greig. These were then re-converted into HD signals.

Greig was "happily surprised" by the way the Link Research technology handled delivery to receiver sites 2.5 kilometers (more than a mile and a half) away, given the weather as well as the trees, buildings and crowds in between. He was also impressed by the DV high gain antennas that came with the kit, which could be angled to increase sensitivity to certain areas.

CTV itself, developed "a lot of background glue," said Greig. Among the proprietary innovations were "multiplex systems" to speed the stroke tallies to the broadcast center, which included redundant paths of fiber interfaces. EVS XT2 (6-channel) servers were used to record the actual shots.

THE U.S. BROADCAST

Stateside, NBC broadcast the event in HD, using a mixture of CTV's signal with its own coverage.

"We took CTV's clean [feed] and quite a few of their cameras and all of their audio—all of their effects mics individually," said Ken Carpenter, the onsite technical manager for NBC's Ryder Cup coverage.

In addition, NBC contracted an additional 22 Thomson LDK 6000s and five Sony BVP-550 PAL units from Charter Broadcast, a Hertfordshire, U.K.-based OB production company, which NBC has contracted to cover international golf events for at least eight years. Total RF of Carlisle, Pa., provided the infrastructure for the wireless transmissions, including 45,000 feet of fiber, RFX-PAINT camera controls, receivers, microphones, technicians, fan beam antennas (RFX-BEAM), and RF Central's RFX-CMTs (camera mount transmitter).

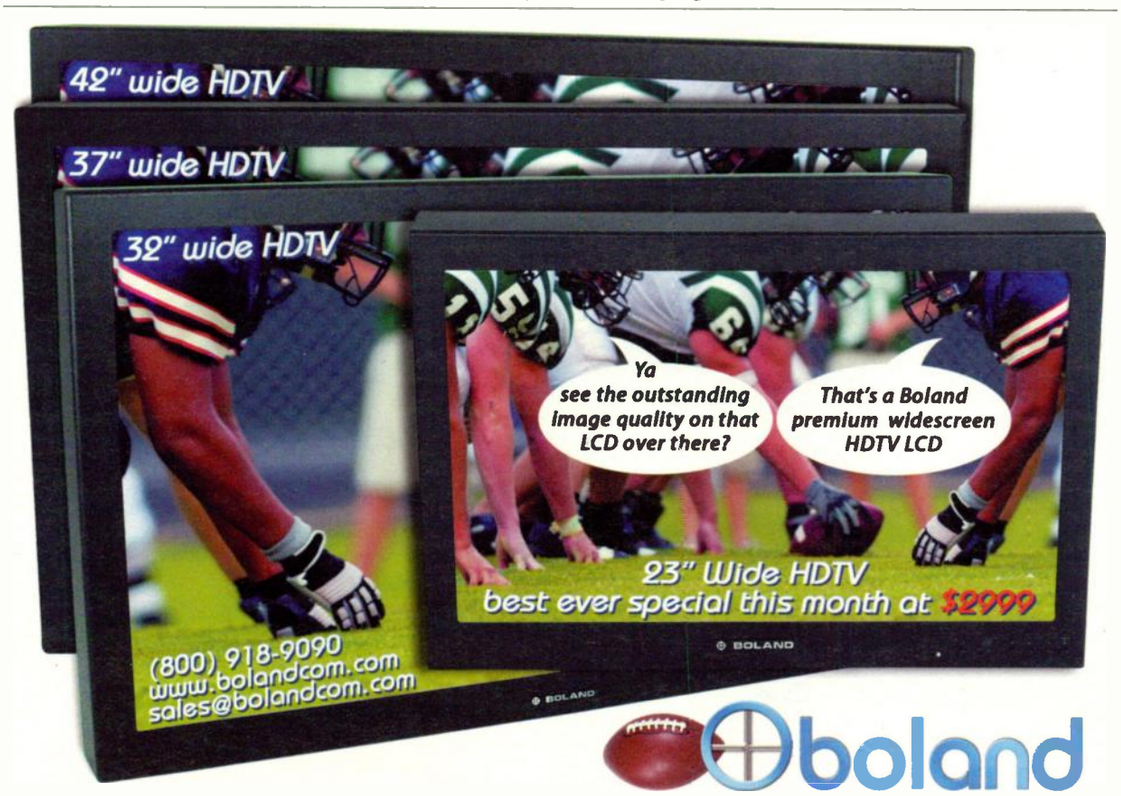
"We put some cameras in places [CTV] didn't have cameras," said Carpenter, recalling a particular set up near the 18th hole. "We had a camera on the 18th fairway—we used it like a speed shot: it could follow the drive from the first tee, then reverse follow from the 18th tee, and follow from the landing area to the green."

"Flanker cameras" were also laid low to focus on the American participants.

Despite cooperation toward a happy medium, Carpenter admitted there were technical differences between the host and NBC footage, due to creative license regarding color and other factors as much as the different camera models used. But, he noted, "you've got different angles, so you don't notice as much."

NBC's remote coverage was also different from the host feed: upconverted standard definition vs. high definition RF.

"When you're the host, you have a lot more control and capabilities," Carpenter said. ■



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World Radio History

BOOK REVIEW

JAMES E. O'NEAL

'Tele-visionaries—The People Behind the Invention of Television,' By Richard C. Webb

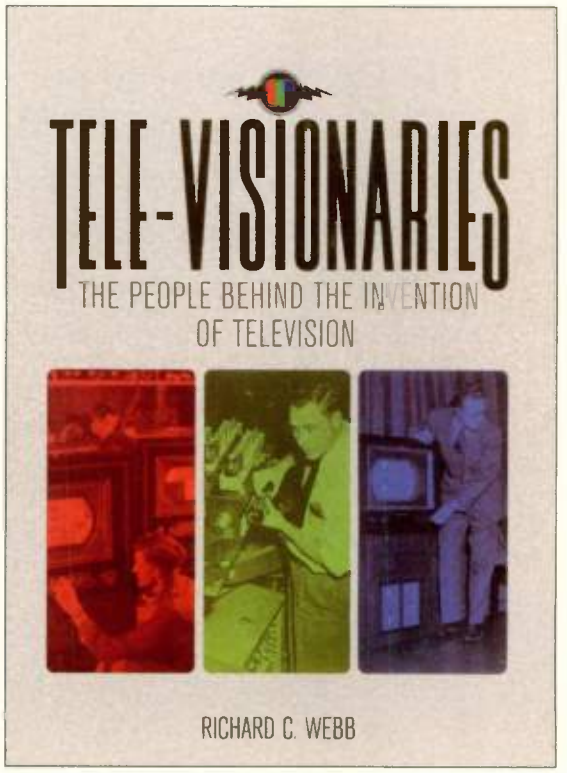
FALLS CHURCH, VA.

For those of us who not only want to know how it works, but also who did it and how it was done, there is yet another book describing television's path to perfection. The author, Richard C. Webb, was a staff research engineer at RCA from 1945 until 1954, and by virtue of his career timing at that organization, was uniquely situated to observe and participate in the development of the compatible color television that we have known for over half a century now.

His book, "Tele-visionaries—The People Behind the Invention of Television," traces television's history, from its infancy on through the FCC's adoption of NTSC color standards in December 1953. As Vladimir Zworykin was pivotal to RCA's television research and development program, Webb devotes considerable space to Zworykin and his "electronic eye," the iconoscope pickup tube.

Webb began his professional career at the end of World War II, when RCA's Princeton, N.J. research facility was just four years old and Zworykin was well established as head of the electronics laboratory division. Webb describes Zworykin as more of a scientist than a manager then, heading up a large division devoted to imaging research and development, with much of the initial research devoted to military electronics, including development of more sensitive and compact television systems.

Zworykin assembled a team, which in fairly short order produced the orthiconoscope, known more simply as the orthicon, a tube that differed quite radically from the iconoscope. The orthicon concept was moved further along by the design team of Drs. Albert Rose, Paul Weimer and Harold Law. They produced the image orthicon, or IO, generally considered responsible for television's post-war success. Weimer contributed to Webb's book, but unfortunately died shortly before the manuscript went to the publisher. Tele-Visionaries is dedicated to Weimer.



TIGHT LID

So, for those television historians, or perhaps those just interested in some of the trivia surrounding the business, what new revelations and insights are offered?

For starters, Zworykin's kinescope apparently was not a unique invention. After RCA announced the tube, interference claims came from a French inventor, Pierre Emile Louis Chevalier. As he was always quick to do, RCA's David Sarnoff stepped in to quell such a minor oversight, and bought up Chevalier's patent. To avoid any further embarrassment, Sarnoff then put a tight lid on the company's television project, until everything was fully operational, patented and ready for display.

A fair amount of post-war television research activity involved color, with Webb taking on his share. One of his projects was the triniscope, an early direct-view color display device. It consisted of three monochrome cathode ray tubes optically multiplexed and filtered in such a way as to produce a full color image. RCA had another device for displaying electronic color images, a three-CRT projector. The CRTs ran at 75,000 V, which was supplied by a large Westinghouse X-ray power unit. Webb comments that those viewing the color display were probably well bathed in X-rays and offers that CRTs for the developmental projector had to be made in near-production lots, as they "browned out" rather quickly.

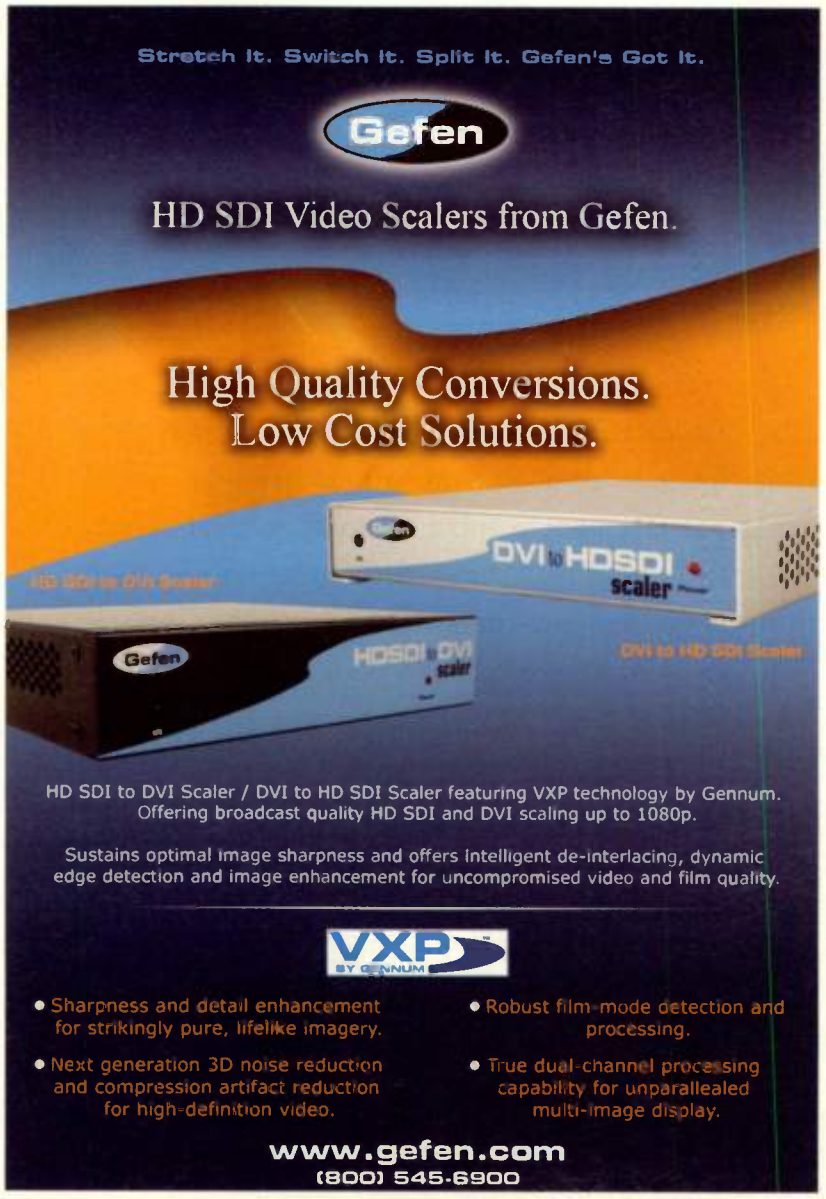
Webb reveals that RCA initially experimented with the field sequential color system developed by Dr. Peter Goldmark at CBS, but is quick to tell readers that system was doomed from the start. Curiously, RCA was interested enough in this dead horse to construct a three-dimensional version.

The construction of the first three-tube live camera was assigned to Webb. This became known as the Princeton camera, and was the direct forerunner to the TK-40 and TK-41 three IO commercial models.

Webb describes RCA's abortive attempts to produce a video recorder in a project headed by Harry Olson, the company's top audio man. Olson simply tried to scale up existing audio recording technology to accommodate

TELE-VISIONARIES, PAGE 38

Webb began his professional career at the end of World War II, when RCA's Princeton, N.J. research facility was just four years old and Zworykin was well established as head of the electronics laboratory division.



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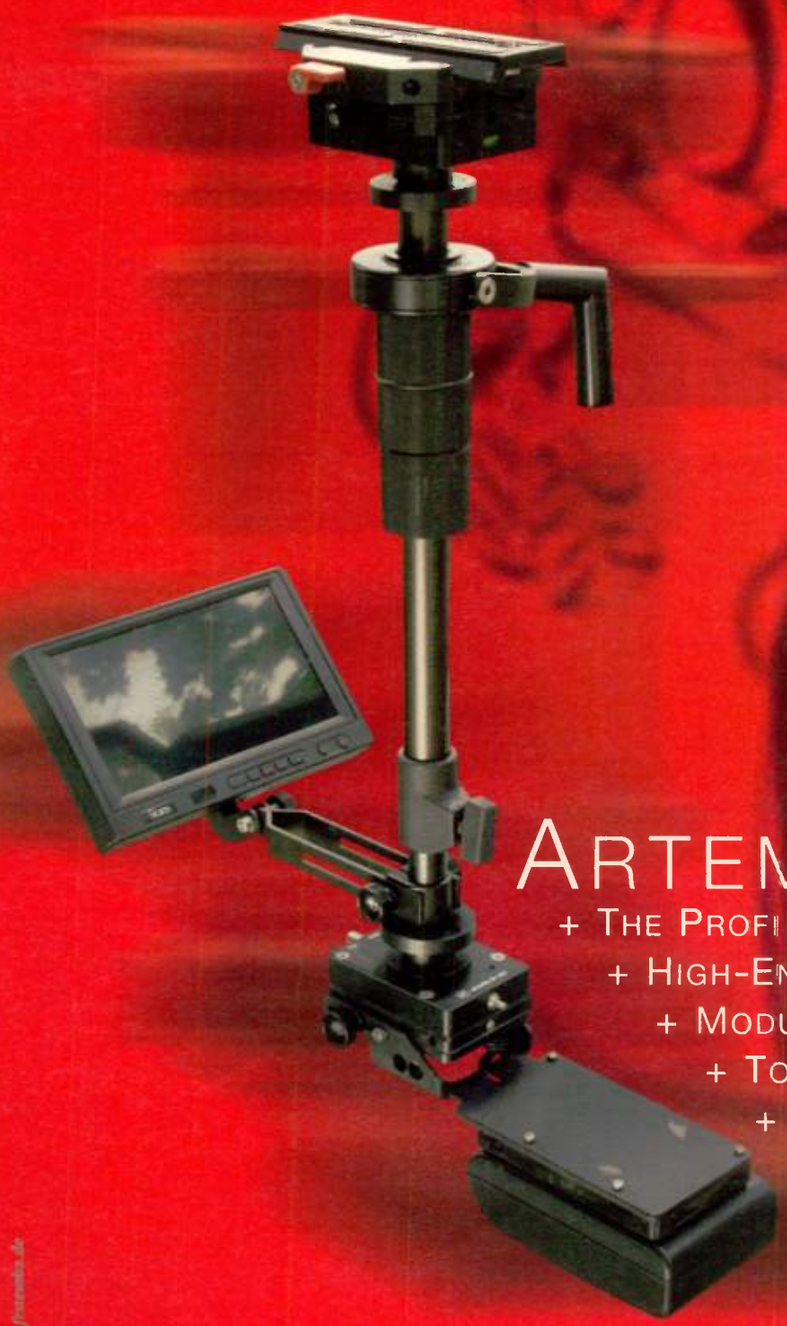
Beyond Balance



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Tele-visionaries

CONTINUED FROM PAGE 36

video. His machine pulled tape at the rate of 30 *feet* per second, or about 20 mph.

Webb criticizes Olson for not looking deeply enough into the RCA talent stable, as another employee, Earl Masterson, had previously described the recording of high frequency signals via the use of a rotating recording head. RCA filed a patent application on this technology in 1950, and patent drawings reveal what is recognizable today as a helical-scan head assembly.

YES BUT...

All in all, the book is a good read and provides much insight into the beginning of RCA's color television research. There are some shortcomings, however, which primarily stem from Webb's departure from the company in 1954.

The first photoconductive camera tube—the vidicon—was invented while Webb was at RCA. He mentions that Phillips (sic) of The Netherlands, made improvements on it, resulting in the plumbicon. Webb states that this tube had equal or greater sensitivity and resolution than the IO and that from 1962 on, all tri-color cameras were built around plumbicons.

This just isn't so, as RCA refused to buy or license plumbicon technology and kept on turning out one IO type of color camera after another, including the TK-42/43 monstrosities that used both a 4.5-inch IO and three vidicons.

Plumbicon cameras from Philips cut heavily into RCA's market share during the color boom of the late 1960s and early 1970s. Ultimately the company bit the bullet and produced a plumbicon-based camera, but this was well after 1962.

Despite Webb's claims to the contrary, it would have to be argued that there was indeed a "color war" between CBS and RCA. Peter Goldmark at CBS was quite outspoken in FCC testimony during the "war," stating that the RCA system should not be continued, as it could not be improved upon. RCA's Sarnoff was equally determined that CBS would not have the upper hand in the color race.

When CBS did get the FCC's initial blessing for color transmission standards in 1950, Sarnoff challenged the decision all the way to the U.S. Supreme Court. His stall tactic was initiated to buy time and ensure that additional millions of television receivers incapable of receiving the CBS 405-line, 144-field color signals were sold.

This incompatibility with existing television receivers ultimately doomed CBS color, as it could not be received without a special receiver or converter box. However, it was better than what RCA had been showing to the commission.

Webb seems reluctant to acknowledge the fact that others outside of RCA had a hand in perfecting NTSC color. Hazeltine Labs offered more than the one "major" improvement cited by Webb. It's true that RCA got the ball rolling, but NTSC color was a *team* effort with many players.

This bit of nit-picking shouldn't be carried too far, as Webb does offer insight not found elsewhere in writings by the RCA's "inner circle." Hopefully, readers of Webb's book will go on to explore more about this very exciting period in television's history and can fill in facts and draw their own conclusions about "how it happened."

Webb is to be praised for bringing forth his account of a particularly interesting time in the medium's technical history. There were some real giants then. Regrettably, many of these have carried their own insight and knowledge with them to the grave. It is to be hoped that others who are still with us, and can add chapters of their own, will read Webb's account and be motivated to share their experiences. ■

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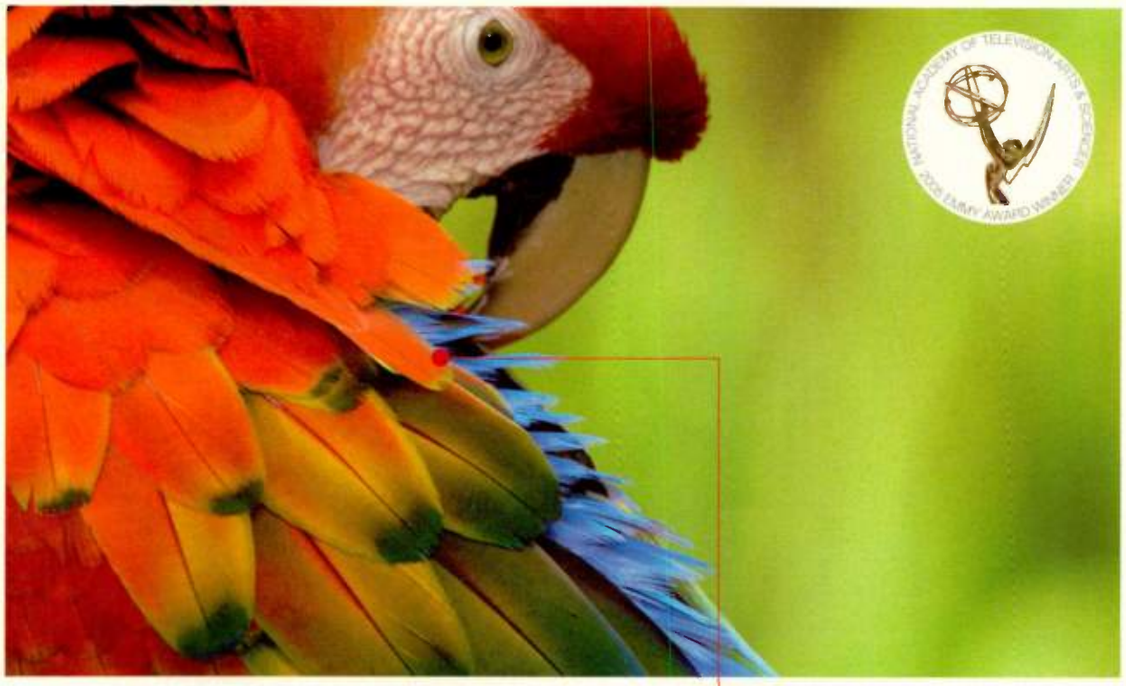

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World Radio History

L-3 Continues Long Local Tradition

Facility has been turning out vacuum tubes for more than 50 years

by James E. O'Neal

(This is the second in a series of articles saluting broadcasting industry manufacturers that continue to produce their products on American soil with American labor.)

WILLIAMSPORT, PA.

Williamsport is just about as all-American as cities come. The area is home to the Little League Baseball Museum and the Little League World Series. Williamsport also has the distinction of being the birthplace of one of the longest continuously published periodicals in America. "Grit" began here as a weekly newspaper in 1882 and was eventually distributed nationally during its 111-year run in this town. The Lycoming aircraft engine had its beginnings here, and the ubiquitous Piper J-3 or "Cub" aircraft first took flight in nearby Lock Haven. Major League baseball's Mike Mussina also hails from Williamsport.

Urban renewal has not impacted greatly on Williamsport and many well-maintained older homes and commercial buildings lend a certain timelessness to this city on the Susquehanna River.

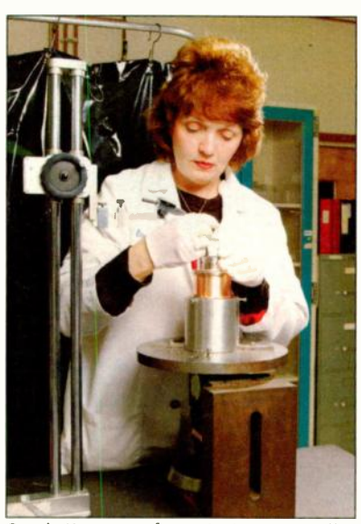
One of those buildings houses the L-3 Communications Electron Devices Division. It's a 200,000-square-foot facility that was originally constructed by Sylvania in 1953 for the express purpose of manufacturing vacuum tubes.

Sylvania sold off the division in the 1960s, but vacuum tubes are still being made there. These are not the 6SN7s and 5U4s that were essential components in 1950s television sets, but rather items just a bit more esoteric. They range from magnetrons only slightly larger than an ice cube to gigantic 700-pound 10-foot-long traveling wave tubes intended for deep space radar systems. In between these extremes are the klystrons, CEAs, IOTs and crowbar thyratrons that the television broadcasting business know so well.

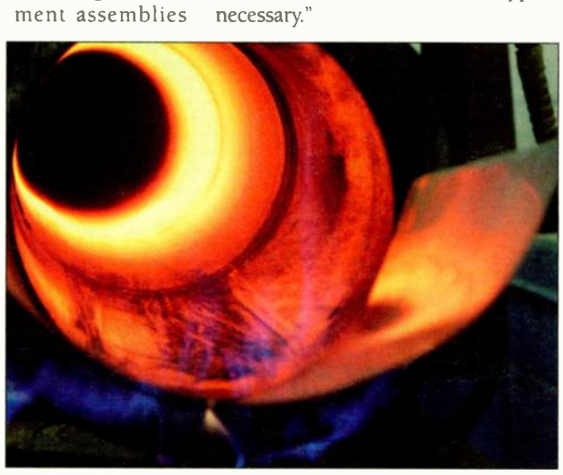
"Buzz" Miklos, director of sales and marketing for L-3's Electron Devices division, says that while some of the raw materials such as oxygen-free copper are imported, virtually all of the component parts of the tubes produced in the Williamsport plant are made in America.

"In general, what we don't make here under this roof is outsourced only as far as local machine shops," said Mikos. "There's only a handful of items that can't be obtained in America—thoriated-tungsten filament assemblies and other speciality metals used in cathodes.

Russia had been a good supplier for thoriated-tungsten and some other countries in Europe are basically sole source suppliers for the entire world tube industry, he said.



Sandy Kropp performs tests on a small magnetron tube at the L-3 facility.



A tube's 'ride through hell' begins here at the entrance of one of L-3's 900 degree Celsius furnaces.

NO END IN SIGHT

While there have been a lot of advances in television transmitting tube technology over the last several decades, some items made by L-3 don't change at all. Mikos cited the 4J55 magnetron as still in production after 46 years.

"There are more than 200 devices in our catalog," he said. "And we can make more than 600 different types if necessary."

He estimated that the plant ships more than 6,000 tubes in a given year.

While a lot of the L-3 Electron Devices production goes for government and military applications, numbers have changed over the years.

"It used to be that 95 percent of our business was government and the balance was for general commercial purposes," said Mikos. "Now, the ratio is around 60 percent government and 40 percent commercial. A lot of credit goes to the developers of broadcast IOTs. We invented the MSIOT here."

'RIDE THROUGH HELL'

The construction of a vacuum tube involves many steps and disciplines. In the case of the products turned out by L-3, it begins with the joining of machined metal and ceramic assemblies in furnace area of the plant.

Elements appropriate to the tube under construction are carefully fitted and clamped together with brazing compound applied to the areas to be joined. These assemblies are then placed in special "boats" and onto a

L-3, PAGE 42

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L-3

CONTINUED FROM PAGE 40

conveyor belt for a "ride through hell" in any of several 900 degree Celcius furnaces. The trip can take up to five hours and when the assemblies emerge, metal and ceramic parts are permanently bonded together.

Smaller portions of the tube such as filaments and cathode structures are resistance or laser welded together.

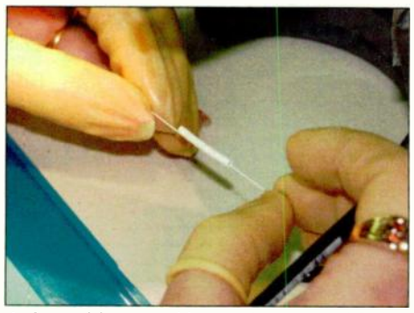
All assemblies are tested for leaks at special vacuum pumping stations equipped with mass spectrometers. While pumped down to a very high vacuum, the assemblies are sprayed with helium. If the spectrometers register the presence of the gas, the tube assemblies are classified as "leakers" and must either be reworked or scrapped.

Once a green light is given to a potential tube's vacuum worthiness, the tube goes on to the next stage of its processing—bake-out and exhaustion.

Completed tubes are placed inside special oven assemblies and connected via a small diameter copper tubulation to a vacuum pump. A very high order of vacuum is maintained while the tube is heated for a prescribed period of time to remove all traces of water vapor and occluded gasses. At the conclusion of this processing, the copper tubulation is compressed with a special tool that resembles a modified bolt cutter. This operation produces a molecular flow of the copper (cold weld) and seals off the exhausted tube from both the high vacuum pumps and the atmosphere.

At this stage, depending on the type of tube being manufactured, either additional processing or manufacturing steps take place, or the tube goes directly to aging and testing stations. (As an example of additional manufacturing, in the case of TWTs, the tube goes into a special lathe where a focusing solenoid is wound onto its body.)

Testing and aging are done in a number of ways.



A tiny oxide-coated heater is prepared for assembly inside a vacuum tube.

Devices slated for high-power television applications go into a modified television transmitter. When asked about special AC power requirements for this area of the factory, Mikos explained that a special power company substation in the megawatt range had been constructed to power the testing jigs. There were also numerous water cooling lines in the area, all connected to a very large roof-mounted heat exchanger.

Sandy Kropp performs tests on a small magnetron tube at the L-3 facility.

LIFETIME CAREERS

A business is only as good as its workers and the Williamsport facility rates high with its rank and file.

Steve Bliek, sales manager for L-3, offered some insight on the company's stability and its ability to attrack qualified personnel.

"People come to work here and stay for their whole career," Bliek said. "Mom and dad worked here and later we see their sons and daughters coming to work.

"We have 190 workers here, with the oldest in their late 60s. The average worker's experience in manufacturing in the plant is about 15 years."

Bliek explained that building vacuum tubes is a bit different than other endeavors.

"We're working to extremely close tolerances," he said. "In building IOTs, we're working to around four-thousandths of an inch or less in some areas of the tube. People here have to pay a lot more attention to detail than on an average job.

"It takes about five years for a worker to come up to speed in some areas. All that we do depends on skill level and attention to details. You couldn't take someone off the street and have them doing jobs here without at least a year's training."

As the demand for most vacuum

World Radio History

tubes has declined over the years, many companies simply closed factory doors and quietly went out of business. The U.S. demand for consumer vacuum tubes is easily met by manufacturers in such places as Russia, the Czech Republic and China.

Craig Cline performs tuning operations on an IOT.

Television transmitter tubes are a slightly different proposition, but with rising U.S. labor costs, increased environmental and industrial safety issues, and numerous multinational manufacturing partnerships in place, it's tempting to ask why L-3 continues to produce tubes in Williamsport.

WHY STAY ON SHORE?

"Tube manufacturers in the United States, or in any other country for that matter, tend to use local sources for the raw materials and component parts used in the construction of their devices," Miklos said. "Since the volume of high-power tube production has declined, the economy of developing offshore sources becomes economically unfeasible. Coupled with the fact that the quality requirements for tubes is so high, we wouldn't want to try and manage the quality and pedigree of the raw materials 10,000 miles distant.

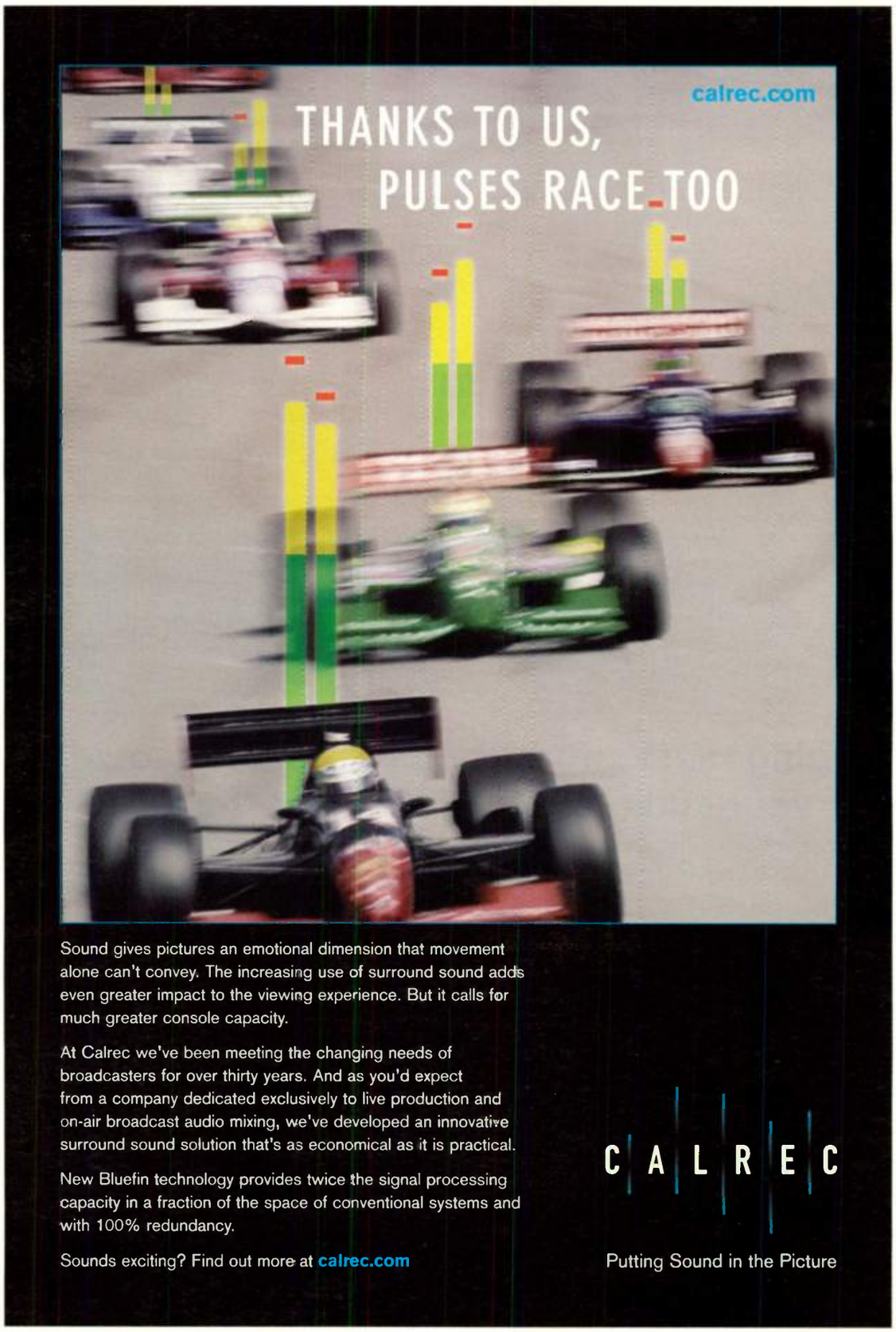
"In a few particular cases, raw materials do come from outside the United States. Oxygen-free copper is produced by Hitachi in Japan and its grade is better than anything else produced in the world. The same holds true for tungsten and molybdenum from Switzerland or glass from Shott in Germany.

"The fabrication of vacuum tube components, however, is performed almost exclusively in the United States and preferably with vendors within several hundred miles of our facility. Some of L-3's major vendors are in Pennsylvania where a strong relationship has been created and communication channels are always available to discuss quality and delivery issues.

"Once we complete the exercise of approving a vendor, we are more than likely to continue to build on the relationship, knowing that the costs of quality and basic produced parts will be better in the long run than trying to seek a 'better deal' offshore. The sensitive nature of vacuum-tube technology to material and process variation has taught all vacuum-tube manufacturers to monitor their suppliers as closely as possible in order to reduce the occurrence of performance problems with finished products.

Miklos said L-3 maintains a strong 'made-in-America' mentality, perhaps more out of practicality than for any other single reason.

"We feel that we can keep tabs on the quality of our lower level assemblies and parts, as well as the raw materials that are used to make those parts," he said. "We can more easily work with local vendors using teaming agreements, kanbans, just-in-time and design-for manufacturing technologies that keep our costs down and make the product more competitive for the end user." ■



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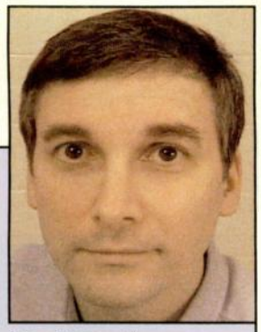
SBE Educator of the Year

Veteran broadcast engineer Gary Sgrignoli recognized for DTV work



Gary Sgrignoli

In honor of his extensive involvement with DTV 8-VSB training efforts over the past few years, the Society of Broadcast Engineers recently named Gary Sgrignoli "Educator of the Year" for 2005. Sgrignoli has been active in VSB transmission system design, prototype implementation, ATTC lab testing and ACATS field testing since 1991.

Sgrignoli is a partner in the consulting firm of Meintel, Sgrignoli & Wallace. Before joining the firm, he spent 27 years with the Zenith Electronics Corp. where he worked as a design engineer in the research and development department. Sgrignoli is a graduate of the University of Illinois, Champaign-Urbana and holds 35 U.S. patents.

For the past eight years, he has been conducting a series of on-site seminars across the county on VSB transmission fundamentals for broadcast engineering personnel, the most recent of which took place in Atlanta Aug. 10-11.

James O'Neal, technology editor for TV Technology, recently talked with Sgrignoli about his work in the industry.

TV TECHNOLOGY: You're a very busy man. How much time do you spend on the road each year in conducting seminars?

SGRIGNOLI: I've done 67 in the past eight years. In another couple of weeks I'll be in Boise to make the total 68. I had been averaging eight or nine a year, but that number has picked up in recent years to around 12 to14 per year.

TV TECHNOLOGY: How and when did you decide that there was a need for your on-site tutorials?

SGRIGNOLI: I spent 27 years with Zenith as an R&D design engineering team member. Zenith was involved with the FCC's Advisory Committee on Advanced Television Services starting in 1987, and was one of 23 groups proposing a new HDTV system. By 1991, there were four remaining groups designing all-digital systems to fit within 6 MHz channels.

Each had its good and bad points. These systems were then merged into one best of the best system under the auspices of the Grand Alliance. In addition to working on the development of the 8-VSB design and prototyping, I was involved in the ACATS lab tests in Alexandria, Va. as well as the two ACATS field tests in Charlotte, N.C.

The FCC selected this new system on Dec. 24, 1996, with Zenith holding the patents on the 8-VSB transmission system. We went out to train the broadcasters on this new system, as there were no broadcast station engineers who knew how this brand new digital system worked.

One thing led to another and that's how I kept on with these day-long seminars. I did 35 seminars as a Zenith employee before leaving the company in February of 2004. I'm expecting to continue conducting seminars into next year and beyond. There are now three types of seminars. There's a one-day seminar that presents VSB fundamentals, another one-day session describing VSB measurements. And there's a day-and-a-half seminar that covers both VSB fundamentals and system measurements.

TV TECHNOLOGY: Do you think that all U.S. television broadcasters are completely ready for the transition to digital broadcasting?

SGRIGNOLI: Right now, the answer would probably be no; not all stations are completely ready for the final transition; but by February 2009, the answer is potentially yes.

There are more than 1,500 stations on the air right now with digital. Some of them will have to change RF channels at the end of the transition, and must redesign their facilities and order more equipment.

They must also figure out how to pay for the changes. I would expect that next year at NAB and other conferences there will be a lot of chatter on details of the actual transition logistics. It's very important to begin planning now, and to continue this over the next two and a half years. There's time, but if broadcasters don't start now, then they won't make it in time for February 2009.

TV TECHNOLOGY: Why do you think that the original Dec. 31, 2006 "flash cut" start date for digital broadcasting was pushed back until 2009?

SGRIGNOLI: First of all, I see a lot of different statements made by people about this date being changed by the government so many times. In reality, the government has changed its mind exactly one time. They had to delay it since we got hung up when we went through the modulation debate in the late '90s, which was caused by DTV receiver performance problems. That's not really a big delay. I'm encouraged that the transition will take place in 2009.

TV TECHNOLOGY: Do you see additional areas in which further consideration or improvements are needed before we end analog television broadcasting?

SGRIGNOLI: There are always possibilities for improvements, but I believe that there are two sides to this: technical and economic. If broadcasters don't start promoting free over-the-air digital television, and if they don't start warning people about the end of terrestrial analog television, there are going to be problems.

In looking at some other areas, I see distributed transmission as possibly being very helpful. There's also the enhanced VSB addition to the standard, which could be useful and helpful toward a final and successful transition.

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I also think that the new fifth-generation receivers have greatly improved DTV reception capability. The fourth-generation receivers were really very good and they got us out of the modulation debate, but the fifth-generation receivers helped us to show that indoor reception was possible using a simple antenna with minimal user adjustment.

What we haven't seen yet are the "smart" television antennas. This technology may be needed to overcome indoor reception problems in very severe urban environments like New York City, Chicago and Los Angeles, for example.

All the improvements in the last six or eight years have been in the areas of receiver front-end design and signal processing. As long as receivers continue to improve, we expect that these improvements, coupled with new smart antenna technology and more robust tuners, will help with weak signal, severe multipath, and RF overload issues.

There's another side too. Back in the 1960s we all heard "brought to you in living color, where available." Viewers understood that TV stations had to buy new equipment and consumers had to buy new sets. The same was true in the 1980s for stereo television. In the new millennium, it's "brought to you in HDTV, where available." How many people really know that you can receive these free signals from existing terrestrial broadcast stations? The general assumption is that you have to have satellite or cable.

A big concern of mine is for broadcasters to step up to the plate. Yes, some broadcasters have been locally promoting DTV in their cities, but they are in a small minority. However, I'm starting to see a change in this, and I'm encouraged. There's another big area of interest to me and that's in the D-to-A converter coupon program that the NTIA is administering.

There are now two prototypes being developed from Zenith/LG and Thomson for MSTV and NAB. While there are still questions about who will receive the $40 government coupons, I think that these D/A converters should have the equivalent performance of fifth-generation VSB receivers or better in terms of multipath, tuner overload, and signal synchronization.

And they should be allowed to have smart antenna interfaces on them while still qualifying for the $40 coupons. However, we still have another two years or so before they will be sold in large quantities.

TV TECHNOLOGY: What is your opinion on the issue of opening up the television broadcast spectrum for other uses? This is the so-called "white space" matter.

SGRIGNOLI: I'm very concerned about it. I'm not saying that it can't ever be done, but right now, it has real potential for affecting DTV reception. We know that first-adjacent spectrum is very dangerous to use. They say they'll be using all sorts of fancy algorithms, but it's going to be rather tricky, and these devices with their fancy algorithms need to be thoroughly tested in the lab and field.

I'd rather not see them do anything in this area right now until we have successfully passed through the DTV transition and get a lot more experience under our belts.

TV TECHNOLOGY: Are you happy with the FCC decision to allow BPL operations in the low-band VHF channels?

SGRIGNOLI: I'm also concerned that not enough study has been done in terms of interference effects. While there are not going to be that many full service low-band VHF DTV broadcasters after the transition, and those remaining will mostly be in rural areas, there may be a significant number of translators and LPTV stations as well as new FCC-required allocations in this band.

Therefore, there obviously needs to be more studies in my opinion. I haven't seen enough information to indicate that such studies have been done, and there has been anecdotal evidence of interference into the amateur radio band. We may be going too fast, based on the knowledge that industry has right now.

TV TECHNOLOGY: Once everyone is well versed in digital television transmission and there's no longer any analog transmission, what do you see yourself doing?

SGRIGNOLI: Continuing on with consulting work for broadcasters and receiver manufacturers. I don't believe that broadcasters will be educated as much as they want to be in the next two years. From personal discussions across the country with engineers attending my seminars, a lot of them wanted to have been educated right from the beginning, but the main focus by station management has been on analog.

With the advent of a 2009 analog turn-off date, now stations are really focusing on digital, with management doing an about face. They've got to figure out how to make money with DTV and to do that, you need a good signal radiating from the transmitter's antenna.

And to keep the signal on the air, you need to understand the system well enough to do very quick troubleshooting when things go wrong at the transmitter site. Therefore, knowledge will always be needed. ■

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COUNT ON IT

André V. Mendes

Moving Heaven and Earth To Move Content

As you probably recall, a few years back and as part of its NGIS (Next Generation Interconnection System), PBS announced plans to change its methodology for distributing broadcast content to our member stations.

While nowadays, all of its content is distributed in real-time streaming using a mixture of Digicipher II and DVB, and using mostly Ku, but also some C-band transponders, the future plans—well on their way—call for a new hybrid model.

In this new model, live and near-live content will continue to be distributed in real-time satellite broadcasts that can be immediately leveraged by member stations or captured and recorded for later broadcast.

As for content that is "in the can" and therefore available well ahead of its expected broadcast time, PBS is planning to deploy file-based distribution that leverages satellite UDP (user datagram protocol) multicasting technology to distribute content to edge-caching servers.

Assuming the use of DVB-S2 and a relatively conservative modulation scheme such as 8-PSK, the available bandwidth on a 36 MHz pipe is somewhere in the 60 to 65 Mbps range. If we then calculate into the equation the present 12 Mbps total payload for PBS MPEG-2 standard-definition content, we are left with the ability to push approximately five times more content per available transponder.

When you combine that superior throughput with the flexibility of unattended and reliable around-the-clock file distribution, it is easy to see the attractiveness of this solution.

Interestingly enough, however, whenever I talk about this strategy at conferences, especially IT-geared ones, I invariably get asked about our choice of the satellite transponder for this IP-based file distribution. In a very predictable order, the questions come fast and furious.

Whenever I talk about this strategy... I invariably get asked about our choice of the satellite transponder for this IP-based file distribution.

'NET SCENARIOS

Why not use the commodity Internet for this activity? After all, bandwidth is getting cheaper every day, broadband is becoming ubiquitous; and satellite transponders are so expensive. What about point-to-point fiber? Certainly there is enough on the ground these days?

What about Internet2 networks?. Those massive pipes are just there for the taking, and they certainly could accommodate your bandwidth and Quality Of Service requirements? Why not a BitTorrent approach where you distribute the content to a couple of servers that then deliver it to a few more and so on and so forth?

Let's examine each of these cheaper "solutions" and see whether or not they do indeed fit the bill.

With regard to using the commodity Internet, one has to consider the cohort population that we are trying to serve. While many of our 177 stations are located in large metropolises, many

EARTH, PAGE 55

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— Tim Thorsteinson, President
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THE MASKED ENGINEER | Mario Orazio

Protecting Pretty Pix, Keeping Consumers Cool

You might not have noticed that the second law of thermodynamics has spawned quite a few adages. "Time flies." "You can't stop progress." "If you snooze, you lose." Yes, of course I'm ranting this month about the war on piracy.

Most folks have a pretty darned good handle on that second law. Take a piece of paper. Light a match. Bring its flame to the paper. Let it burn.

Now go ahead and ask even a two-year-old whether you can turn the ashes back into a piece of paper. Nope. Everyone knows time moves in only one direction (which is one way of paraphrasing the second law).

Yes, everyone seems to have a good handle on the second law, except for a group of content-protection enthusiasts who believe that time moves backwards. I'll get to them in a bit, but first this message from the sages at the Consumer Electronics Association, CEA, or, as I like to pronounce it, See-ya.

Every year, See-ya publishes something called "Digital America." It used to be called "The U.S. Consumer Electronics Industry in Review," but See-ya knows time marches on. Anyhow, it's chock full of all kinds of current and historical info on things that might be of interest to readers of this fish wrap, such as audio, television, and video.

It's also got info on things that some folks might never have heard of, like radar detector detectors. That wasn't a typo. Here's Digital America 2006 on the subject:

"RDDs work on the principal that all radar detectors leak a small amount of signal and these signals can be detected and the police officer alerted to the presence of a radar detector. The first RDD unit was the VG-2 Interceptor, manufactured by Kustom Signals Inc., which looked for leakage within the 11-11.4 GHz frequency band."

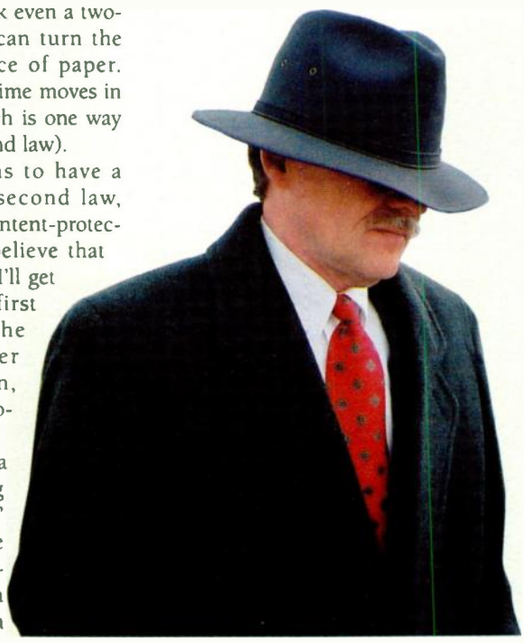
So, naturally, radar-detector makers switched frequencies. So RDD manufacturers adjusted. So radar-detector manufacturers took other countermeasures. So cops switched to lasers. So the radar-detector industry added laser jammers. And so it goes.

The whole fascinating story (complete with model numbers and what law-enforcement tools they subvert), is available on the Web at *www.ce.org*.

Click on "Press," then "CEA Publications," then "Digital America," then "2006 Edition," then "Mobile Electronics," and, finally, "Lasers and Anti-Radar Radar." Do it before the Department of Homeland Security shuts it down as they've done so effectively with bomb-making instruction sites on the Web.

Anyhow, I didn't shovel coal into my word processor this month to talk about radar and lasers. I just thought the progression was instructive.

Police go after speeders with radar.



Then again, the FCC, Our Beloved Commish, didn't seem to care about analog outputs. No pirate would *ever* think of digitizing those and feeding the Web.

Speeders buy radar detectors. Police buy radar-detector detectors. Speeders buy RDD-proof radar detectors. Police switch to lasers. Speeders buy laser jammers. Time marches on. The second law of thermodynamics wins.

Now try TV technology. Thousand-line video gets invented. Content protectors sit on their hands. Digital TV gets invented. Hands stay put. DTV receivers that can deliver thousand-line pictures to the Internet get sold. Hands still in place. FCC orders every device with a TV tuner to get some of that digital reception. Hands creep out.

YE GRANDE OLDE FLAG

So the FCC issued its broadcast flag order. It didn't have a blessed thing to do with Old Glory transmitted through the air. No, it was for protecting the spigots through which content flows.

Got an HDMI spigot feeding a TV? It would have needed content protection. FireWire to a DVR? More content protection. Demodulated 8-VSB inside a TV feeding a demultiplexer? Content protection or else potting in epoxy so a viewer with a screwdriver, a soldering iron, and (oh those typical consumers!), clip leads, an EEPROM burner, and a debugger can't get at it. I am *not* making this up.

Then again, the FCC, Our Beloved Commish, didn't seem to care about analog outputs. No pirate would *ever* think of digitizing those and feeding the Web. And they also didn't seem to

PIX, PAGE 52

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News that Comes to Life.

"The camera's video quality is exceptional, which maintains the station's excellence in quality programming."

– Jeff Nelson
News Director, ABC Affiliate WDAY-TV

ProHD

JVC's GY-HD100U ProHD Camcorder

When Time is Crucial, Direct-to-Edit is Vital.

The ABC affiliate, WDAY-TV in Fargo, North Dakota knows that news happens instantly. When the WDAY-TV news crews are out in the field, they need reliable cameras that record video directly to a hard drive when time is of the essence. That's why WDAY-TV standardized on JVC's GY-HD100U. The GY-HD100U provides the versatility that WDAY-TV needs for studio and ENG shooting and durability to operate in North Dakota's below zero temperatures. This flexible and affordable camera was easily and economically integrated into WDAY-TV's existing Final Cut Pro post production workflow.

WDAY-TV's ProHD cameras are equipped with the optional DR-HD100 HDD recorder, which provides cache memory so you don't miss a shot. It also allows the editors at WDAY-TV to edit immediately from the hard disk without time-consuming transfer to a non-linear editor. Efficient and economic, the JVC GY-HD100U ProHD camera system is the ideal choice for news organizations such as WDAY-TV migrating from SD to HD.

"We chose the GY-HD100U because the camera can record in SD and HD. The affordability of the camera will allow us to upgrade the entire station to HD in the very near future. JVC's ProHD cameras are WDAY-TV's primary cameras for ENG and the hard disk recorder lets us transfer footage directly to our editing systems."

– Jeff Nelson
News Director, ABC Affiliate WDAY-TV

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INSIDE BROADBAND | Will Workman

Me, Too! Programmers Dive Into Broadband

The radio star lasted more than a half century until, according to the Buggles, video killed it. But the video star is looking mighty old at 25.

MTV, that purveyor of teen culture pop, launched in 1981. Now counting nearly half a *billion* households across the globe, the Viacom darling is certainly in no danger of demise. But its basic video distribution paradigm, via TV channels reaching large audiences, is being upended by the very demographic that made it famous.

When Rupert Murdoch's News Corp. spent $580 million last summer to acquire MySpace.com and its 60 million networkers, analyses began circulating immediately that he was going to rig it as a digital MTV for launching and promoting musical acts as well as distributing video programming.

YOUTH COOL

The basic theory ran thus: the ever-changing face of youth cool was moving inexorably toward Internet and mobile devices through social networking sites such as Friendster, Facebook, and MySpace, and video-sharing sites such as YouTube and Google Video. Musical acts were being born fully fanaticized through MySpace, while consumer video producers were becoming instant hits on YouTube.

Meanwhile, content companies have been scrambling to find traction in the cell phone market. So far, the results have been barely a blip. Mobile measurement firm M:Metrics says that, other than ring tones, video (0.4 percent) and music (0.2 percent for full songs) downloads have been anemic.

These results are typical of a nascent industry, says research firm In-Stat, which projects 50 million portable media players worldwide by 2008, when the market should gain traction.

The challenge posed for broadband content marketing and delivery through these new platforms has sent shockwaves through the media conglomerates; MTV is only one of several major brands struggling to adjust.

Across the spectrum, companies new and old are probing for ways to capitalize on the erosion of traditional media delivery. Disney's sports stalwart ESPN recently tried to inject new life into its faltering Mobile ESPN network by offering complete college football games for cell users. Using Sprint's EVDO network, the football plan adds $25 per month to the package of real-time sports info that already costs $40 and up monthly.

Launched in February, Mobile ESPN so far hasn't drawn subscribers as hoped, Disney execs concede.

Meanwhile, a competitor for ESPN's male demographic, Viacom subsidiary Spike TV, has launched a Flash-based broadband player on its Web site that allows users to zoom in on various camera angles of live programming to interact with talent.

But might it just take a brand new device to render the broadband equation simpler for users? Upstart Sling Media thinks so. It's packaging features into a single $200 gizmo that might become the iPod of the broadband video age, allowing users to watch all cable channels on Internet-connected devices (laptops, desktops or mobile) at no additional charge.

While ABC and other mainstream programmers are partnering with Apple's iTunes to offer downloads of popular shows, NBC Universal has gone one strategic step further. It recently created a whole new offshoot, the National Broadband Co., or NBBC, to find broadband distribution paths for all network and affiliate content.

NBC Universal President Randy Falco still didn't quite get it, saying that YouTube "made a lot of money" off the Lazy Sunday sketch, and that NBBC "in the future... will make a lot of money off it."

The traditional broadcaster has launched a co-branded broadband video site offering fee-based feeds of nonmainstream sporting events, and announced it will stream for free select episodes of top shows.

Executives there have acknowledged that the sudden boost to "Saturday Night Live" ratings from the pirated uploading of a skit onto YouTube, which became enormously popular, forced them to completely overhaul their business model.

NBC Universal President Randy Falco still didn't quite get it, saying that YouTube "made a lot of money" off the Lazy Sunday sketch, and that NBBC "in the future... will make a lot of money off it."

But here we go back to the old Napster drawing board. The major recording labels five years ago learned the hard way that tight-fisted control to stop digital content piracy didn't work. And they're still wrangling with iTunes and other legal download sites about the perceived loss of revenue in $1-per-song sales.

In addition to content control, Falco and others seem to think they can maintain the broadcast, or one-to-many, model of content distribution, even if it's though multiple distribution platforms.

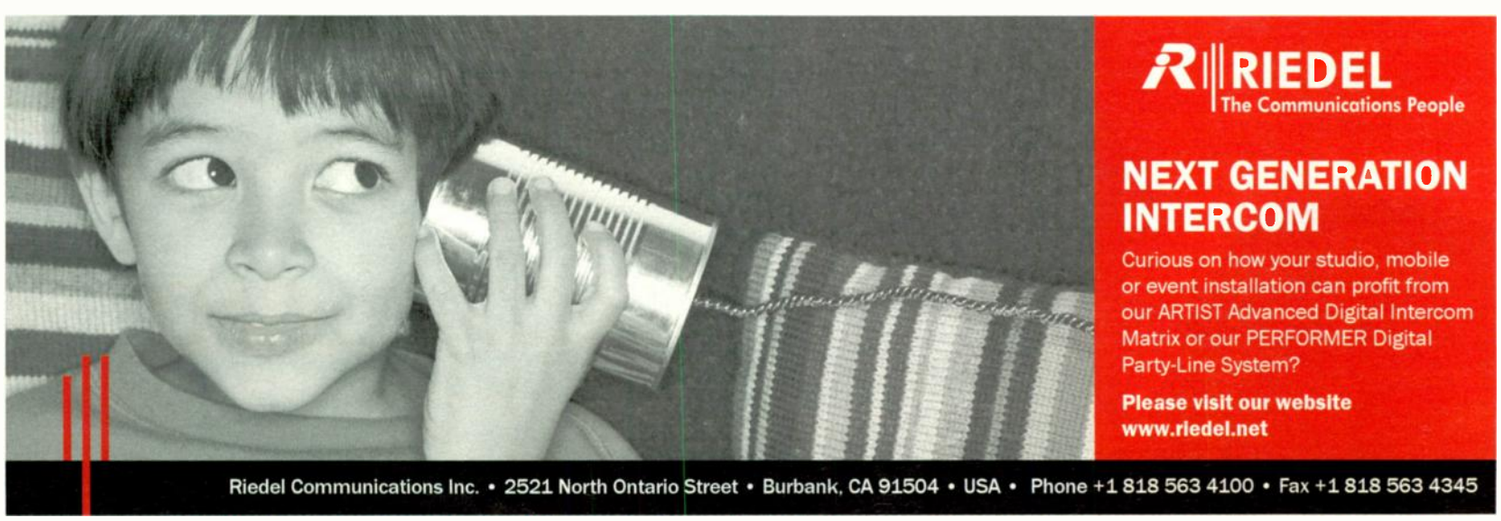
But can the type of expensive content production supported by the broadcast model and sustained by advertising revenue, survive the transition to this new broadband model? Or will the model of consumer-as-producer, evidenced by the popularity of YouTube, someday gain the upper hand?

How will users make sense of this maze? It's not as simple as handing a sports fan a new cell phone loaded with access features, or telling an MTV viewer they should check out the broadband video site. The very multiplicity of platforms and technologies stymies technological integration and consumer adoption.

Finally, how can content providers merge seamlessly with the communities spawned by YouTube, MySpace and other platforms, in a way that doesn't alienate users?

In the end, I may still want my MTV, but how I'll be getting it and paying for it is anybody's guess.

Will Workman is a former editor of telco industry publications Cable World and MediaView. He is now working on his PhD in mass communications. He can be reached care of ***TV Technology****.*



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DIGITAL TV | Charles W. Rhodes

Making Room for Unlicensed Devices

The FCC has issued a timetable to authorize sharing of broadcast spectrum with unlicensed devices in the so-called "white spaces." So whether Congress passes the telecom reform act this year or not, the FCC will complete its rulemaking.

Unlicensed devices will be deployed in broadcast spectrum February 2009 according to this timetable.

That was the bad news. The good news is that the FCC laboratory will test consumer DTV receivers for interference immunities. Presumably, those measurements will provide the commission with the data needed to write its rulemaking to protect broadcasters from harmful interference.

We have already discussed the use of those first-adjacent channels ("Avoid Adjacent Channels For Unlicensed Devices," Aug. 23). Some fear that direct pickup off coax cables in homes fed by community antenna TV systems will also create interference. If so, you've really got a problem. Coax cable is shielded, but how well is it shielded? If it only has a braided outer conductor, it isn't really well shielded at all.

Double braid-and-foil wrap is the best solution, but it costs more.

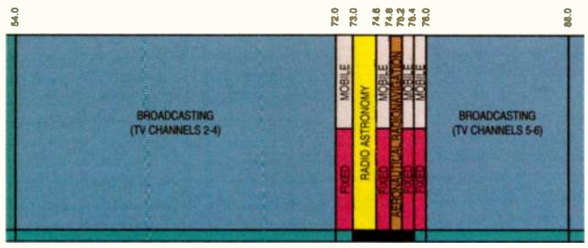
Now the FCC might have to allow DTV transmitters to use those previously taboo channels. For example, in the Washington, D.C.-Baltimore area, DTV is being broadcast on Channels 33, 34, 35, 36, 38 and 39. This column has shown that strong signals on Channels 33 and 36, for example, can generate third-order intermodulation products in Channels 30 and 39. Channels 34 and 38 can interfere with reception of Channels 32 and 40. Channels 34 and 35 can by this same mechanism, interfere with Channels 33 and 36.

It follows that unlicensed transmitters on certain pairs of channels will create interference to DTV reception at sites near those transmitters. Imagine the problem a broadcaster would encounter trying to track down interference to his signal if it results only when both unlicensed transmitters are simultaneously on-the-air.

Will such interference become widespread? Yes, these unlicensed transmitters can be put to many uses, and they will be mass-produced for a mass market. That is at least one reason why so much political pressure is being exerted on Congress. Another reason is that in rural areas, wireless links would allow people to access the Internet. That will drive the political process.

As this column has already noted, if

DEVICES, PAGE 53



I believe the best solution... will be the creation of a new unlicensed band by reallocating the spectrum from 54–88 MHz.

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CONTINUED FROM PAGE 48

care about down-rezzed digital outputs, even though 960x540 looks pretty darned good, especially when later up-rezzed with something like the Brick House Syntax or Snell & Wilcox Quasar.

Anyhow, a court said Our Beloved Commish didn't have the authority to order such things. So Congress has gotten into the act—literally. Any day now (which is legislativese for "before the end of time"), our elected representatives might come up with an order that requires tuners to be potted with demods, demuxers, decoders and anything else with an unprotected digital output of any sort.

UNLESS THEY DO

If a miracle happens, and the law is passed and takes effect tomorrow, that will leave only tens of millions of unprotected DTV receivers out there. No pirate would ever think of buying one of those.

Silly me! I forgot that the second law of thermodynamics is unproven to this crowd. Methinks they believe that, as soon as the law is passed, all unprotected receivers will disappear off the face of the earth, and so will all unprotected Blu-ray and HD DVD players, D-VHS machines and HD DVRs.

"But, Mario, are you saying a 'broadcast flag' law would have no effect?"

Heck, no! It'll have plenty of effect! DTVs will be more expensive. HDTV recorders will be harder to use. Maintenance that could have involved replacing a tiny part will require a complete subassembly instead. But it surely won't stop many pirates.

AVAST YE!

"Curses! A potted subassembly! Don't bring me an older, unprotected receiver!"

Meantime, there is a perfectly good way to protect content. It's good enough that AMD, Broadcom, Cablevision, DirecTV, Fox, LG, Philips, Samsung, SanDisk, Texas Instruments and Thomson all support it, along with a bunch of other folks.

It's based on a novel idea: If you want to protect content, why not protect the content, not the connections over which it travels? No need to pot anything. No need to add DTCP to FireWire.

It's called the secure video processor. You could look it up on Google.

It *does* have a few holes. But at least it ain't entirely stupid.

Mario Orazio is the pseudonym of a well-known television engineer who wishes to remain anonymous. E-mail him at Mario_Orazio@imaspub.com.

World Radio History

Devices

CONTINUED FROM PAGE 52

using one channel of each of these channel pairs were not allowed, such interference would be eliminated. That would leave the other channel of each channel pair to be used by unlicensed transmitters. These channel pairs create interference by generating third-order intermodulation, or IM3 products that fall into the DTV channel thus creating interference in the desired channel.

WORST CHANNEL PAIRS

The worst of these channel pairs is n+5, n+10, as this generates IM3 in the DTV channel (n) and also in n+15, the image channel. This creates a double whammy with up to 3 dB more undesired signal in the intermediate frequency as was described here in my column in the June 28 issue of **TV Technology**, ("Can Broadcasting Survive Unlicensed Devices?").

There is another interference mechanism yet to be considered: cross-modulation.

In the CATV industry, it is called "triple-beat interference." The DTV signal is amplitude modulated. Any really strong undesired signal that gets to the RF input port of the mixer can amplitude-modulate the desired DTV signal. This is cross-modulation (X-M).

Both intermodulation and X-M result from the same kind of nonlinearity. IM3may be more potent than X-M because it has the total power of two undesired strong signals behind it. A lot is known about intermodulation and X-M with analog signals, but not much is known about intermodulation versus X-M with digital signals.

I think I am on safe ground to assume that these unlicensed transmitters will not be modulated by analog signals like NTSC, but there is no such prohibition in the FCC's proposed rules. By the time unlicensed transmitters might be in widespread usage, there will be no analog TV broadcasting (after Feb. 17, 2009).

SUPPORT STUDIES

I urge broadcasters to support proper scientific studies with experimental confirmation of findings to compare the interference to DTV reception by one undesired signal a few channels from the desired channel (X-M); versus the interference caused only when certain pairs of channels are in use (intermodulation).

If X-M is deemed an intractable problem, the only white spaces left would be outside the UHF band. The high-VHF band is well-suited to DTV transmission, while the low-VHF band is generally known to be unsuitable for DTV.

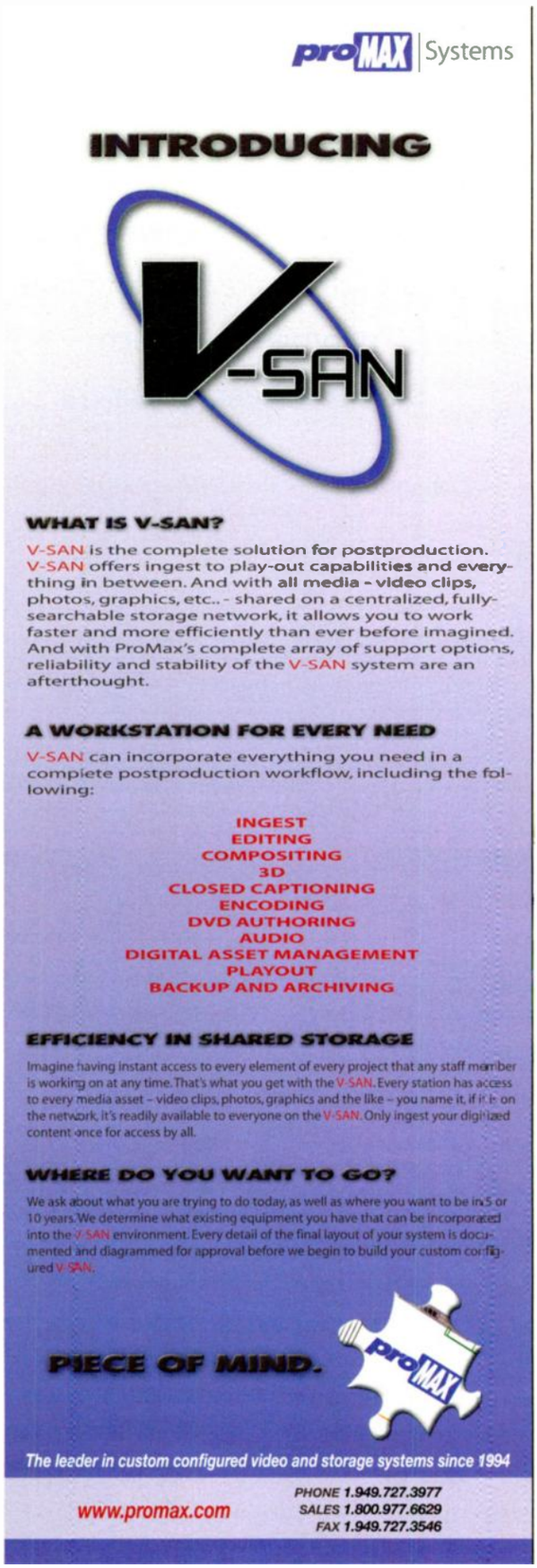
There are only 43 DTV channel assignments in the low-VHF band, according to the reported results of the second round of broadcaster choices. I believe the best solution for these unlicensed transmitters will be the creation of a new unlicensed band by reallocating the spectrum from 54–88 MHz.

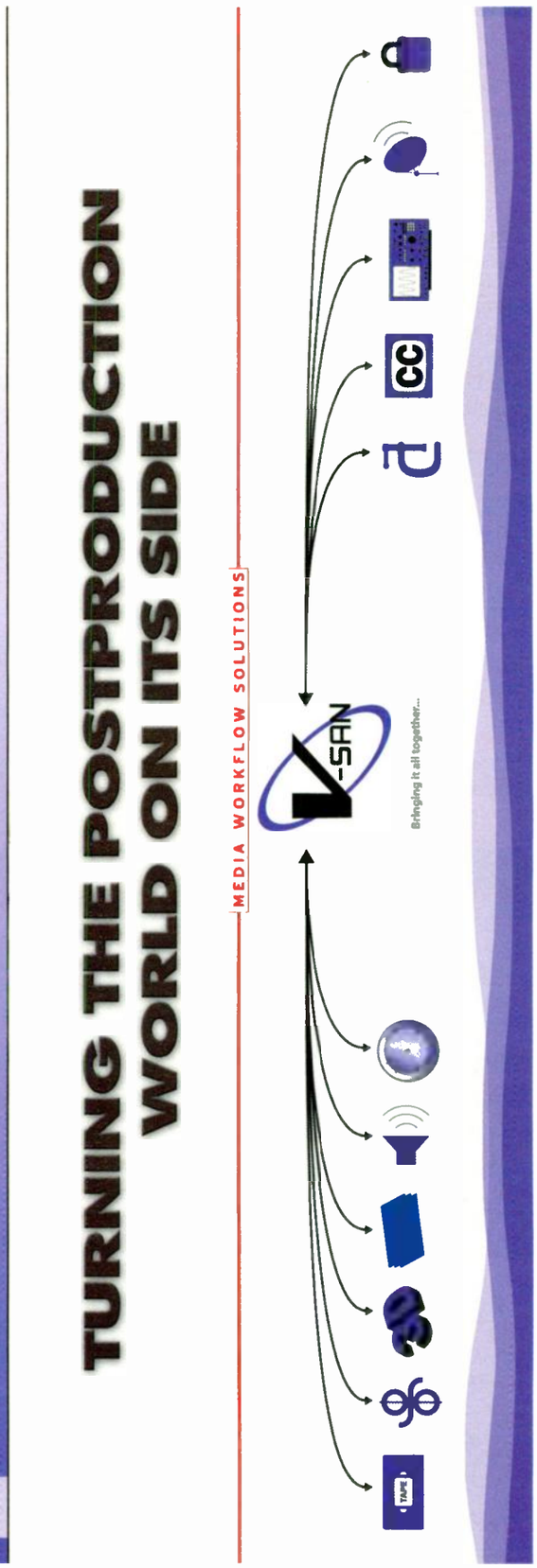
This would require 43 additional DTV channels in the high-VHF and UHF bands to be found for those broadcasters who have indicated they want a low-VHF DTV channel.

Soon, the results of the third round of the channel selection process will be known. There may then be even fewer broadcasters still requesting a low-VHF channel, and consulting engineers will know exactly which channels will be available in the high-VHF and UHF bands.

But somehow, broadcasters must get answers to these questions I've raised here. Too bad they shut down their Advanced Television Technical Center a few years ago. Consulting engineers can find those needed channels in the high VHF and especially the UHF band, (after NTSC shutdown), but where can the experimental work needed be carried out with FCC oversight and fully documented?

Charlie Rhodes is a consultant in the field of television broadcast technologies and planning. He can be reached via e-mail at cwr@bootit.com.





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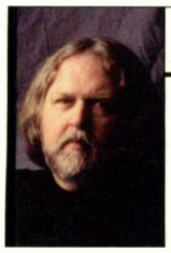


Photo: Steve Jordan

NET SOUP | Frank Beacham

The Director's Role in Video Production

With Web sites like YouTube providing the accessible platform for overnight video sensations, the walls to television distribution are rapidly falling. Unfortunately, the barriers to good television remain as high as ever. When I say "good television," I don't mean it in an elitist way. To me, "good" means the video tells a compelling story—one that grabs and keeps my attention.

Good television is usually the work of a single intelligent voice—the director. In today's micro video universe, a director can operate as a one-man band or with a more traditional crew. It doesn't matter—the important thing is that the director's intelligence and skill is applied to the story.

IT'S THE STORY, STUPID

I'm reminded of a wonderful lecture the late film and theater director, Elia Kazan, gave "On What Makes a Director." In a nutshell, Kazan said a good director must have some knowledge of just about everything: literature, dramaturgy, acting, speech, comedy, music, dance, scenery, costumes, lighting, color, cameras, tape recorders, cities, the country, the sea, animals, psychology, the erotic arts, war, history, economics, food, travel, sports... and that was just the beginning.

Too many video directors today are obsessed with technology. They play the game of camera specs and always demand the latest new model off the video assembly line. Sadly, some are actually convinced that the latest gadgets acquired for their video playpen will assure them the power to create magnificent, compelling programs. Sadly, they are very wrong.

Probably the best advice I've ever received about directing came many years ago from a veteran motion picture cameraman who had successfully switched to feature film directing in mid-career.

The advice was this: no matter which medium, video, film, theater, etc., and no matter what kind of production—sales training tapes to news segments to documentaries to feature films—as long as people are involved, a good director must have a knowledge of the craft of acting. For someone whose training had always emphasized the technical side of video production, this advice initially threw me for a loop.

Acting. Learn acting? No one, including all those "professors of broadcasting," had ever told me this. It was never on the radar screen.

A knowledge of the actor's craft will fundamentally change your approach to directing any kind of program in which people appear on camera. I guarantee it, the film director assured me.

A knowledge of the actor's craft will fundamentally change your approach to directing any kind of program in which people appear on camera.

I took his advice and can now declare: *he was right*!!! At the very minimum, every video director should study acting. Admittedly, it's easier to study acting in cities like New York and Los Angeles. But some level of acting classes are taught in nearly every city in America. And there are many books that can start a beginner on the right track.

I was lucky enough to study with an excellent teacher who offers a class is tailor-made for video directors. Judith Weston, who is based in Los Angeles, teaches "Acting for Directors," a workshop of basic acting techniques for directors, writers and producers with no previous acting experience. An accomplished actress, Weston was inspired to create the workshop some years ago due to the many bad personal experiences she had working for directors with no acting background.

"If a director knows something about acting, that director can communicate with the actors and will create a collaborative atmosphere," she said.

The workshop will help fledgling directors communicate with actors and inspire them to do their best work. The classes are occasionally held in various cites outside of Los Angeles. Check Judy's Web site at *www.judithweston.com* for schedules.

If you can't attend a workshop, Weston has two excellent books on the subject: "Directing Actors" and "The Film Director's Intuition." (I'm a bit biased about the second book, since I helped Judy with the editing.)

There are many great books on acting. Names like Stanislavski, Sanford Meisner, Stella Adler, Uta Hagen have written among the best. On the subject of directing, however, I'd like to recommend two personal favorites. One—"On Directing," by Harold Clurman—was published in 1972, and—"On Directing Film," by David Mamet—was published early in 1991.

Mamet's book is based on a series of lectures the playwright and director gave at the film school of Columbia University in 1987. Mamet's philosophy of directing follows that of Ernest Hemingway's theory on good writing: "Write the story, take out all the good lines, and see if it still works."

Says Mamet: "My experience as a director, and as a dramatist, is this: the piece is moving in proportion to how much the author can leave out. A good writer gets better only by learning to cut, to remove the ornamental, the descriptive, the narrative, and especially the deeply felt and meaningful. What remains? The story remains. What is the story? The story is the essential progression of incidents that occur to the hero in pursuit of his one goal."

Harold Clurman, the legendary stage director and drama critic, produced one of the greatest books written on the directing craft. Though Mr. Clurman focuses on the process of directing for the stage, his insights and methods apply to all media. If you read no other book about directing, read this one.

(Judith Weston's books are published by Michael Wiese Productions. "On Directing Film," by David Mamet is published by Viking Penguin, New York. "On Directing," by Harold Clurman is published by Collier Books, New York.)

Frank Beacham is a New York-based writer, director and producer.

World Radio History

Earth

CONTINUED FROM PAGE 46

others are located in remote locations throughout the 50 states and the Caribbean, and to efficiently migrate to a non real-time strategy, we have to serve each and every one of them.

Large pipe availability in some of the more remote locations is, to this day, still virtually nil. Even if the pipes existed in all of the locations, the myriad different vendors and devices would make it impossible to leverage an efficient multicasting solution.

That would mean that we would need gargantuan amounts of bandwidth and server capacity at PBS to serve out all of those unicast streams. Without even considering the additional expense associated with routers and firewalls and maintenance at each one of the sites, this "solution" is effectively a nonstarter.

The same issues surface with point-to-point fiber since the highly fragmented and geographical nature of broadband providers would preclude a homogeneous multicasting solution. Strike two.

The Internet2 scenario is just as troublesome. While many of our university licensees indeed have access to Internet2 infrastructures, the overwhelming majority of our community licensees do not, which makes this potential solution unworkable as well. As Robert Metcalfe's law of network value states, "The value of a telecommunications network is proportional to the square of the number of users of the system." In that respect, Internet2 networks fall way short of the ubiquity needed for this process. Strike three.

NOT FOR BROADCAST

This brings us to the last scenario. While BitTorrent distribution methodologies are very enticing for low-bandwidth content, they become far more complex and problematic when it comes to the reliable and timely distribution of broadcast-quality material.

Even if we were to assume a perfect and flawless exponential distribution tree, it would take at least eight iterations to get to all of our stations (27=128, 28=256). Imagine distributing a two-hour episode of "Masterpiece Theater" (10 GB in SD, 30-plus GB in HD) via that methodology. Now imagine sending 90 percent of your on-air content that way to 177 stations.

As much as I am a strong believer in the double exponential rate of technological development, I do think it will be at least five to seven years before terrestrial distribution can address our current requirements.

In public television, not only do we have to worry about Washington, Los Angeles, Chicago, Boston and New York, we also have to service our stations in Alaska, Hawaii, Eureka, Calif. and Peoria, Ill.

So for the time being, and until all of the bandwidth providers can divine an MPLS-based, multicast-enabled, reliable terrestrial network that reaches all public TV stations, a relatively simple satellite-based solution remains our only cost-effective, manageable and efficient strategy for non-real time content distribution.

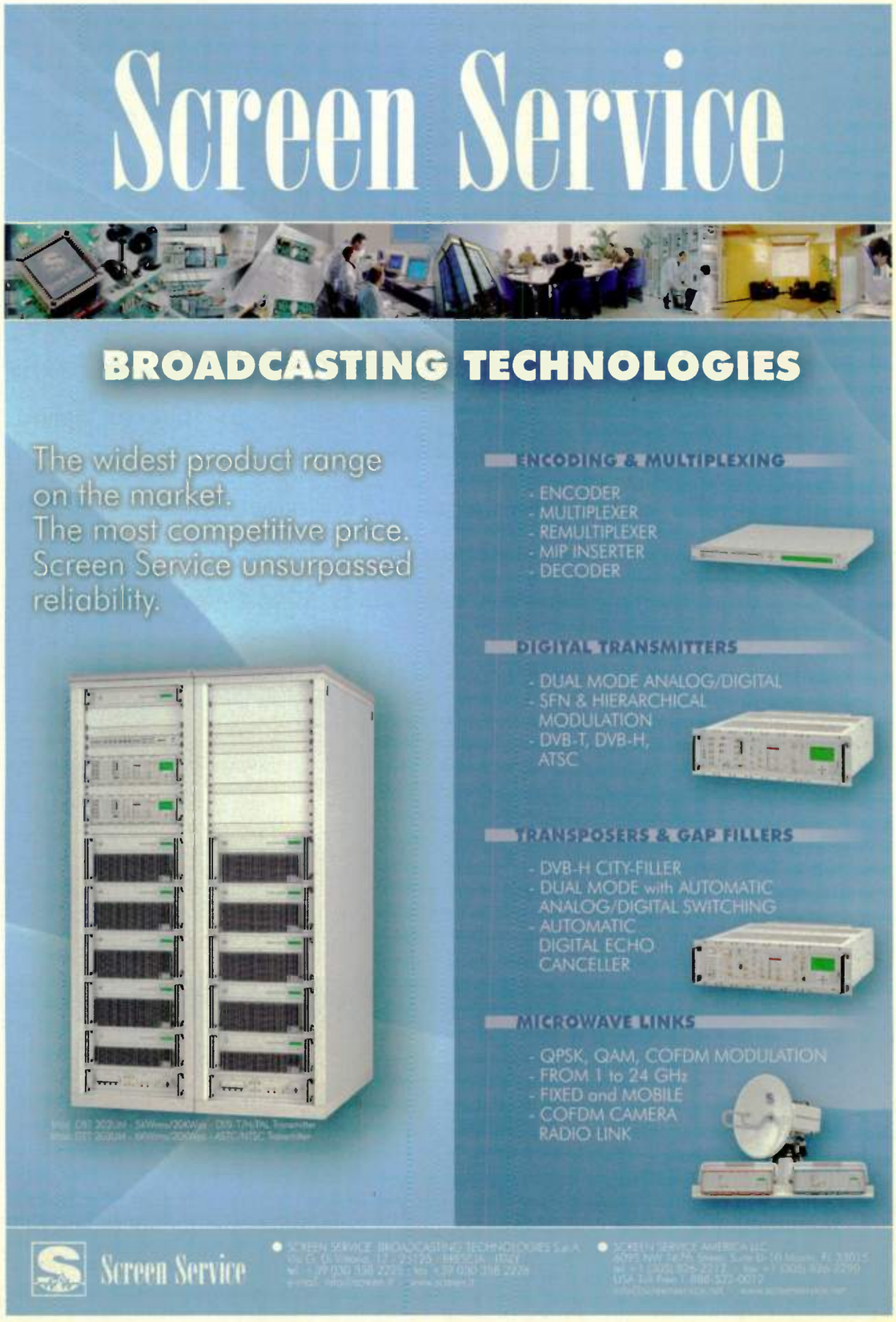
AU REVOIRE

As you might already know, I have recently taken another job outside of the broadcasting arena and as such, this will be my last column in this fine publication. Over the last few years, broadcasting has undertaken a dramatic shift into the IT realm and I am delighted to have been able to play a role in that transformation. Going forward, the challenges will only get harder as the upcoming changes continue to affect each and every broadcasting institution to the inner core.

It will be in those times that bold technology leadership will make its strongest mark yet. We are destined to do so!

Count on IT!

Andre V. Mendes is the former Chief Technology Integration Officer for PBS.



World Radio History

FOCUS ON EDITING | Jay Ankeney

Editor's Emmy Win Was a Team Effort

Editor Lance Luckey is a Hollywood kid born in Santa Monica and raised in the San Fernando Valley by a Hollywood father, Richard Luckey, who had built a successful career as a music editor on major movies and TV series. And, when he stepped up to receive the Emmy for "Outstanding Single-Camera Picture Editing For A Comedy Series" at the Creative Arts Awards ceremony Aug. 19, 2006 at the Shrine Auditorium, Lance was living a Hollywood dream.

Lance won the statuette for editing the "Ruined Joy's Wedding" episode of the popular ensemble comedy, "My Name Is Earl," created by executive producer Greg Garcia for 20th Century Fox Television and Amigos de Garcia Productions for airing on Fox.

In it, the karma-challenged Earl (Jason Lee) finds he has not been invited to the wedding of his ex-wife Joy (Jaime Pressly) and friend "Crabman" Darnell (Eddie Steeples). In proper TV sitcom style, he rectifies the situation by inadvertently ruining the wedding, and then sets out to correct the latest "something bad I did" on his list (No. 261), as part of his ongoing attempt to erase the missteps taken in his past life.

EDITING WITH PREMISE

With the help of assistant editor Pat Magee, Lance rotates cutting the show's episodes with editor William Marrinson throughout the season, and has found the visual comedy style of "Earl" conducive to encouraging input from the editor's perspective.

"It's not just about telling the story," Lance said, "and now co-producer, Kim Hamberg, even managed to work an extra day into our schedule to give us additional time to complete our editor's cut. Kim knows the show will only get better if we can work on it just that much longer."

Some of this extra time lets Lance and Pat search their iPods for '70s music for the soundtrack, and for use in editing. One reason for this easy working relationship is because Lance had met the show's executive producer, Marc Buckland, at Steven Bochco's production company when he was cutting "The Byrds of Paradise" in 1994. Fortunately, since Buckland was also the director of this Emmy-winning episode, Lance's contributions were especially appreciated.

"While I am cutting a show, I am always trying to determine what was in the director's mind. But if I have been successful, I will have presented him with some surprises he did not expect."

—Lance Luckey, 2006 Emmy-winning editor

"While I am cutting a show, I am always trying to determine what was in the director's mind," Lance said. "But if I have been successful, I will have presented him with some surprises he did not expect."

Fans of the show know that the plot's mixture of humor and sentimentality often depends on flashbacks from Earl's life, triggered by a frozen close-up. Sometimes, however, Lance finds that the rhythm of action shot could gain extra punch during editing. Often he will insert a quick white flash that allows him to pull up the timing so a crucial expression can hit freeze frame on the proper beat.

Two other production techniques favored by director Buckland provide Lance with additional tools to tweak the pacing. Buckland likes to have characters pop into and out of the frame. By cutting before or during their appearance, the rhythm of the whole scene can be affected.

But most importantly, Buckland will often start a scene on a black flag and pull back from that void to reveal the action. Since this often has to be coordinated with Earl's voiceovers, script supervisor Jennifer Jackson often reads the lines off camera.

But in one scene in the "Ruined Joy's Wedding" episode, the best of plans needed some help. We see Earl "being friendly with Joy" when the idea was to have the shot pull back through the bedroom window and black-flag transition to the wedding's rehearsal meal. This was supposed to be covered by a V. O.: "Since three members of the wedding party had court-mandated curfews, the traditional rehearsal dinner was switched to a rehearsal lunch;" over a dolly past steaming pizzas ending just in time for Joy to be handing out paper cups. However, back in the edit bay, none of the takes fit.

Thanks to the convenient use of the black wipe, which has by now been easily accepted by the audience, Lance was digitally able to trim the head of the incoming move over the pizzas that ended on the lunch gathering to make it fit the V. O.

At the end of Act One, during the titular wedding, is when Lance's editing showed its muscle. Held in a public park, the ceremony is constantly interrupted by a nearby soccer game. Wobblingly frustrated and drunk, Earl is blindsided by an invading soccer ball. In one continuous shot Earl kicks the ball down the aisle—smack into Joy's face. Stunned, she turns into camera and sinks out of frame. Earl writes No. 261 on his list of bad deeds, and we fade to commercial.

At the beginning of Act Two, the script called for a recap of the gag. But instead of repeating that single shot, Lance split the moment. He began with a close-up of Earl kicking the ball and cut to an over-the-shoulder shot of Joy getting whacked in the kisser. He then inserted two reaction shots of startled wedding guests before returning to Joy spinning into camera. This time, when he cut back to Joy's stunned mug, Lance was able to further extend the moment by digitally slowing it down.

"I knew the fun of the gag had already played at the close of Act One in a single shot that emphasized its reality," Lance said. "So when we went back to this bit of slapstick, I wanted to stretch it out by adding some slo-mo so it would look different to the audience. Otherwise it wouldn't have been as funny of a reveal, and this is the kind of technique only modern digital editing can let us play with."

Lance is modest about his contributions to the ensemble crew behind this ensemble comedy. But he recognizes the contribution editing can make.

"My goal is to make the show better than it was in the script, and even better than the director hoped for," he said. "If I can add something during editing, that shows the power of the editing art."

Jay Ankeney is a freelance editor and post-production consultant based in Los Angeles. Write him at 220 39th St. (upper), Manhattan Beach, Calif. 90266 or at JayAnkeney@aol.com.

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PRODUCTION MANAGER Craig Johnston

Fielding Feedback From the Crew

I've heard it said (and probably said it myself) that most jobs in television are 10 percent inspiration and 90 percent perspiration.

Those on the creative end, producer types, often find they have to fight the urge to spend more than that 10 percent of their time dreaming up what they're going to do or the show itself never gets done. Making their dreams come true requires a lot of work on their own part.

For those on the more technical end, they can often find themselves fighting to get anywhere close to 10 percent in the creative area. I've heard it over and over, "they just want us to be robots." I don't think it's so much they're wanted to be robotic as producers and directors want the job they do to be uniform, show-to-show, day-to-day.

There is good reason for insisting on a good deal of uniformity on the technical side. Cameras in a multicamera show need to be shaded the same or the show itself looks goofy. Shading on cameras on the same show should look the same, as should the lighting and framing of shots. Audio same-same.

NO BLUFFING ALLOWED

So with this need for uniformity, how do the technical types get their creative 10 percent?

I'll start by suggesting you don't try using your own creative 10 percent coming up with some way of tricking them into thinking the droid-like stuff they have to do is creative. We both know that ain't gonna work.

But I'll suggest you do two things: find parts of their jobs where they can exercise creativity, and help them see where they are contributing creatively.

Just because there's uniformity, it doesn't mean the uniform can't change. (Heck, I can remember when the U.S. Navy changed its uniform back to bell-bottom pants, although they waited until just after they went out of style for civilians.)

Unless you're changing the news set, any changes in the way a news show is shot are going to have to be gradual. But there's still room for some improvement. This is a good time for the director and news crew to sit down and watch an aircheck of a news show, on the studio floor, where cameras are readily available to try things.

For these meetings to be more than an excuse for disappointment, it's important that process and expectations be defined up front.

First, make sure the news director knows what's happening. Otherwise, what's likely to get back to him is that your people are messing with his newscast. You need to let him know what's going on, that the people who actually do the job are being asked for advice about how it might be done better. Nothing is going to change on-air until the news director has had a chance to see what you're talking about.

This same one-potato, two-potato process also has to be communicated to technical folks coming to the meeting. And if anyone from the news department comes to you with a wild version of what's going on, tell them they've heard it from someone who misunderstood, and to talk with their boss about it.

The first few of these kinds of meetings can be productive, or very nonproductive. This may be the first time members of the crew have been asked their opinion on this, and it may also be the first time the director or whoever is leading the discussion has facilitated this kind of meeting. Ahead of time, you should probably spend time working with the discussion leader on what to do and what to expect.

I remember one director, who had just held his first meeting like we're talking about. When it was over, he slogged over to my desk, crestfallen. The show he was directing was a talk-show, and the major suggestion he got from the crew was that the producers shouldn't let fat people in the studio audience. Apparently larger audience members made it tough for the hosts to take a mic out into the peanut gallery.

He went back for another meeting with the crew, telling them that although he had communicated their thoughts to the lead producer, it was probably against the law to discriminate against potential audience members because of their girth.

Subsequent meetings yielded suggestions he could act on. The show started looking better as a result of some of those suggestions.

Not all of the creativity in doing a television show is in the content, or in what you can see on the screen.

©iStockphoto.com/Darcy Fitzpatrick

Not all of the creativity in doing a television show is in the content, or in what you can see on the screen. A good deal of creativity goes into making it possible for you to see what you see on the screen, and technical crew may not realize how much their creative problem solving is appreciated.

My own nomination for the underappreciated award is the ENG microwave folks. When they've explained how they made the shot under this overpass, bounced the signal off that building, and somehow got it back to the receive site, I'm usually amazed. It's a creative process to me.

Other technical jobs have their own openings for getting the job done creatively. If the news program talent shots themselves have to be done from an exact location on the floor, and framed just so, make it clear that's how it has to be done. As long as that gets accomplished, how it gets accomplished can be up to the crew members. That's their space.

It may be a stretch to say that in television, every job, every day is 10 percent creative. But you can do your part by treating the technical folks like more than robots. A robot can only give you exactly what you can think to ask it for; an invested crew member can give you a lot more.

Craig Johnston is a Seattle-based Internet and multimedia producer with an extensive background in broadcast. He can be reached at craig@craigjohnston.com.

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AUDIO BY DESIGN | Mary C. Gruszka

Microphones With Switchable Polar Patterns

In previous columns, we discussed the different microphone polar patterns, omnidirectional, bidirectional, and directional (which included cardioid, supercardioid, and hypercardioid). Each of the mics discussed produced only one of these particular polar patterns.

But mics can also be designed to produce more than one polar pattern. A switch on the body of the mic allows the user to select one of the provided polar patterns.

But how do they do that, asked Jeff Koscho, senior systems engineer for Video Networks, Inc. He wrote: "I just read your pet peeves article. In it, you mentioned a difference between omnidirectionals and directional mics. It is consistent with what I've learned, taught and lived with through the years: slits behind the microphone diaphragm allow the sound to enter and create acoustic cancellations.

"What I'd like to know, and hopefully you can provide some insight, is how do the switchblade-patterned microphones work? The switch is an electrical device, but the change in pickup patterns are due to acoustic principles. I asked a manufacturer's rep this one once, and he didn't have an answer for me."

VARIABLE PATTERNS

Let's try to answer this question here.

In general, for a microphone to have different polar patterns it must have more than one diaphragm element. The electrical outputs from each of the elements, which result from the impinging acoustical sound pressure levels, are added or subtracted from each other, thus forming new polar patterns.

Now let's get more specific. A common way of creating different polar patterns in one microphone is to mount two condenser cardioid elements back to back inside the mic housing.

A common construction method is to create a single element with two diaphragms (one facing the front of the mic, the other facing the rear) with a common backplate. The mic body is also designed with appropriate slits and internal acoustic delay elements as part of the cardioid design.

Remember that the condenser mic uses a capacitor for each element. One of the two parallel plates of the capacitor is actually the diaphragm, which moves in the presence of sound waves, and the other is a fixed backplate. This type of mic requires a polarizing voltage.

The polarizing voltage to the front element is fixed, but the voltage to the rear element is variable. A common method is to switch this voltage, and that is what the selector on the mic body is doing. The voltage to the rear element can also be continuously variable with a potentiometer. The element's sensitivity is proportional to the applied polarizing voltage.

The electrical signal (AC) outputs of each element are summed together to produce the final output of the mic.

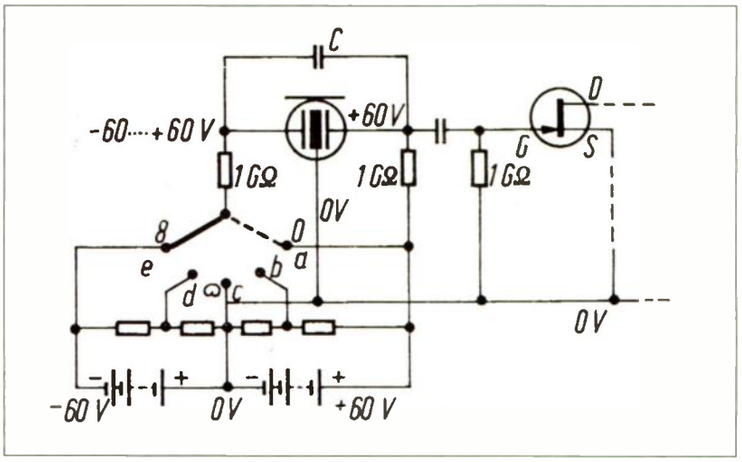
Let's use a mic with a switch. If it's set to the cardioid position, the voltage to the rear element is switched off, so that only the front element contributes any signal. Since this element is designed to be a cardioid, then the polar pattern of the entire mic will be a cardioid.

If the polar pattern switch is set to omni, it switches in a DC polarizing voltage to the rear element that is equal in value and polarity as that of the front. Now, both elements will produce signals each with a cardioid polar pattern. When the two cardioid patterns are added together they produce an omnidirectional pattern.

If the polar pattern switch is set to figure-8 (bidirectional), it switches in a DC polarizing voltage to the rear element that is equal in value but opposite in polarity to that of the front. This means that the signal from the rear cardioid element is subtracted from the signal from the front cardioid element, resulting in the figure-8 pattern.

This type of construction is used on such microphones as the Shure KSM44, and the Neumann U87 Ai.

The Neumann TLM127 has two more polar patterns available—a wide-angle cardioid (between the omni and cardioid) and a hypercardioid



Graphic Courtesy of Neumann

Fig. 1: Circuit of a condenser microphone with electrically switchable polar characteristics.

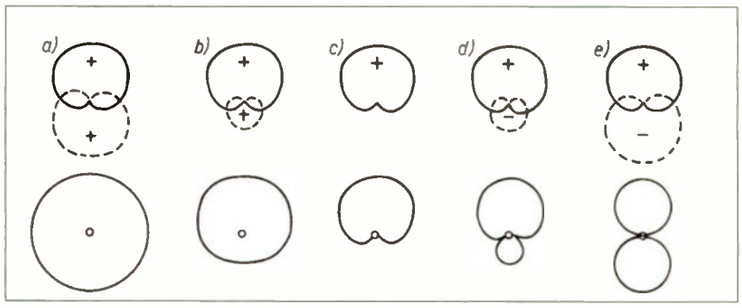


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Fig. 2: Polar patterns obtainable from a microphone as shown in Fig. 1 by adding or subtracting two cardioid patterns.

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(between the cardioid and figure-8)—plus the three mentioned above. This is done by applying a voltage (either positive or negative) that is lower than that applied to the front element. This lowers the sensitivity of the rear element, and it thus produces a lower output, that when added to or subtracted from the output from the front element, produces these intermediate polar patterns.

A FEW SWITCHABLES

In addition to the switch on the mic body, many Neumann mics can be remotely controlled with standard phantom powering on standard shielded twisted-pair audio cable.

The AKG C 414 B-XL II is another example of a mic that has five switchable polar patterns—omnidirectional, wide cardioid, cardioid, hypercardioid, figure-8. An optional remote control is also available.

The AKG C 4000 B has these three switchable polar patterns—omnidirectional, cardioid, and hypercardioid.

(The mics mentioned above are only a sampling of those that have switchable polar patterns.)

The Shure KSM9 takes a different approach to producing multiple polar patterns. This mic can be switched to either cardioid or supercardioid.

Michael Pettersen, director of applications engineering at Shure explained how the KSM9 is constructed:

"The KSM9 has two electret condenser elements; one element is in front of the other. Both elements face forward and are contained within a single housing. The front element is acoustically tuned half-way between cardioid and supercardioid. Via a double-pole switch, the rear element is connected in parallel to the front element.

When the rear element is connected to have the same polarity as the front element, the resultant pattern is cardioid. When the rear element is connected to have the opposite polarity as the front element, the resultant pattern is supercardioid. Using this approach, the sensitivities of both patterns are nearly identical."

MIXING IT

Another approach to creating variable polar patterns is to bring out the signals from the different microphone elements and mix them externally, like on separate channels of an audio mixer.

The Josephson Engineering C700A consists of an omnidirectional element and a figure-8 element. Its C700S model has an additional side-facing figure-8 element that provides not only the polar pattern itself, but allows the direction of the pattern to be changed. Here, the polar math works like this: omni-plus-figure-8 (equal levels and polarity) equals cardioid. At the front, the level is double that of the individual elements.

Changing the levels of the two elements relative to each other with an audio mixer, provides a wide range of polar patterns. Changing the polarity of the figure-8 results in patterns facing the opposite direction (like a reverse-cardioid, for example.)

The side element of the C700S, allows the polar pattern to be "steered" in different directions. This means that the maximum response of the mic doesn't necessarily have to be at 0 degrees on axis. It could be at 30 degrees, –45 degrees, as two examples, or at other angles depending on the level and polarity of the side element mixed compared with the omni/figure-8 combination.

Microphones with switchable or variable polar patterns are useful additions to one's microphone collection. They provide a certain amount of flexibility for use with different sound sources and recording environments, and you can learn a lot about the characteristics of different polar patterns under these different circumstances.

Mary C. Gruszka is a systems design engineer, project manager, consultant and writer based in the New York metro area. She can be reached via ***TV Technology.***

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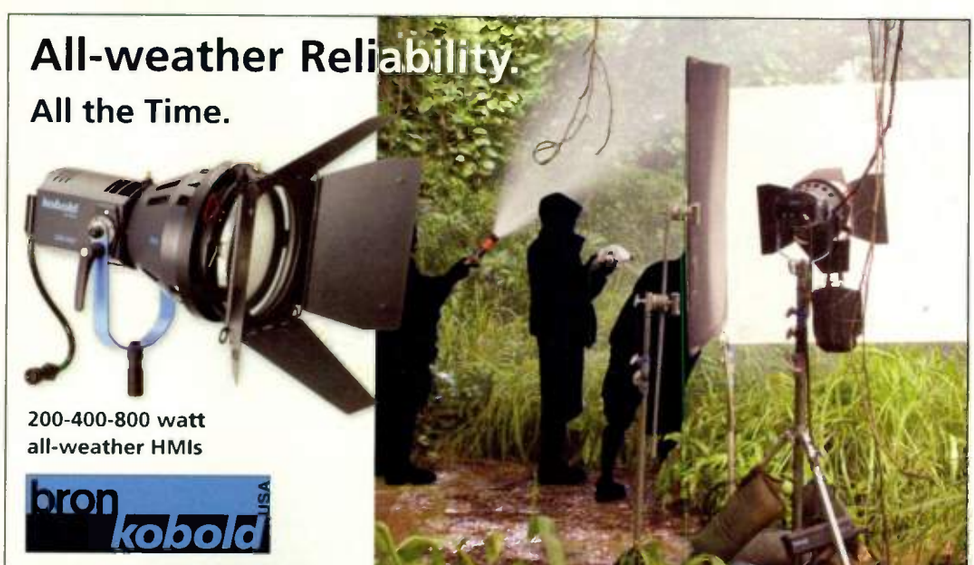

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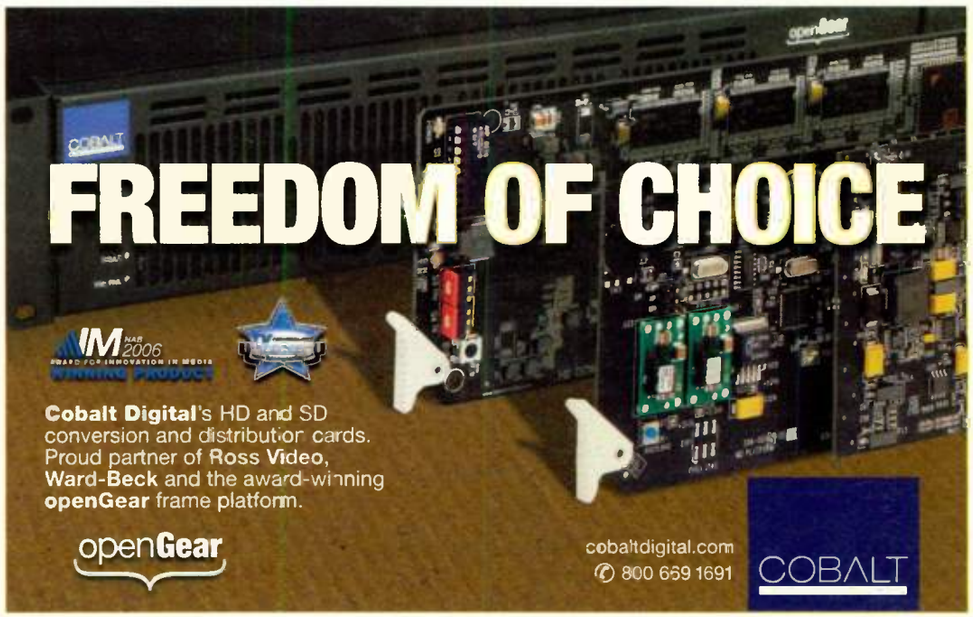

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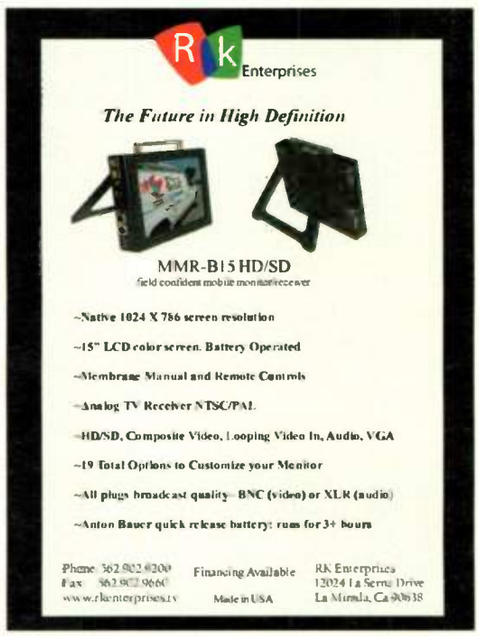

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World Radio History

USER REPORT

Sony HVR-Z1U Works for Documentaries

by Jon Alpert
Videographer and Cofounder
Downtown Community TV

NEW YORK

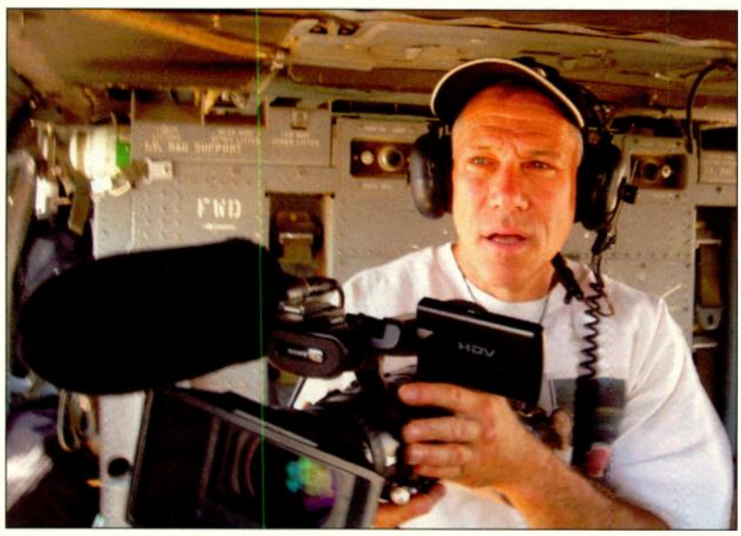
I recently worked on two location shoots that were both for TV documentaries, but each presented its own set of unique challenges. One thing in common with these was my use of the Sony HVR-Z1U HDV camcorder. It helped me capture shots that would have been hard to get otherwise and also helped me create signature looks for each project.

The first was a recent program that aired on HBO, called "Baghdad ER."

WORKING IN BAGHDAD

My codirector, Matt O'Neill, and I spent two months in and around the city of Baghdad, with much of our time at the main U.S. Army hospital there. The resulting footage became the basis for the documentary.

This was one of the most difficult and horrifying experiences of my life. I've been to more than 20 war zones as a journalist and I've never seen anything like this. For documentary purposes, it was really important that we had a camera that could work under all circumstances.



Jon Alpert on location in Iraq with the Sony HVR-Z1U HDV camcorder

For capturing serious footage, Matt and I found that the HVR-Z1U had several features really stood out in the field.

The way it was able to capture what was going on inside that hospital was incredible. To some degree, it's almost too realistic, because you can see everything happening in the operating and emergency rooms—the colors, when the doctors or patients are crying; or the celebrations when a life is saved. It makes it all seem so real. It captured reality in a way like nothing we've ever worked with before.

UNIQUE CHALLENGES

The second project was a very different type of documentary, a "docucomedy based on reality." It also aired on HBO earlier this year, and was titled "House Arrest." The production tracked a day in the life of Chris Colombo, scion of the famous New York Colombo family. It presented some unique challenges, and would not have been possible, or at least not have turned out the way it did, without this camcorder.

The HVR-Z1U was able to discreetly capture even the smallest details, making the footage come alive on the screen. The look of it is astonishing. You'll see beads of sweat, tears—things you might not normally see. This camera has a richness to it. The colors just seem to envelop you. I hadn't worked in widescreen format before, but found that it gives the attractiveness of film, but with the added benefits of working digitally.

The camcorder's ability to produce high-quality images in a compact package helped us blend into the subjects' environments without being obtrusive.

To be in the backseat of a car and be able to shoot with no lights, no wires, no gigantic crew, basically made the shoot. Everyone was able to act naturally. If this had been done conventionally, it would have been impossible to complete the shoot in one day. Actually, it would have been impossible to shoot in a week. What makes this show unusual was that I was able to blend in with everybody and still capture this type of quality.

You can feel it and see it in the final product. It's the level of quality in terms of the camcorder's technical performance and the realism in terms of what it captured.

Jon Alpert is a 15-time Emmy Award winner and cofounder of Downtown Community TV in New York. He may be contacted at jonny@dctvny.org.

For additional information, contact Sony at 800-686-7669, or visit www.sony.com/professional.

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World Radio History

USER REPORT

Lone Star Station Shines With Canon

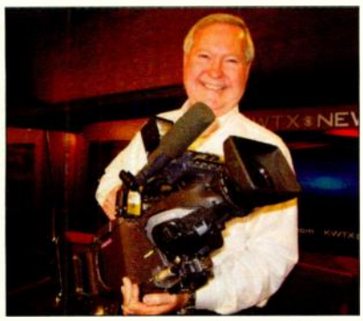
by Ken Musgrave
Operations Manager
KWTX-TV

WACO, TEXAS

KWTX-TV is the CBS affiliate for Waco, Temple and Killeen, Texas. It's owned by Gray Television in Atlanta, and reaches more than 300,000 households. We have always seen ourselves as pioneers of new technology. KWTX-TV was among the first stations in Texas to have ENG cameras, beginning in 1975 with an Ikegami camera equipped with a Canon lens.

Keeping with our tradition as trendsetters in central Texas, we recently upgraded with nine Sony PDW-510 XDCAMs, and we wanted to equip them with the best possible optics.

We have used Canon lenses almost exclusively on our ENG cameras over the years, due to their quality, durability and service. When the time came to purchase lenses for the new cameras, we bought Canon J17ex7.7B WRSD standard-definition units.



Ken Musgrave shows off one of his station's XDCAMs with its Canon lens.

Throughout the years, our track record with Canon has been very good. We've had no problems with any of the lenses we purchased during the past year, and we know from experience that Canon has strong technical and repair support for the lenses, should this ever be needed. This was a definite factor in our decision to buy Canon. We chose the broadcast lens over a professional version, which offered the option of a 2x extender or the 16:9-to-4:3 conversion adapter, but not both.

I thought it important to have a lens with a long focal length, but I also wanted a lens that could shoot with the widest possible angle. The broadcast lens lets us do both at the same time. Wide-angle shots are critical for debriefings and stand-ups in the field, as well as getting the best possible shots in certain newsgathering situations. Since we broadcast three-and-a-half hours of news per day, having the wide-angle option was an absolute necessity.

The combination of the lens and the camera has given us excellent field video, rivaling—if not exceeding—our studio video quality. Crispness and clarity of the picture have become competitive aspects among stations in the modern age of broadcasting, and the picture that we get from these lenses certainly lives up to our high expectations and the demands of the viewers.

With the competition among stations and the pending digital transition deadline, we'll likely be upgrading our newscasts to HD and/or widescreen. When we do, we will be in a good position to upconvert video from the XDCAMs equipped with Canon lenses. The quality and resolution are excellent, and we feel the upconversion will be equally good.

The performance of these lenses has been superb. We started our ENG operations with Canon lenses, and with this latest purchase, we plan on continuing that relationship for the foreseeable future.

Ken Musgrave is the operations manager at KWTX-TV. He may be contacted at ken.musgrave@kwtx.com.

For additional information, contact Canon USA Inc. at 516-328-4923 or visit www.usa.canon.com.

BUYERS BRIEFS

The Orbitor from **PAG** is an advanced camera support system designed to provide mobility and balance when shooting with camcorders. The Orbitor features three-axis control for smooth pans, tilts and rolls and is fully adjustable for any operator.

The unit weighs 5.8 pounds without a counterbalance and has a quick-release camera plate. The design allows a battery to be substituted for the counterweight. The Oribitor allows users to shoot in a car, a narrow staircase or at right angles to their bodies. The support system provides a stable shooting platform and once the shoot is completed, disassembles quickly and easily.

For additional information, contact PAG USA at 818-760-8265 or visit www.pagusa.com.

The Genesis from **Panavision** is a digital camera system that combines high performance electronic imaging with Primo cine optics. The camera provides gamma and colorimetry circuitry that allows seamless intercutting with most 35mm film emulsions. Shutter angles are adjustable between 0.8 and 360 degrees and frame rate can be set from one to 50 fps.

The camera provides dual viewfinder outputs as well as full bandwidth dual link 4:4:4 HD-SDI outputs. There's also a 4:2:2 HD-SDI monitor output.

The sensor is 35mm-sized and provides 12.4 megapixel performance. The device can be used with a dockable Sony SRW-1 VTR and accommodates many Panaflex accessories.

For additional information, contact Panavision at 323-464-3800 or visit www.panavision.com.

The Pro Series HD 2X Tele-Converter from the Century Film & Video division of **Schneider Optics** doubles the focal length of existing popular camcorder lenses. Three models are available for use with Panasonic HVX200 and DVX100A/B camcorders and Sony HVR-Z1U and FX1 units. The extender mounts on the front of the camcorder lens and is designed to maintain the performance requirements of the new higher resolution formats.

The unit incorporates multi-coated elements for sharp images that are free of chromatic aberration or other distortion and comes with a lens support slider for mounting on standard 15 mm support rods.

For additional information, contact Schneider Optics at 800-228-1254 or visit www.schneideroptics.com.

USER REPORT

Getting Ready for HD With Fujinon

by Bill Mumford
Owner
Mumford Video Productions

PARRISH, FLA.

As I look back on my past 17 years as a freelance videographer, there have been overwhelming advances made in video technology. Through these years, all the lenses I've shot with have been Fujinons. Eventually, I will upgrade to an HD camera, but I've decided to wait due to the cost, and because I believe there are still format issues to be resolved.

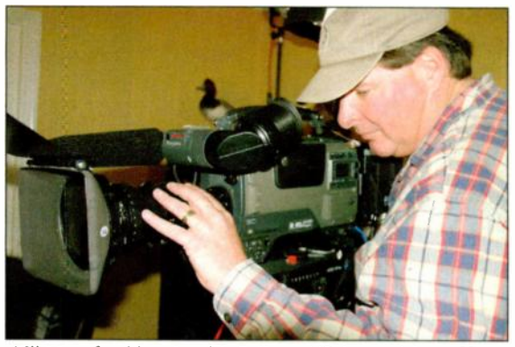
In the meantime, I've made an interim step by purchasing a Fujinon HA22X7.8ERM HDTV ENG-style lens, which I currently use on my own Beta SP camera. The resulting image produced by the lens has been amazing. It has made a dramatic difference in my footage and has thrilled our clients.

I've been involved with several high-profile shoots of late, including an interview for ABC with the president of the Airline Pilots Association about new airline regulations since the bomb plot was uncovered in the United Kingdom last summer.

I recently shot a story that originated in Tampa, Fla., for the CBS series, "48 Hours," a longtime client. In years past, I've shot several television programs with a variety of Fujinon lenses, including ABC's "Nightline" and "Primetime Live," and "60 Minutes" on CBS. In addition, I've been a videographer for ESPN football, baseball and many other sporting events.

Until a year ago, I shot with my SD Ikegami V55, which I'd come to depend on. Unfortunately, that camera was stolen. I replaced it with another Ikegami V55, which came with a different lens. I wasn't happy with how my interviews were turning out, so I talked to a friend who suggested I try something else. This is when I bought the Fujinon HA22X7.8ERM HDTV ENG-style lens.

Eventually, I'll need to decide upon a new HD camera that will be ideal for all of my clients' productions. I've been leaning toward a Sony 2/3-inch XDCAM with 1080i capabilities. This camera is compatible with my new Fujinon lens. The resulting image from the HA22X7.8ERM lens combined with the Sony XDCAM makes a spectacular image, which is why I'm so excited about my lens purchase.

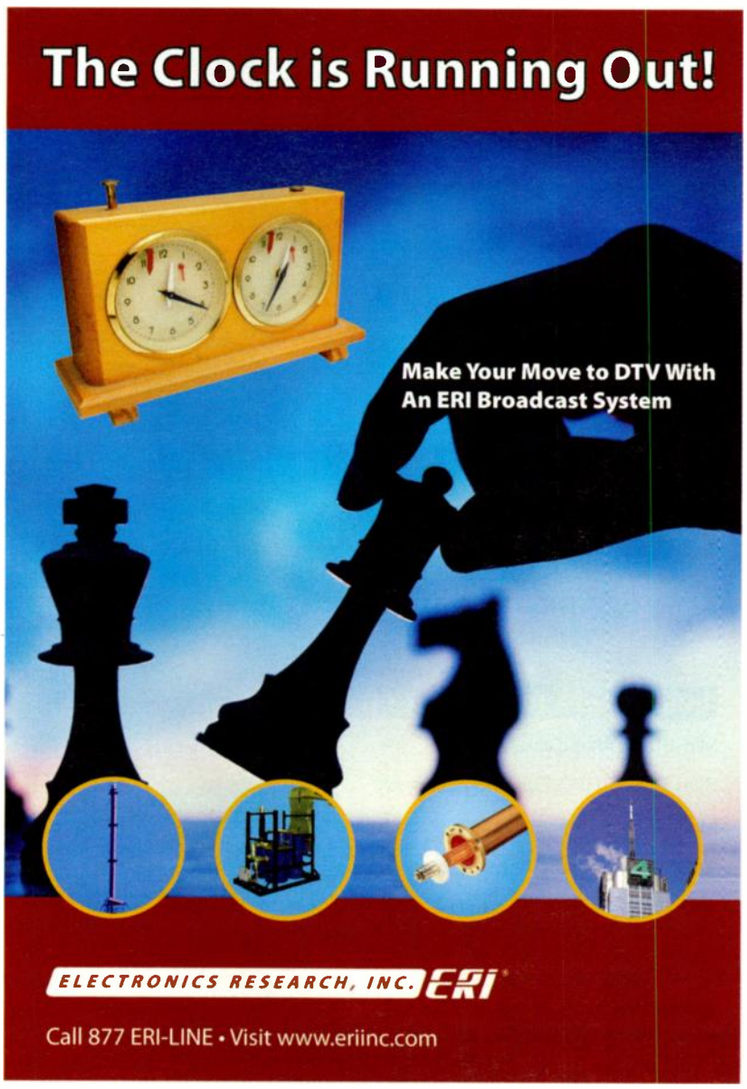


Bill Mumford is using his Fujinon HD lens with an SD camera now, but is contemplating moving to an HD acquisition platform soon.

Because I will eventually switch to an HD camera, buying an HD lens was the right economic decision for me. And while I do not have an HD camera at the moment, I am confident I will make that switch in the near future.

Bill Mumford has worked in the video production industry for more than 24 years, the past 17 as a freelance videographer out of Parrish, Fla. He may be reached at mumfordvideo@aol.com.

For additional information, contact Fujinon Inc. at 973-633-5600 or visit www.fujinon.com.



USER REPORT

Telemetrics Assists With Robotics

by Jeff Cain
Network Services Supervisor
County of San Bernardino

SAN BERNARDINO, CALIF.

San Bernardino is the largest geographic county in the contiguous United States, covering slightly more than 20,000 square miles. Historically, providing media services for the county has been problematic. In fact, it's often been downright challenging. However, with the installation of Telemetrics robotic camera-control systems, that task is only slightly short of being a breeze.

We now provide coverage of county meetings, as well as the production of various other programming, by using the Telemetrics robotic system. The four cameras and all other equipment can be operated by two people.

41 DEPARTMENTS

Our media group provides services for the 41 departments within the county government. Our primary involvement is with the county board of supervisors and county administrative offices.

One of the Telemetrics-equipped cameras used for televising County of San Bernardino meetings

We produce the weekly live and videotaped coverage of all board of supervisors meetings, as well as that of county planning commission meetings. Recordings are provided to most of the county's cable providers for delayed broadcasts. We also produce training, informational and PSA videos for distribution via tape, DVD or on our internal IP network.

The Telemetrics camera robotic and control system was installed here in early 2001 as part of a video system installation to allow for the broadcast and videotaping of the

TELEMETRICS, PAGE 71

World Radio History

USER REPORT

Citytv Taps Ikegami

by Kirk Neff
News Cameraman
Citytv

TORONTO

Citytv Toronto is one of five stations in the Citytv family, bringing an independent voice and local flavor to the community.

It's owned by CHUM Television and reaches 9.1 million people in Ontario and another 2.4 million outside the province. Citytv presents a contemporary television style and sensibility reflecting the diversity and pace of today's urban environment. We keep our eyes and ears on the changing nature of contemporary Canadian city life and enjoy a pioneering, interactive relationship with our community.

Kirk Neff in action with the Ikegami DNS-33W Editcam3

Part of that relationship involves bringing viewers up to the minute local news, live from the field. The demanding nature of live news outside the studio calls for a high-performance camcorder that can quickly and easily play back acquired content.

With those needs in mind, tapeless acquisition was the logical choice. When purchasing new cameras for Citytv, we concluded that the Ikegami DNS-33W Editcam3 tapeless camcorders had the high-quality picture, faster workflow and comparable price that we were looking for.

BIG FEATURE SET

We now have 34 Editcam3 camcorders for news, sports and entertainment. This camera is packed with features—it's like a computer with a lens. Working without tape is a tremendous advantage in the field. With just the push of a button, a reporter can instantly view a newly shot clip from the truck without having to rewind or fast-forward.

In special news coverage, we've also taken advantage of the Editcam's input capabilities. I've been able to record undercover footage without worrying about losing quality from dubbing, by using a smaller camera placed on the dashboard and connecting it right into the Editcam.

When we shoot local sports the camera's Retroloop function provides us with easy highlights. I can set the Retroloop for about 20 seconds and follow the action with the camera without actually recording. As soon as something noteworthy happens, I hit record and it captures the previous 20 seconds of action, creating an instant highlight reel. We simply keep track of which clips have the best plays on them and just hand the clip sheet to the editors; most of their work is already done!

DISGUISING FLAWS

In our new digital control room, where every tiny flaw can show, the Editcam is invaluable. If reporters or anchors are concerned about their appearance in a higher resolution close-up, presets using soft detail and other features reduce visible lines and enhance skin beautifully.

And as we transition to shooting in 16:9 and at a different compression rate, we will rely on the presets more and more.

The technological advances in cameras such as the Ikegami Editcam3 have made life as an ENG cameraman significantly easier. You have to think a little bit more about things, but the acquisition is easier, the results are better, and the turnaround is much faster.

Working tapelessly is a tremendous benefit in ENG, and the preset functions and features make the Ikegami Editcam an ideal camera for news.

Kirk Neff is an award-winning supervising news cameraman for Citytv Toronto. The opinions expressed are those of the author alone. He may be reached at kirk.neff@chumtv.com.

For additional information, contact Ikegami Electronics at 201-368-9171 or visit www.ikegami.com.

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World Radio History

USER REPORT

WFTV-TV Nixes Editing Crunch With P2

by Dave Sirak
News Operations Manager
WFTV-TV

ORLANDO, FLA.

Cox Television's WFTV-TV, the ABC affiliate here, made an early commitment to solid-state newsgathering in the spring of 2005 by acquiring seven Panasonic DVCPRO P2 ENG cameras.

We took delivery of an additional seven additional P2 cameras in the summer of 2006. More than three-quarters of our 22 photographers are equipped with AJ-SPX800 P2 2/3-inch 16:9/4:3 P2 camcorders today, and that number will go up to 100 percent in February 2007, when we complete our phase-out of tape-based cameras.

WFTV's Bruce Wiley works the laptop while Octavio Torres shoots with the Panasonic P2.

TAPELESS IN 2003

Our interest in tapeless acquisition was driven by our purchase of the Avid Unity system in 2003, moving us closer to tapeless editing, storage and playback capabilities.

Accordingly, we were interested in a next-generation camera to maximize our editing potential. We saw a preliminary version of the AJ-SPX800 in 2004, and were impressed by its integration with the Avid system, specifically its simple file transfer into an NLE. Compared to other products we evaluated, Panasonic had a working camera a year before delivery.

Each of our photographers has a laptop PC loaded with Avid NewsCutter. Photographers either edit from the cards or transfer the material into the laptop, then edit the story and send it back to the station. By cutting the cord on the old infrastructure, P2 has made us ultraportable. Our photographers can edit anywhere, and P2 makes material instantly available when crews edit at the station.

We use a combination of 4 GB (16 minutes DVCPRO) and 8 GB (32 minutes DVCPRO) P2 cards. We assign five P2 cards per camera,and we have found that the 4 GB cards sufficiently address the needs of our daily work.

The 8 GB cards are used for longer stories. The photographers use the camera and P2 cards like a digital still camera, editing from the cards or offloading and erasing them. They can easily share media by swapping cards. If there is a need to preserve media, each photographer has a 300 GB hard drive that holds 18 hours.

In the studio, we have P2 card readers at key editing stations for ingesting material. We don't need a lot of card readers, as much of the editing is done in the field. We also have the ability to mount the laptop onto the Unity system and transfer media into or out of the system directly to the laptop hard drive for use in the field.

We started shooting with the AJ-SPX800s in June 2005, and one of the first stories we covered was the flight of Space Shuttle Discovery. The images were gorgeous. The cameras have proven very resilient in Florida's hot, humid climate. We might have expected problems in our hurricane-rich environment, but there have been none. Thankfully, the 2006 hurricane season has been less severe, but so far, the P2 cameras have been reliably on the scene to document July's Ernesto storm in South Florida and beyond.

Dave Sirak has served as WFTV news operations manager since 1999. He may be contacted at dave.sirak@wftv.com.

For additional information, contact Panasonic Broadcast at 210-348-7000 or visit www.Panasonic.com/broadcast.

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USER REPORT

KOMO-TV Powers Up News With IDX Batteries

by Dennis Dwan
TV News Operations Manager
KOMO-TV

SEATTLE

KOMO-TV is owned by Fisher Communications, and is an ABC affiliate in the nation's 13th largest television market. It has one of the Northwest's largest newsgathering organizations. We have 19 staff photographers, and work on stories that take us throughout the greater Seattle area, across the country and around the world.

Maintaining our equipment long-term and getting the most from it is an imperative. That's why we're using the Sony SX ENG/EFP cameras we bought in July 1999. Our initial camera batteries were Sony lithium ion units and we were pleased with their long-term performance.

Last year, it was finally time to replace them. I've had positive experiences with IDX batteries, and purchased IDX Endura Model E-10 batteries for our camera fleet. In making this decision, my chief photographer and I reviewed various available product lines. Our final decision was based on several factors—price, size and weight among them—and IDX was our choice overall.

Dennis Dwan, KOMO-TV news operations manager, with one of the station's many Sony camcorders and the new IDX battery.

The batteries have exceptional performance—they last three hours or more, and operate at 98 W-h. Moreover, we were able to purchase

IDX, PAGE 70

World Radio History

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World Radio History

USER REPORT

Church Chooses Thales Angenieux Lens

by Don Walker
TV Ministry Director
First Baptist Church

TEXARKANA, TEXAS

The First Baptist Church of Texarkana took delivery of a Thales Angenieux 40x15 AIF HR ENG/EFP lens in December 2005. This lens was selected for the production of our weekly television broadcasts, which are seen on three regional stations and nationwide on the NRB network and Family Net.

We're using four JVC KY-D29W cameras to produce the weekly service. Three of these are on tripods with manual operation, and the other one is remotely controlled. Two of the cameras are situated in the rear of the church, about 65 feet from the minister.

Due to the physical size of our church, we needed a long lens that would effectively cover this distance and stay sharp when zoomed in. Other lenses we've used have a tendency to go soft on the borders when we do a close-up and we believed a higher performance lens would help to improve production quality.

The Thales Angenieux 40x14 AIF HR lens

I've been in the business for 24 years and I'd had heard about Thales Angenieux lenses, but didn't know much about them. When we made the decision to buy a new lens, I wanted to see a selection of lenses. From the spec sheets, the various lenses appeared to be similar in performance capability and functionality, with the Angenieux lens having the longest focal length range of 15-600mm.

Angenieux demonstrated the lens for us and then allowed us to keep it for further evaluation. The anti-breathing feature kept the images rock solid during zooming and the close-ups were sharp and crisp. There was no softening at the edges even with the aperture wide open.

ZOOM SPEED CONSTANT

By pressing the AIF switch while zooming in, the zoom speed stayed constant, which also adds to the production value. We found the difference in the pictures compared to the other three existing lenses was night and day. The camera had to be mounted a little further back on the tripod head because of the 13-pound weight of the lens, but we did not exceed the head's weight limit.

What really made the difference in our decision to buy the Angenieux lens—aside from the fact that it is a superior product—is that it sweeps the competition on the price point. It's very affordable, considering its high performance capabilities and quality.

We've been using the lens regularly since last December and it continues to amaze and please us. One of our recent productions made with the new lens was broadcast on Trinity Broadcast Network, which is seen nationally and in some 80 countries.

Angenieux did call us as a follow-up to our purchase and this was in keeping with the professional manner in which they conducted the demonstration, quote and sale of the lens.

Don Walker is TV Ministry director at the First Baptist Church in Texarkana, Texas. He may be contacted at dwalker@ fbctexarkana.org.

For more information, contact Thales Angenieux at 973-812-3858 or visit www.angenieux.com.

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USER REPORT

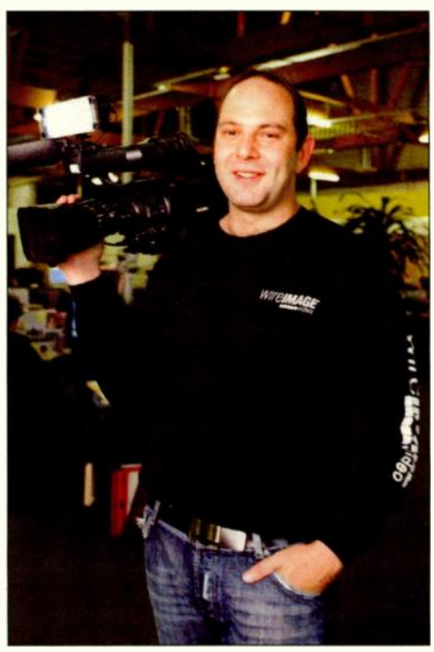
JVC Shoots for Wire

by Justin Kahn
Vice President & Cofounder
WireImage

LOS ANGELES

WireImage is a leading digital photo agency and wire service that has been providing high-quality photography with up-to-the-minute coverage of entertainment, sports and news events since 2001.

Our photographers' and videographers' work is featured regularly in major magazines, newspapers, Web sites and on domestic and international television programs, which is why image quality is extremely important in everything we do.



Justin Kahn with the JVC GY-HD100U SD/HD camcorder

Recently, we launched WireImage Video to provide our clients up-to-the-minute entertainment footage to leading broadcast carriers, mobile carriers, and online properties worldwide.

As a highly reputable photo agency, we need professional video equipment that is flexible and easy to use, and that's why we went with JVC's GY-HD100U camcorder. The fact that it can be used out in the field and well as in the studio in an

JVC, PAGE 69

World Radio History

USER REPORT

FireStore Provides Plenty of Time

by Liz Radley
Independent Camera Operator

LOS ANGELES

"*Stay upwind of the explosions!*" They don't really tell you that; they just wait for you to find out. There's a lot of sand and debris that fly up and then flash downwind, to cover you and your equipment—the first time!

"*Stay behind the flamethrower!*"

That one the Marines do tell you. It sweeps from side to side to clear the area ahead.

"*Don't stand on the red marks!*"

They blow up out of the ground—target practice. And so it goes when you're shooting Marine Corps training exercises. Reloading is for guns, not cameras. You have to remember, they're not extras. They're Marines. Get in front of them and they'll run over you.

The Panasonic HVX-200 is my camera of choice. But forget those 8 GB P2 cards if you're shooting handheld, one-take long action sequences. I'm shooting DVCPRO HD 1080/30i and the cards just don't last long enough.

Fortunately, Focus Enhancements had an answer for this—FireStore. I used the FireStore right out of the box, having read the manual on the plane en route. It worked just the way they described.

When the shoot was over, I followed the prompts to reorganize the MXF files, imported them into my laptop's NLE and onto a pocket-sized bus-powered external drive, and I was editing a quick preview. All battery, all the time!

SMALL IS BEAUTIFUL

I also had a backup now, right there in the field. Before the FireStore, I had to change my choice of camera, between a larger camera or a smaller tape-based camera with much higher compression. I carry that camera all day, so small is beautiful! Employers notice the flexibility in my system and I've received more work because of it.

Back in the editing room, I make a quick copy of the files from the mini drive used for the preview on to the house drives, and I'm up and editing again while still on that first cup of coffee. If there's no need for a field-preview, then I just plug in and copy from the FireStore directly to the drives.

I always duplicate the files onto another external drive off-site. My back-up mantra is "all files must live on two separate pieces of media that live in two separate locations."

Then I reformat the FireStore to be ready to shoot with a clean drive as soon as I get the call to action. I can do all this in less time than it used to take me for real-time digitizing from videotape. If the producer is eager to see the footage, they can join me immediately. A happy producer hires you again!

In the past year, about half of my shooting has been in the milieu of firefights and explosions; simulations for training and movies. My hat's off to the combat cameramen of our Armed Forces, as they have all the same practical things to be concerned about while they are under fire themselves.

The Focus Enhancements FireStore FS-100 portable video recorder

Liz Radley shoots HD for directors from Clint Eastwood to Michael Mann. She may be contacted at lizradley@gmail.com.

For additional information, contact Focus Enhancements at 408-866-8300 or visit www.focusinfo.com.

JVC

CONTINUED FROM PAGE 68

added bonus. We easily and immediately integrated the camera into our workflow.

Wire Image Video uses the GY-HD100U to capture A-roll interviews and B-roll footage of attending talent at events. We provide raw footage and video packages to our clients.

The GY-HD100 gives us the picture quality we require. Other cameras we looked at had too much data loss—the CCDs weren't refreshing themselves enough. The GY-HD100U is also very intuitive and was the only camera that our videographers found easy to master.

Our videographers are on their feet for hours at a time in covering events, so we chose the GY-HD100U, as the camera is extremely lightweight which is a big factor during long periods of shooting. Another key feature that's very important to us is that the camera is easy to set up. This is especially crucial when time is of the essence.

LENS OPTIONS

Our videographers also love the GY-HD100U because of its form factor and flexible lens options. We also have the ability to shoot in SD and HD, which is important, as more and more broadcasters are requesting HD footage.

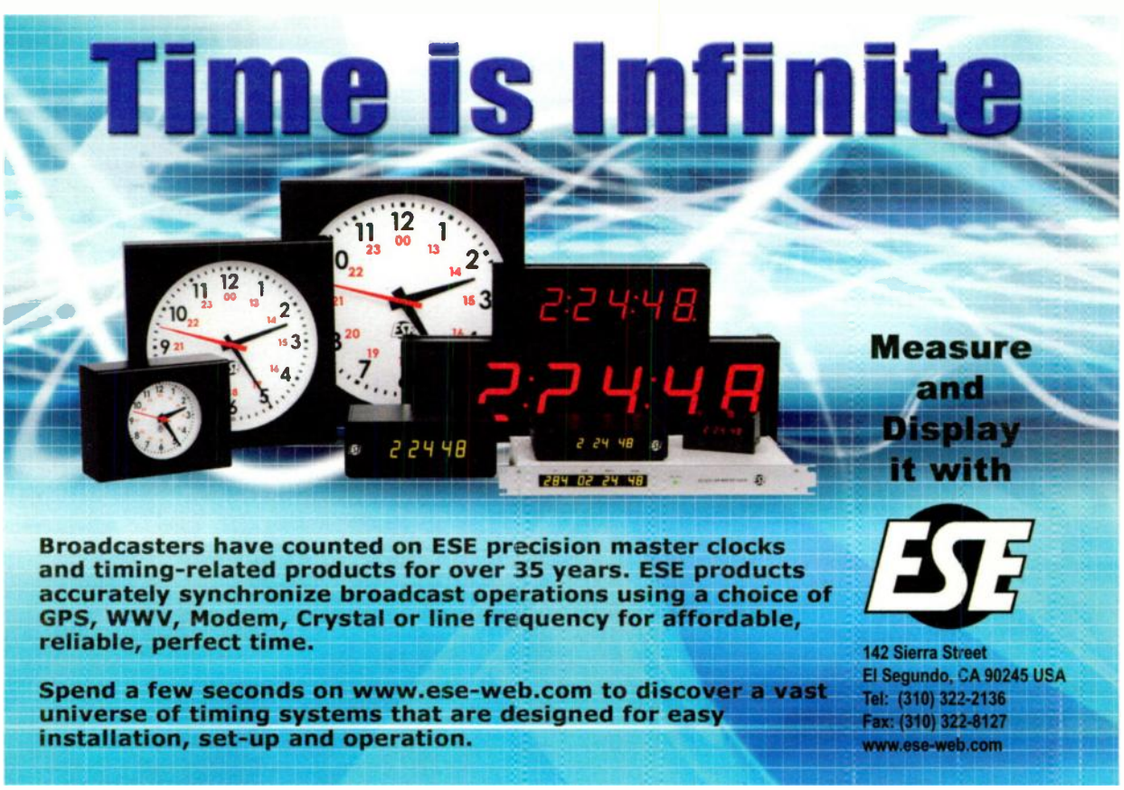
Our product is used by broadcasters worldwide and they rely on us to capture high-quality video. The quality of the GY-HD100U is so good that we can pull stills from the HD footage.

With access to all the award shows, premieres, film festivals and concerts, it's our job to make sure that we provide premium content to our clients. This is why we need a professional camera like the GY-HD100U. We've recently provided video footage from the Sundance Film Festival, the Toronto International Film Festival, Olympus Fashion Week and also for NFL Kickoff.

The most important thing in our business is delivering the highest quality footage to our clients and the GY-HD100U makes that possible. It delivers 30 solid frames per second of fabulous looking video. We're thrilled with the work we're creating.

Justin Kahn is vice president & cofounder of WireImage in Los Angeles. He may be contacted at justin@wireimage.com.

For additional information, contact JVC at 973-317-5000 or visit www.jvc.com.



World Radio History

IDX

CONTINUED FROM PAGE 66

four IDX batteries per camera instead of the three per camera we'd budgeted.

One factor that we found outstanding about the IDX batteries was their size and weight. Our photographers tell me their backup IDX batteries slip easily into their fanny packs when they're shooting. Other batteries they'd used had cases that were too large for fanny packs. The IDX battery is smaller and lighter to carry.

On bench tests, the IDX E-10 battery performs with the same efficiency as the Sony batteries did when they were new. One thing we liked about Sony was the low-battery warning. IDX has this feature too, and their batteries give us up to a 40-second warning.

WHITHER THE WEATHER

Because of the wide range of weather here, we've worked with the IDX batteries under many conditions—from the heat of eastern Washington to the snows of Mount Rainier, and have never lost a story due to battery failure.

We believe in controlling our capital outlay carefully and expect our IDX batteries to last at least four years. We also like the fact that we can charge the new batteries on our existing chargers. Hidden costs in battery purchases are the accessories that are needed to support the batteries, such as extra chargers. Although IDX makes an affordable charger, we found that our existing chargers work just fine.

The bottom line is that we believe IDX makes a good solid product line, and offers good value to its customers. That's why we are pleased with our IDX E-10 batteries and look forward to strong performance from them over the next several years.

Dennis Dwan is news operations manager for KOMO-TV in Seattle. He may be contacted at dennisd@komotv.com. *For additional information, contact IDX at IDX System Technology Inc. at 310-891-2800 or visit* www.idx.tv.

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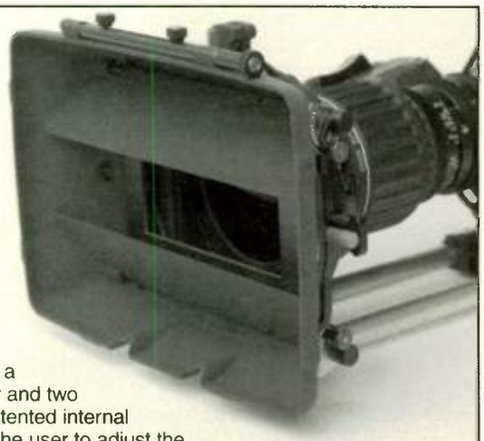

The new MB-350 wide angle mattebox from Vocas features two *independently* rotating filter trays and one non-rotatable horizontal tray. It can accept an additional 4x5.6" filter in the hood for a total of four stages! This fourth stage can also be used with a variety 4:3 or 16:9 mattes.

For lenses wider than 5.0mm the mattebox can use a 4.5x4.5" rotatable filter or one 4x4 non-rotatable filter and two horizontal filters. The patented internal eyebrow system allows the user to adjust the matte or mask to the zoom position of the lens. The MB-350 can be used as a clip-on mattebox or may require the MBS-100 support and bars adapter for use with standard 15mm rails.

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Presenting The SDI Product Line

The **Model SDI-900*** is an all digital **Color Corrector/Video Processor** that directly interfaces with the 4:2:2 video at 270 Mbs. (Optional analog inputs and outputs are also available). It features individual control of Red, Blue, Green gains and setups, luminance brightness, high frequency response and gamma. There is no need to navigate a menu, all controls are independent and instantly responsive. The **Model SDI-900*** comes in several versions for additional features. It can have up to 400 memory presets, as well as up to 9 dBs of ramdom noise reduction. Noise reduction is automatic or manual. It's ideal for matching any video feed to any display characteristics and for video pre-processing to maximize compression efficiency. Priced from $1350.

The **Model SDI-313** is a **Universal Transcoder** that converts any analog video format (525/625 lines 50/60 fields/sec) to SDI as well as to any other analog format having the same scanning rates. It also converts a SDI input to any corresponding analog format. List price $1495.

The **Model SDI-333** is a **Universal Analog to SDI Converter.** It converts any analog format (NTSC or PAL scan rates) to SDI. List price $895.

Other SDI products from Xintekvideo include the **SDI-1 SDI to NTSC Converter** ($295), the **SDI-3 Analog to SDI Converter** ($345), the **SDI-10 Noise Reducer** ($1295), the **SDI-110 Professional SDI to Analog Converter** ($895), the **SDI-310 NTSC to SDI Converter** ($995), the **SDI-330 Components to SDI Converter/Noise Reducer** ($1395), the **VP-3000 Pre-Compression Processor with SDI output** ($2995).

XINTEKVIDEO Inc. 56 West Broad St. Stamford Ct (203) 348-9229
www.xintekvideo.com

World Radio History

USER REPORT

Tommy K Productions Relies on Frezzi

by Tommy Krakowiak
Owner
Tommy K Productions

NEW YORK

I am a freelance cameraman and director of photography who has worked for a number of network news organizations.

I am currently DP for a home and garden show called "Cultivating Life," which runs on PBS. I've spent a large part of my career shooting news and have undertaken many assignments for "ABC World News Tonight" and "Nightline." I won an Emmy for my camerawork on a piece about Bob Dole for "Nightline" and a Peabody and Emmy Award for my camerawork covering former New York City Mayor Rudolph Guiliani on 9/11.

During that assignment, I covered Guiliani walking the streets of New York, holding press conferences, visiting hospitals, and of course, going to Ground Zero. We went nonstop for almost 24 hours shooting some remarkable and often horrifying footage. Most recently, I worked with Charlie Gibson when he interviewed President Bush aboard Air Force One and chronicled, "A Day in the Life of the President."

Due to my 20 years of experience, the assignments I get are usually high profile and require top-notch equipment. I've been using Frezzi batteries since I began shooting professionally and am now on my third generation of batteries and chargers.

Tommy Krakowiak relied on Frezzi light and battery products while shooting President Bill Clinton's first interview after his heart surgery.

I began with Frezzi Nicads, graduated to metal hydride and now use their lithium batteries.

I have had tremendous success with the Frezzi FLB-200 lithium batteries due to their extreme reliability. They last four times as long as the original NiCads (200 W-h) and weigh half as much as their predecessors.

When you are out in the field for long periods of time, lighter weight is an important factor. The Frezzi lithium batteries also give you 40 more W-h than some other lithium batteries, and at a considerably lower price. Frezzi's fast chargers and high-capacity batteries make those long shooting assignments more bearable and eliminate one of my worries.

Frezzi Mini-Sun Gun HMI lights make up another part of my location gear. They adjust to daylight color temperature. They're lightweight, excellent for filling in shadows on people's faces and shooting interviews outdoors.

For the "Cultivating Life" series, I use the HMI lights to highlight flowers and background scenery. The HMI lights give them extra contrast, which makes them come alive on-screen.

One of the nice parts about using Frezzi equipment is that the sales and engineering staffs are extremely sensitive to a cameraperson's needs. If you need service in a hurry, they will accommodate you. If you need a loaner, they will help you as well.

FIELD TESTER

Fortunately, I have not had problems that needed such service, but it is good to know that it is available to me. I have dealt with Ed Kuhn, Frezzi vice president of sales, for a long time, and when they introduce a new product, Ed will often calls me and asks if I'd like to field test it.

That's what happened with the lithium batteries and I haven't looked back. I'm completely satisfied with their performance and recommend them to my colleagues in the field. Frezzi makes a good product and the company is easy to deal with. In the hectic life of a cameraman, that's a winning combination.

Tommy K Productions is based in Rhode Island and New York. His production van can often be construed as his office. He shoots all over the world and provides production crews for broadcast projects. He may be contacted at tommykproductions@ earthlink.net.

For additional information, contact Frezzi Energy Systems at 973-427-1160 or visit www.frezzi.com.

Telemetrics

CONTINUED FROM PAGE 64

board of supervisors meetings. The new system replaced an older manual system that was in disrepair.

Our new Telemetrics system is far superior, with camera control delegated to one operator. The movement of the cameras so closely mimics a live camera operator that I would defy anyone to be able to tell the difference. And with camera presets, moving from shot to shot is a snap.

PROBLEM SOLVED

The system design includes four Telemetrics pan-and-tilt units, controlled by the CP-D-2A controller installed in the control room. They are coupled with four Sony cameras and also control the associated Canon lens functions.

We are almost five years into our installation now, and have experienced only a single lightning-caused failure. This resulted in loss of zoom functionality on two of the cameras.

To be honest, I wasn't sure what to expect when I called for assistance. I thought we might have to ship our inoperative units to Telemetrics, and operate with only two cameras for a while. We are on the West Coast, Telemetrics is in New Jersey, and I was expecting a long down time. My concerns proved to be without merit.

Within an hour of requesting technical assistance, the process of getting the system back up and running had begun. Telemetrics e-mailed service and installation manuals for the units and after another phone call or so, we were successful in resetting and recalibrating the lens functions without sending the units out for repair.

Telemetrics should be commended, not only for their superior products, but also for their stellar technical support team. Each and every one of our needs have been met over the last five years. Their friendly, helpful and fully competent staff make you feel as if you were their number one client. I would highly recommend Telemetrics products to everyone—they are easy to use, fully intuitive and built like iron.

Jeff Cain is network services supervisor for the County of San Bernardino, Calif. The opinions expressed are those of the writer alone. He may be contacted at jcain@isd.sbcounty.gov.

For more information, contact Telemetrics at 201-848-9818 or visit www.telemetricsinc. com.

World Radio History

USER REPORT

Anton Bauer Powers ASL Productions

by Anthony S. Lenzo
President
Air Sea Land Productions, Inc.

ASTORIA, N.Y.

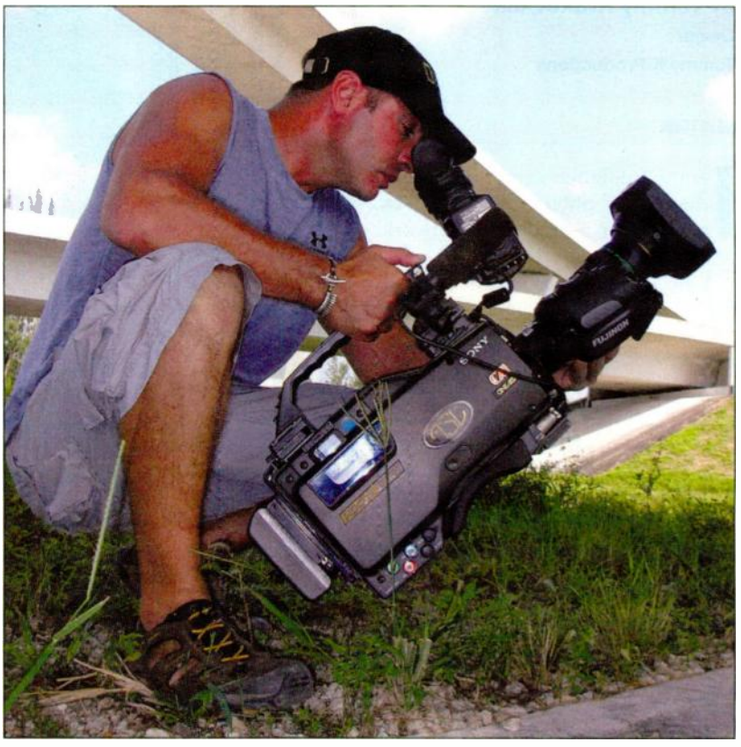
Air Sea Land Productions was formed in 1994 in the highly competitive New York City market. In order to survive here, you need to be different. So ASL focuses on the things that I knew well—video productions in exceptional locations and conditions specializing in nature productions.

With a priority on HD production for the likes of National Geographic, minimizing risks to personnel and to "the shot" are paramount. My early experience in all aspects of video production, from unit productions to camera operation, taught me the value of professionalism, reliability and expertise in business and in equipment.

ASL is the largest provider of Jimmy Jib camera cranes in New York City, and the largest rental operation in the Northeast for underwater housings from POV to HD. We also offer HD rental equipment and crews for a variety of productions. Our clients trust us to get the right shot for their story. Sometimes that means getting up-close-and-personal with something dangerous, especially when working with nature.

DON'T IGNORE BATTERIES

HD productions require cutting edge digital technology and equipment, but batteries are one essential that is often taken for granted. I learned from hard experience that a battery is the lifeblood for a remote production—especially in the kind of conditions ASL specializes in. Reliability is everything and we base our operations exclusively on Anton/Bauer Dionic 90 and HyTron 120 batteries.



Anthony Lenzo prepares his Sony HDW F-900, powered by Anton Bauer, for another day's assignment.

Unusual uses of batteries will come as no surprise to most production shooters. Very often we have to get creative with equipment setups, and batteries play a big part. In Hawaii, we had to shoot from an ultralight aircraft with a camera mounted on a 12-foot boom and a recorder under the pilot—and still get off the ground.

Both camera and recorder were easily powered from one HyTron 120 placed at the tail of the plane as part of the counterbalance for the boom. We landed to change tapes eight times, but changed the battery once in about eight hours of shooting!

I recently returned from two location trips for National Geographic documentaries in connection with a program called "Hunter Hunted." ASL Productions provided underwater camera services and topside HD camera operator services.

One of these assignments was based on shark attacks in Recife, Brazil. The other profiled alligator attacks in Florida. At virtually every turn in these productions, critical footage would have been lost and production compromised without an adequate power source. One of the best features of Anton/Bauer is the RealTime display. When I'm handed a battery by a client's PA, I can be sure that even the least experienced among them can see that it is ready to use.

OUTLASTS AIR SUPPLY

Underwater, I use Anton/Bauer Dionic-90 batteries to power my Sony HDW F-900 camera. I can depend upon these batteries to provide plenty of energy—lasting long after my tape and air supply have run out.

A typical complement of six Dionic 90 batteries covers a day's shoot. At only two pounds, the Dionic 90 fits easily in the Amphibico housing and does not compromise buoyancy or performance.

At 60 feet underwater, and in the middle of feeding sharks, confidence in your equipment is everything. No one wants to have to surface or do anything other than keep rolling, surely not to make an unexpected battery change. I need to know that at the toughest times my camera won't "cut to black" and leave me in a risky position with a shark, and my client!

Anthony S. Lenzo is president and founder of Air Sea Land Productions, Inc. in Astoria, N.Y. He may be contacted at anthonyl@airsealand.com.

For additional information, contact Anton Bauer at 800-422-3473 or visit www.antonbauer.com.

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Congratulates John Lyons
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After the destruction of the World Trade Center antenna on September 11th 2001, John Lyons was responsible for removal of the 132-foot master FM antenna tower and its replacement with a 385-foot master TV and FM antenna tower at 4 Times Square. The new antenna is capable of accommodating all the TV and FM stations licensed to the New York metropolitan area. This facility is also capable of point-to-point microwave, spread spectrum, broadband, two-way, STL/TSL, RPU and ENG services.

For information on the 4 Times Square Broadcast Tower, contact:
John Lyons at 212.997.5508 or jlyons@durst.org

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World Radio History

BUYERS BRIEFS

The SK-3300P from **Hitachi Kokusai Electric America Ltd.** is a handheld high-definition television production camera, with 1080i native scanning. It uses 2/3-inch FIT 2.2 megapixel CCDs and provides an HD-SDI signal directly from the camera head. Downconverted 480-line NTSC may be taken from the CCU, as well as SD-SDI video. The SK-3300P provides independent control of HD and NTSC detail and masking and the camera can genlock to either analog color black or to HD tri-level sync.

For additional information, contact Hitachi Kokusai Electric America Ltd. at 516-682-4427 or visit www.hitachi-kokusai.us.

The Arriflex D-20 from **Arri Inc.** is a film-style digital camera designed for cinematographers. It has a six-megapixel CMOS sensor for high-definition imaging. The camera uses the same lenses as 35mm film cameras and provides the same depth of field as film cameras. The D-20 has an optical viewfinder and is compatible with Arri film camera accessories and can be equipped with an optional "video assist" to provide a video image when the mirror shutter is stopped in the viewing position.

For additional information, contact Arri Inc. at 845-353-1400 or visit www.arri.com.

The N-Gen is a fuel cell power unit from **Jadoo Power** that can provide 100 W of continuous power. The unit outputs 12 V and weighs 5.1 pounds. The power unit operates between 35 to 100 degrees F and is an environmentally sound approach to portable power for camera and lighting purposes. The N-Gen fuel cell is maintenance free, attaches to cameras with industry-standard battery mounts, and the N-Gen unit features an accurate "state-of-fill" display.

For additional information, contact Jadoo Power at 888-513-6648 or visit www.jadoopower.com.

The Mini from the Steadicam division of **The Tiffen Co.** is a wearable camera stabilization device designed for use with lightweight video camcorders. The Mini system can accommodate camcorders weighing between five and 15 pounds and features a quick release plate. The system includes a battery mount for Anton Bauer, PAG or NP-1 products, a 12 V power cable, 3-foot video cable and a VHS training tape.

For additional information, contact The Tiffen Co. at 631-273-2500 or visit www.tiffen.com.

The DigiZoom TM17-112mm T1.9 from **Carl Zeiss** is a new high-performance zoom lens designed for electronic cinematography. The lens features brightly marked windowed scales, which are readable from either side of the lens. Zeiss designed the new lens for use with 2/3-inch 3 CCD cameras and it is optically engineered to provide optimum performance in full-aperture situations.

For additional information, contact Zeiss's marketer, Bandpro Film & Digital Inc. at 818-841-9655 or visit www.zeiss.com.

Tired of having to buy a sound reinforcement board for your TV station?

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The Artisan is available now! Save money on your next audio installation without compromising on functionality.

The Artisan features:

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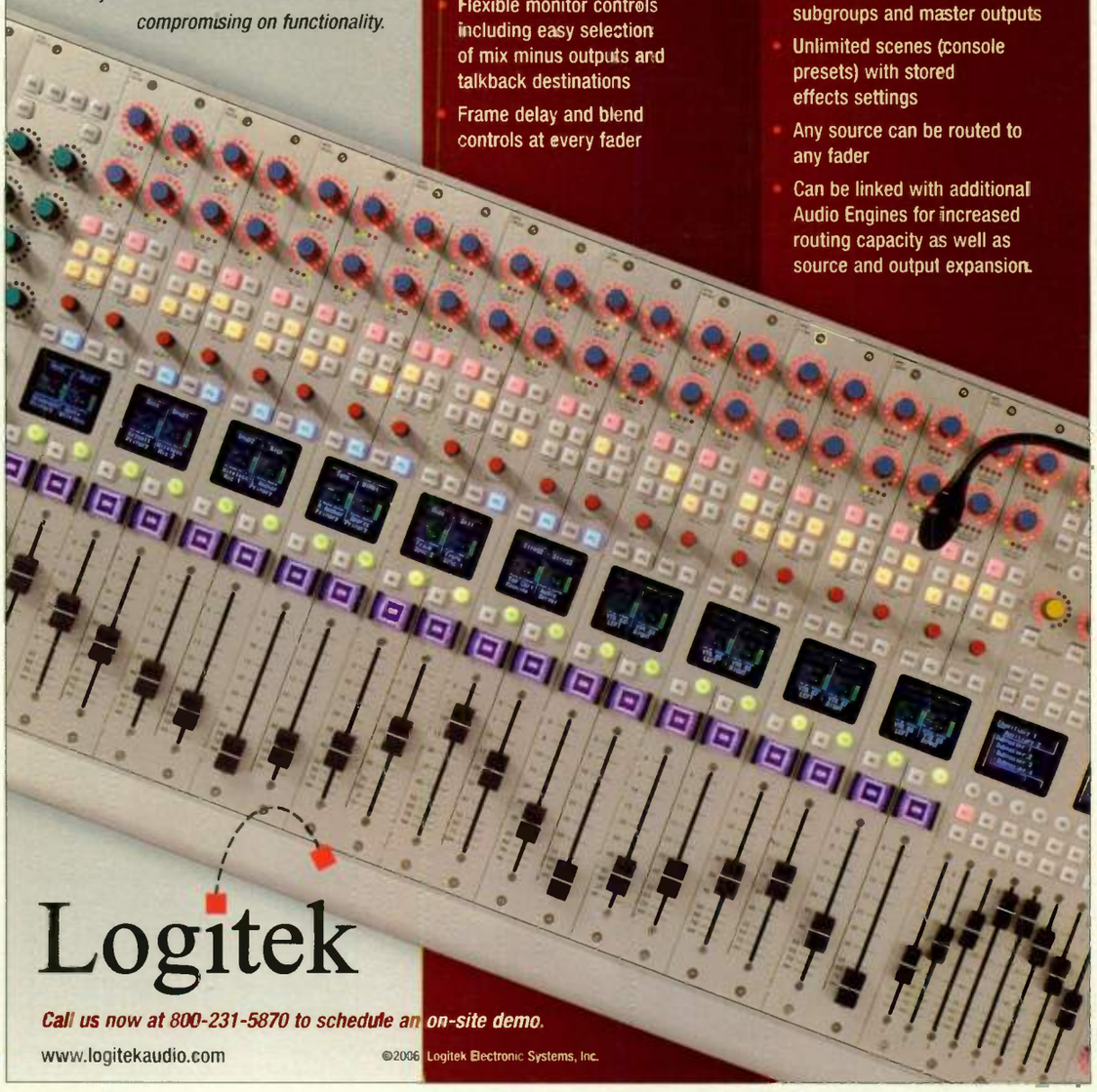
- Flexible monitor controls including easy selection of mix minus outputs and talkback destinations
- Frame delay and blend controls at every fader

The Audio Engine router offers:

- Analog and digital I/O
- Full X-Y routing capability
- 5.1 mixing
- 24 easily changeable mix-minus busses
- Five function dynamics processor and four band equalizer available at all faders, aux busses, subgroups and master outputs
- Unlimited scenes (console presets) with stored effects settings
- Any source can be routed to any fader
- Can be linked with additional Audio Engines for increased routing capacity as well as source and output expansion.



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World Radio History

COMPANY PROFILE

GV: From Movies to Movies

GRASS VALLEY INC.
15655 SW Greystone Court
Beaverton, Ore. 97006

Tel: 505-526-8150
Fax: 503-526-8250
www.thomsongrassvalley.com

by James O'Neal

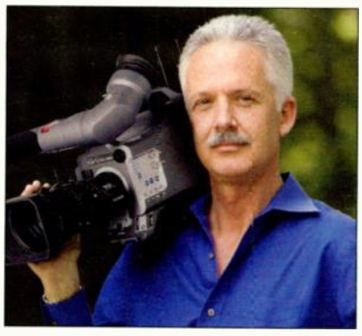
BEAVERTON, ORE.

Grass Valley, a small town tucked away in the Sierra Nevada foothills range of California, may seem an unlikely place to find leaders in the broadcast technology industry.

However, the town's claim to this industry stretches back to the early 1950s, when Charles Litton—a leader in glass-working machinery and vacuum tube manufacturing—decided to leave San Francisco and set up shop in his favorite weekend retreat, Grass Valley.

Late, Litton lured his friend Dr. Donald Hare to the town. There, in 1958, Hare began producing his first product under the Grass Valley brand—a solid-state audio amplifier designed for the burgeoning widescreen motion picture industry.

The company entered the video world a few years later and gradually expanded the product portfolio to include video switchers, signal-processing, routing, master control, file server and modular products.



Jeff Rosica, senior vice president of marketing and technology for the Grass Valley business within Thomson

After its acquisition by the French electronics firm Thomson in 2002, the reach and scope of Grass Valley expanded significantly.

There are now Grass Valley products for all parts of the digital television workflow, and while its U.S. headquarters remains in the Grass Valley area, its research-and-development centers span the globe.

Late last year the company acquired Canopus Corp., a leader in desktop video products, as well as Thales Broadcast & Multimedia, which provides platforms for IPTV, video-on-demand, mobile TV and digital TV.

"At a time when people are as likely to be watching content from an office PC or mobile phone as they are a television at home, we have the technologies to deliver any content, any time, and any place," said Jeff Rosica, senior vice president of marketing and technology for the Grass Valley business within Thomson.

"While some of our competitors are looking at just adding file-based functionality, we are developing products and whole workflows that are what we call 'IT-immersed'," Rosica said

As an example, Rosica cited the new Grass Valley Infinity Series camcorder.

"Storage on the Infinity is a perfect example of IT immersion," Rosica said. "If you are stuck for storage on location, you can just go to a local computer store and buy standard REV disks for around $50!"

Having started with a movie product, Grass Valley has come full circle, with products for the digital revolution in filmmaking. The Spirit film-scanning platform has been available for a decade, with the latest version, the Spirit 4K, able to scan film to full resolution 2k data in real time. In tandem with the Spirit, GV's Bones modular software platform forms a complete digital intermediate post-production workflow. Also, many directors are choosing the Grass Valley Viper Filmstream camera over traditional 35mm film.

"Our focus in filmmaking, as it is in every other facet of our business, is maintaining the highest possible quality while delivering practical workflows that aid the industry's most creative people," Rosica said.

From a company started because the founder wanted a lifestyle change, Grass Valley has grown to become one of the largest businesses in the industry. Its success then, as now, has come from sticking to its original values of using the innovative application of technology to develop products that engineers and operators love and managers can afford.

REFERENCE GUIDE

The Reference Guide is a selected sampling of current products. Specifications and prices are supplied by the manufacturer and are subject to change without notice.

BATTERIES

MANUFACTURER	MODEL	CHEMISTRY	TYPE OF MOUNT	VOLTAGE AND CAPACITY	WEIGHT AND SIZE	RECOMMENDED CHARGER	TEMP. RANGE	SPECIAL FEATURES	PRICE
Anton/Bauer 203-929-1100 *www.antonbauer.com*	HyTRON 140	NiMH	Gold mount	14.4 V, 140 Wh	5.4x4.7x2.9 inches, 5.5 pounds	Any Anton/Bauer InterActive or Titan charger	-20C to +60C	Real-time display, 175 W max. power draw, can provide up to five hours on DVC camcorders	Call for price
Frezzi Energy Systems 800-345-1030 *www.frezzi.com*	FLB-200 FLB-200V	Li-Ion	3-button Anton/Bauer or Sony V-mount	14.4 V, 13.8 Ah, 200 Wh	6.5x3.4x3 inches, 3 pounds	Frezzi FLC-2	-10C to +40C	Highest capacity, lightest on-board battery with LED gauge showing remaining capacity, plus weather proof	$650
IDX System Technology 310-891-2800 *www.idx.tv*	Endura E-10	Li-Ion	IDX V-mount	14.8 V, 6.6 Ah, 98 Wh	3.4x5.6x1.97 inches, 1.75 pounds	Endura VL-2Plus, Endura VL-4S, Endura VL-4Si, VAL-4S, VAL-4Si	-20C to +50C	PowerLink, 5 LED load-capacity status display, digital data protocol, support Digi-View and digital BMS	$495
Jadoo Power 916-608-9044 *www.jadoopower.com*	N-Gen	Hydrogen fuel cell	3-button Anton/Bauer	14.4 V 130 Wh	4.3x4.3x7.4 inches, 5.1 pounds	Jadoo Fillpoint or FillOne	-1C to -49C	AccuStat information interface, 2-year replacement warranty, Hot-swap capability	$999
PAG USA 818-760-8265 *www.pagusa.com*	9360 PAG L95 Time Battery	Li-Ion	Sony V-mount compatible	14.8 V, 6.5 Ah, 95 Wh	5.1x3.4x2 inches, 1.67 pounds	Sony charger or PAG All-Chemistry charger	+10C to +40C	Push-button power and time display, high/low charge facility can be set by user	Call for price
Sony 800-686-7669 *www.sony.com/professional*	BP-M100	NiMH	Sony	14.4 V, 98 Wh	Size N/A, less than 4 pounds	Sony BC-M50	N/A	Original equipment for many Sony cameras, built-in LED capacity indicator	Call for price

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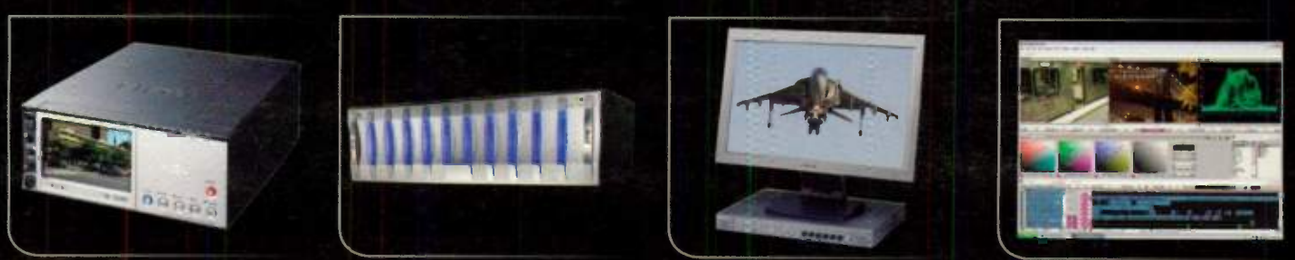

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MARKETPLACE

Highlighting the latest products available to professionals in the video industry

Matthews Road Flags

The Road Flags system from Matthews Studio Equipment is the latest in the company's line of support equipment for electronic field production or cinematography.

It's a portable lighting control system designed to duplicate studio lighting effects in on-location shooting. The package consists of two easy-to-assemble frames, a single scrim, a silk diffusion unit and a solid flag. The frames break down into a convenient size for handling and transport in any automobile or location vehicle. A lightweight carrying case is included.

Matthews can also provide a wide range of light modification fabrics to complement the Road Flags system. They are sized to fit the portable frames.

For more information, contact Matthews Studio Equipment at 818-843-6715 or visit *www.matthewsgrip.com.*

Camplex PRO-XHD Control System

The PRO-XHD from Camplex Corp. is a brand new control system for MiniDV HD camcorders manufactured by Canon, JVC, Panasonic and Sony that produces HD format analog video and operates on 7.2 to 8.4 V DC power.

The PRO-XHD system converts these camcorders into live HD cameras for multicamera studio or field shooting.

The system operates with a single CAT-5 interconnection cable and takes camera HD analog component video, along with SD composite video, from a dockable camera adapter to the production control center. Operator intercom, tally functions and camera program audio are provided with the device. DC power for the camcorder is transported by the same CAT-5 cable used for control functions.

For more information, contact Camplex Corp. at 620-342-7743 or visit *www.camplex.com.*

Neumann KMS 104 Microphone

The KMS 104 from Neumann is a new entry into the U.S. market. The 104 microphone incorporates all of the features of the Neumann 105 and also provides a cardioid polar response pattern. The unit includes an elastic shock-mounted capsule and provides a high degree of rear sound rejection.

The handheld condenser microphone offers superior voice resolution, has extended frequency response and provides accurate transient detail. The 104 has built-in high-pass filtering which is optimized for close microphone placement. It features low self-noise and is ideal for use with personal monitoring systems.

For more information, contact Neumann USA at 860-434-5220 or visit *www.neumann.com.*

TecNec VPTR-1 Production Trailer

The VPTR-1 from TecNec Distributing is the latest in the company's line of low-cost production trailers. The unit is a rack-ready 20-by-8.5-foot audio and video production unit and comes fully equipped with heating and air conditioning. The trailer is prewired for AC power distribution and can accommodate four 6-foot-high EIA 19-inch equipment racks.

The VPTR-1 is supplied with an all-white exterior, and the interior is finished in a non-glare medium-grey acoustic fabric. It is fully carpeted and has dimmable track lighting.

Three cable feed-through doors and an audio/video/telco/CAT-5 I/O panel provide connectivity with the outside world. The unit has a curb weight of 2,900 pounds.

For more information, contact TecNec Distributing at 845-246-0428, or visit *www.tecnec.com.*

Panasonic AG-DVC20 Camcorder

The AG-DVC20 from Panasonic Broadcast & Television Systems Co. is a new shoulder-mount 3-CCD MiniDV camcorder. The AG-DVC20 features one-touch controls and weighs in at 4.4 pounds. It has an optical 10x zoom and a 500x digital zoom, and incorporates a digital electronic image stabilization system to compensate for vibrations and jitter.

The camcorder has an 8-bit digital video recording system and a 16-bit/48 kHz two-channel audio recording system. It has a 2.5-inch LCD color monitor with a six-language menu and a color electronic viewfinder. Recording time is 83 minutes and the unit comes with two 1,350 mAh battery packs, an AC adapter and a wireless remote control.

For more information, contact Panasonic Broadcast & Television Systems Co. at 201-348-7000 or visit *www.panasonic.com/broadcast.*

Chrosziel DigiFox Remote Control

The DigiFox from Chrosziel GmbH is a digital wireless remote control for the Panasonic HVX 200 camcorder. It operates on any of 16 channels and has a range of 2,000 feet outdoors. The device provides control of camcorder start/stop functions, as well as lens control through the camcorder's remote jack.

The unit can also control external lens motors with incremental encoders, as well as internal focus drives in Canon and Fujinon ENG lenses. The DigiFox provides this control with 32-bit resolution and has automatic settings for detection of end stops, proper connections and power state.

The DigiFox also works with the company's Aladin dimmer module to control a 12 V onboard camera light up to 75 W in size.

For more information, contact Chrosziel's U.S. distributor at 818-972-2839, or visit *www.chrosziel.com.*

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

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

AUDIO PRODUCTION

Want to Sell

Bittree & ADC Audio and Video Patch Panels from $250; 45RU racks from $400; Graham-Patten D/ESAM 230 audio mixer, $5900; Yamaha O1V 16-input digital mixer, call; Mackie 1604 VLZ used, $550; Mackie 24-4, make offer; Tascam M-2600 MK II 16-Channel Mixer, $1,500; Digidesign 888, $650; Sony PCM7040 DAT, $3,990; Panasonic SV-3800 DAT, $300; Wohler Amp 1-A, $325; Wohler AMP-1A-VTR, $550; Wohler AMP-1AP, $325; Wohler Amp-1APF, $325; Wohler MSH-8AL Audio Level Meter, $600; AKG C 414 B ULS Microphone, $950. 818-246-7100 or 212-564-9933 or www.tvprogear.com.

Sony BVW-400A w/12x9 lens, $6000; Sony DXC-637 w/PVV-3, $7000; Sony UVW-100 w/lens, $3500; Sony DSR-130/DSR-1/18x lens, $8010; JVC GY-HD100AU, $5495; Sony BVP-50 head, $2300; Sony BVP550/BVV-5, $11200; Sony BVP550 head, $8500; Sony DXC-325, $1800; Ike HC-340 w/J15x9.5B4 lens, $2250; Ike HI-55 /w14x lens, $4500. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

BATTERIES

Gentner AP400, $1400; Tektronix 760A, $700; US Audio DA-2, $199; Clear-Com XP-22, $250; GVG AMX-170S mixer, $450; Graham-Patten D/ESAM 200 16-input, $2600; Sony DMX-E3000 w/options, $4500; Teac M-2A, $420; Tascam M-308, $300; Yamaha PROMIX01, $590; Wheatstone TV-CONSOLE 600, $2000; Switchcraft 26x2 audio, $153; ADC BJF203-4MKII, $150; GVG 8550-8551 VDA Tray, $1000; Leitch FR-882 w/8 ASD card, $950; Clear-Com ICS-2003, $1500; Clear-Com ICS-92, $700; RTS RM300, $125; HME RW800 base station, $2100. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

CAMERAS

Want to Sell

(5) Sony DXC-3000 cameras & Ikegami HC-200 camera, all cameras incl lens, zoom cntrlrs & VFs, $250/ea. 804-230-2716 w/questions.

PVW637 BetaSP camera w/PVV3 deck w/case & AC adapter, one owner, BO. Glen, 208-735-1970 or 208-420-9779.

Sony D-600 BetacamSP camcorder w/Fujinon 7.8mm x 22 zoom lens & shade, 2-setup cards, component out connector, tripod mounting plate, Thermodyne shpg case, PortaBrace camera case, PortaBrace Rain Cover, (2) Anton Bauer Digital Pro Pac 14 batts, (5) Anton Bauer Trimpac batts, Anton Bauer Magnum Quad chrgr, IDX IA-100 AC pwr sply, $8500; Chrosziel 4x4 clip-on Matte Box w/Eyebrow, $450; Century .8 wide angle adapter w/clip-on lens shade & Pelican case, $750; Sony VA-500 color PB adapter w/PortaBrace case, $250; (2) RMP-9 CCU w/extension cables & case, $750; entire pkg, $10000. 215-353-0543 or bscdp@earthlink.net.

Sony DXC930 color video camera, $1995; Sony DXC990 color video camera, $2995; Listec studio prompter, call; Miller 50 fluid heads & wooden sticks, call; Cartoni Beta w/2 stage aluminum sticks, $1700; Glidecam Steadicam Rig, call; Matthews Doorway dolly, call; Trovato Chameleon dolly, call; Mole Richardson Baby Solarspots, Tweenies & Midget solarspots, call; Autro MB Cyc lights, various, call; Strand stage lighting, call. 818-246-7100 or 212-564-9933 or www.tvprogear.com.

CAMERA ACCESSORIES

Want to Sell

Canon J17ex7.7B4 IRSD 2/3 lens w/extender (elFxs), incl Peter Lisand pistol grip, perfect cond, original box & manuals, $8500. 419-621-0602 or flatwater@mac.com.

Sony CA553, $1700; Sony CCU-355 w/CA55, $4340; Sony CCU-370, $6500; Sony CCU-M3, $200; Sony DXF-51, $975; Ikeg VA-95SA, $530; GVG WAVE-LINK w/2 chnls, $1250; Schneider 14x9 Ike mount, $750; Fujinon A12x9BERM, $1995; Fujinon A14x8.5BERM, $2500; Fujinon A14x9BERM-28, $700; Canon HJ22EX7.6BIRSE, $22000; Canon J17x8.5B3IRS, $2500; Canon J20AX8B4IRS, $6500; Canon J20AX8BIRS w/cntrl, $8000. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

CAREERS

COMPUTERS

Want to Sell

SGI ONYX RM4 board, $300; SGI ONYX RM5 board, $300; Marshall V-R563-P LCD rackmount LCD monitor, $1650; Marshal V-R72P-2SD LCD monitor, $2699. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

EDITING EQUIPMENT

Want to Sell

Avid Adrenaline, $15500; Avid Symphony Version 3.5 on IBM Intellistation, $12500; Avid MC 9000 on Mac G4, $10500. 818-246-7100 or 212-564-9933 or www.tvprogear.com.

Panasonic AJ-D200 DVCPro 3-chip video camera, xlnt cond, vlh, hrs 27, drum 12, threading 40, incl 16X lens, Shotgun mic, camera plate, AC pwr sply, Anton Bauer chrgr w/3 batts & Thermodyne case; Panasonic AJ-D640 studio DVCPro edit deck, xlnt cond, vlh, oper 163, drum 104 & tape run 12, SDI, YRB, YC & Composite I/O; Panasonic H1390 13" color monitor w/YRB, YC & composite inputs; Media 100i-XR vers 7.5 incl SDI, YRB, YC & Composite I/O, lossless resolution, 72 GIG 10K RPM SCSI drives, Mac G3 computer, Mackie 1604VLZ audio mixer, just plug-and-play, $3500. Steve, 415-642-6970 or visionplus@aol.com.

Sony BE-9000 edit cntrlr, $3460; Convergence ECS-195LM edit cntrlr, $740; GVG VPE-131 edit cntrlr, $2270; GVG VP-141L, $1730; GVG VPE-241, $3350; GVG VPE-251, $992; GVG VPE-251, $4220; GVG VPE-331, $1500; GVG VPE-41, $900. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

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GVG 8500 w/5x8501 cards video DA, $575. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

MONITORS

Want to Sell

Sony PVM 8044Q 8" color monitor w/PortaBrace case, $750. 215-353-0543 or bscdp@earthlink.net.

Sony PVM2030 color monitor, $250. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

Sony PVM-20M4U, $1750; Sony PVM-14M2U, $1050; Sony PVM8042Q, $500; Sony PVM8041Q, $400; JVC TM H1750CG 17" color monitor, B-stock, $640; JVC TM H1950CG 19" color monitor, B-stock, $925; JVC DT-V1710CGU 17" HDTV monitor, B-stock, $1890. 818-246-7100 or 212-564-9933 or www.tvprogear.com.

SIGNAL PROCESSING

Want to Sell

Chyron InFinit!, $5500; Chyron MAX w/option, $2800; Chyron MAXINE, $6500; Sony BVX-10 color corrector, $2000; For-A CCS-4360 frame color corrector, $1000; Accom 221 encoder/decoder, $1750; GVG CV-20T, $225; AJA D4E, $230; Comtech SDM-2020D, $3450; Minerva VNP-151, $2850; Miteq U-96-14.25S, $5460; Leitch FR-6804-1 w/ADC, $950; Leitch RC-4000, $420; Sony HKPF-1125, $1900. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

Leitch DPS 575 digital processing, $4495; Leitch FR-684 Dual PS 2RU Frame, $295; Leitch FR-884 Dual PS 2RU Frame, $295; Leitch Mix-7001 Multi-function digital frame, $400; Leitch 6804 Mounting Frame w/Pwr sply, $250; Leitch SPG-2602N Pulse Gen, $1,000; Sony BVX-D10/BVR-11, $3,990; Leitch DPS-295 Component TBC, $1,500. 818-246-7100 or 212-564-9933 or www.tvprogear.com.

SWITCHERS

Want to Sell

GVG 2200 switcher w/Krystal effects, $27000; Sony AWS-G500 Anycast switcher w/options, $13500; Videotek RS-12DVA SDI Routing Switcher, $600; Miranda Digipath 16x16 SDI Router (w/remote panel), $3,500; GVG Ten X, $600. 818-246-7100 or 212-564-9933 or www.tvprogear.com.

GVG Master 21 master control switcher, $5500. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

GVG110CV 8-input, component video switcher, DSK, ChromaKeyer, $3000; Sony FXE100 3-input, YC/composite switcher/AB-roll edit cntrlr, built-in audio mixer, $1200. Steve, 415-642-6970 or visionplus@aol.com.

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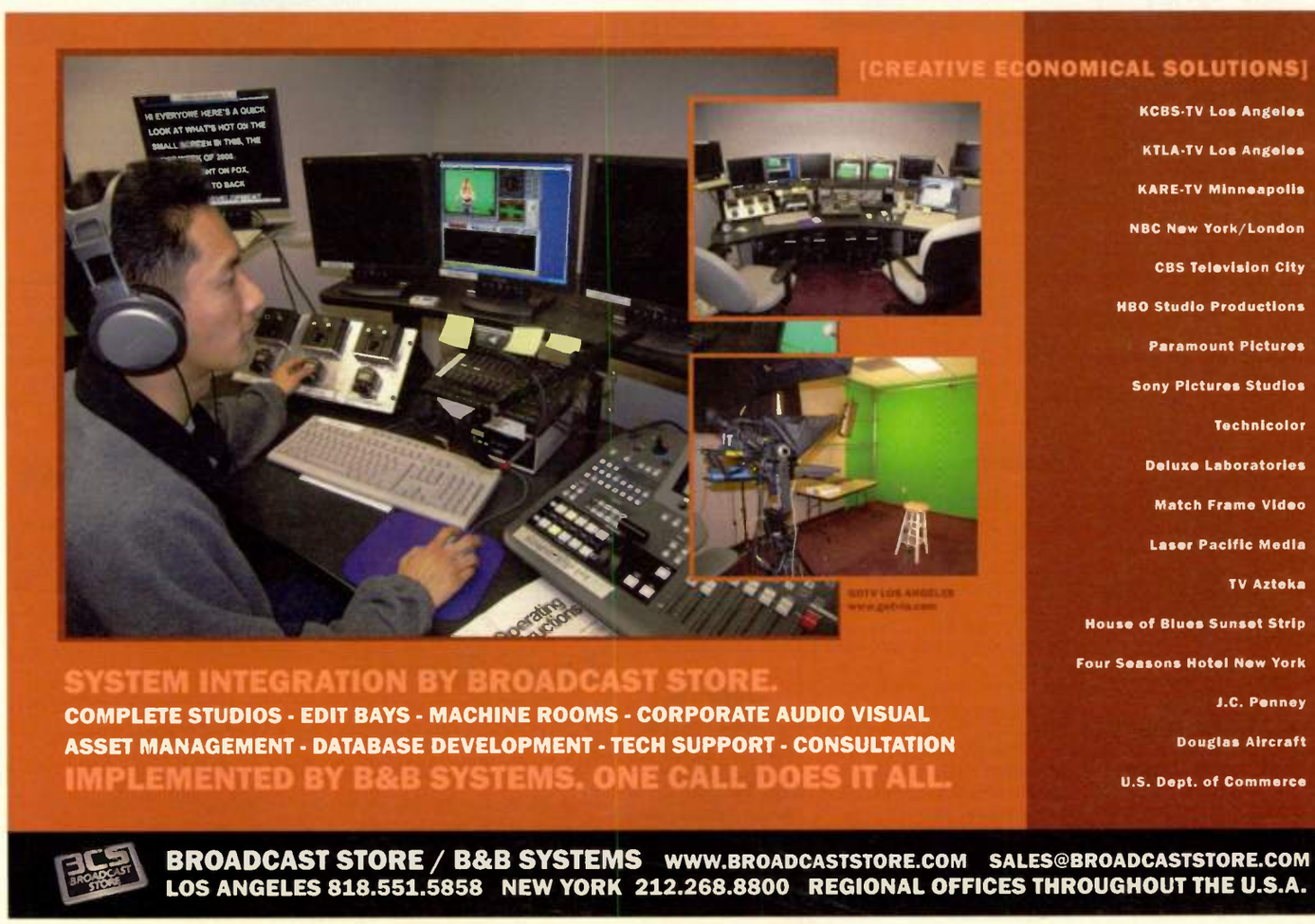

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Tektronix WFM601i SDI Waveform, $4500; Tektronix WFM601 SDI Waveform, $3500; Tektronix 1745a wfm/vec NTSC/PAL, $2500; Tektronix 1755 wfm/vec, $2750; Tektronix 1765 NTSC/PAL wfm/vec, $3450; Tektronix 1730 WFM, $900; Tektronix 1720 vectorscope, $900; Tektronix 1710B, $1000; Tektronix 764 Digital Audio Monitor, $1000; Videotek TVM-821D, $3295; Videotek VTM-200, $3195. 818-246-7100 or 212-564-9933or www.tvprogear.com.

Tektronix 1750 waveform/vector monitor, $1250. 215-353-0543 or bscdp@earthlink.net.

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Sony SDI-28 SDI I/O card for Sony DSR80 deck, $600. Steve, 415-642-6970 or visionplus@aol.com.

Sony UVW-1800 BetacamSP, $3995; Sony PVW-2800 BetacamSP, $4490; Sony PVW-2650 Betacam SP, $1950; Sony PVW-2600 Betacam SP, $1950; Sony BVW-70, $4750; Panasonic AJ-SD93 DVCPRO 50, lw hrs, $5495; Sony DSR-2000, $7995; Sony VO 9850 w/timecode, $1200; Sony VO 9800, $1000. 818-246-7100 or 212-564-9933 or www.tvprogear.com.

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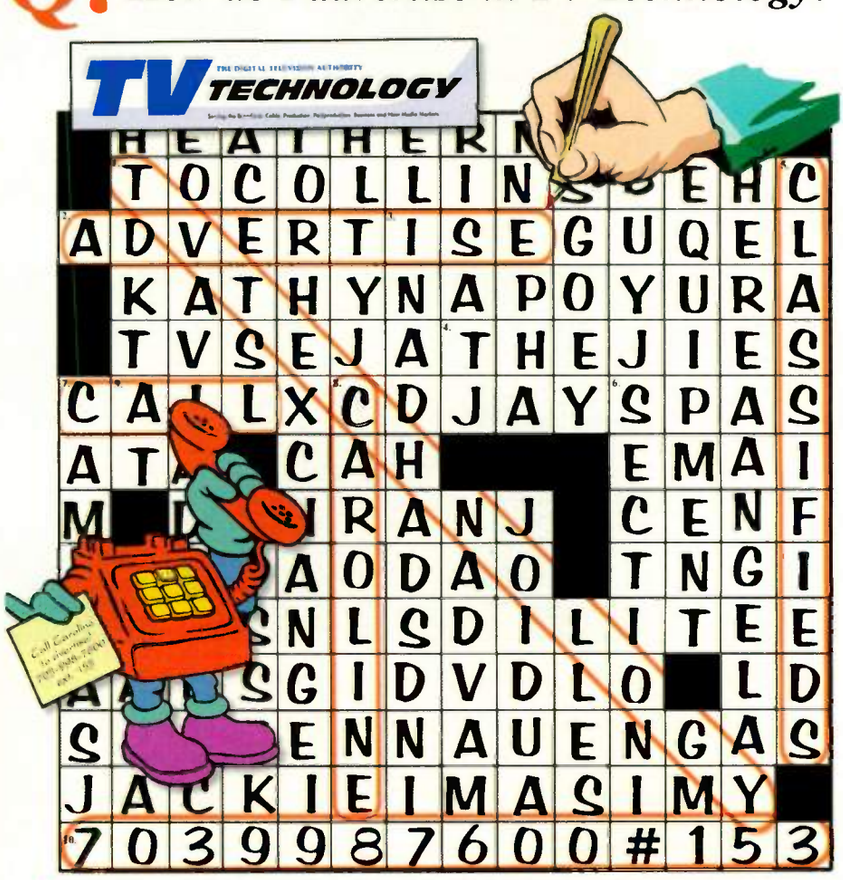
ENGINEER Manager RF Engineering NEWS 12: Seeking Manager of RF Engineering to maintain microwave, fiber backhaul, downlinks, SNG and ENG newsgathering trucks and related systems. Must have strong managerial skills and ability to work extensively hands-on. Responsibilities include routine maintenance, system repairs and training of engineering and operations staff. Must understand RF theory as well as electronics. Work includes coordination of FCC licenses and maintaining operation in compliance with all rules and regulations as well as developing strong relationships with vendors. Travel between 5 primary studio locations and other transmission hubs on a weekly basis required. Requests for support must be answered on a 24/7 basis to maintain the integrity of newsgathering operations. Responsibilities include installation of new equipment and future capital improvement plans. To submit resume, please go to: www.Cablevision.jobs and enter Req ID # 1461BR. EOE M/F/D/V & A Drug Free Workplace.

Mobile/Video Production Engineers: Clark Media, an established mobile & production company serving clients in the Mid-Atlantic area, is looking for full-time video production engineers. Entry level and senior positions are available to work with our fly-packs, hi-def systems and our mobile truck. Position provides opportunity to work as part of a team in a fast paced environment. Send resume and salary requirements to: Gary C. Snyder, President/Engineer, Clark Media, Phone: 610-694-9800; Fax: 610-694-9700; e-mail: GaryS@ClarkMedia.com.

GET THE JOB DONE!
For more information, rates and deadlines, contact Caroline Freeland 703-998-7600, ext. 153

Q: *How do I advertise in TV Technology?*



A: To advertise, call Caroline at 703-998-7600, ext. 153, or e-mail: cfreeland@imaspub.com.

World Radio History

Camera Control Systems

Camplex Corp.

3302 West 6th Ave.
Emporia, Kan. 66801

The following is a compilation of opinions solicited from users of the month's featured product, as well as general specifications and other pertinent information.

- Remote camera control
- Uses single coax or triax cable
- Provides control, tally, genlock, audio and video signals

USER	Trent McNelly Operations Manager KTTU-TV	Bill Sinatra Chief Engineer Oceanside Community Television	Daryn Cashmark Owner Cashmark Media	Fred Swift Assistant Chief Engineer KUSI-TV
WHAT MODELS DO YOU HAVE?	CP-201s, 301s, 301Bs and 601s	We have four CP-701s.	We have both CP-301s and 601s.	CP-201As, CP-201Bs and CP-301As
HOW ARE THEY USED?	In our microwave, sat and prod trucks	In our mobile studio truck	With our Sony DSR camcorders	In our live trucks and at a sports stadium
HAS IT PERFORMED AS EXPECTED?	I've always been happy with Camplex.	They sure have.	Yes. We've had very good luck.	Better than expected
WHAT FEATURES DO YOU LIKE THE MOST?	The fact that we can use standard cable with runs up to 1,500 feet	The fact that we don't have to use multicore cable	There's nothing else like it. We can use camcorders as cameras.	The quality of the video and the fact that there's just one cable
WHAT FEATURES DO YOU LIKE THE LEAST?	Poor intercom levels in older units.	Camera connections are a little awkward.	The CP-301 is for composite video only, but we knew that going in.	When dropped, ICs sometimes fall out, but this is not a normal situation.
HOW LONG HAS IT BEEN IN SERVICE?	The oldest have been in use for 14 years.	Only since June, but they get used a lot—two or three times a week	We've had the 301s for three and a half or four years.	About 12 years
HAVE YOU HAD ANY EXCESSIVE MAINTENANCE PROBLEMS?	Nothing I'd call a problem	Only at the very beginning-quickly cleared up by Camplex	Not really. We did have a tally issue, but it was resolved very quickly.	Other than popped chips, no. That was abuse situation.
HOW WOULD YOU RATE THE MANUFACTURER'S SERVICE/SUPPORT?	Both outstanding	Great, very high.	Nine out of a scale of 10.	Ten out of 10
WHERE WAS THE EQUIPMENT OBTAINED?	From Midwest and then Camplex	Directly from Camplex	Directly from Camplex	Directly from Camplex
WHAT WAS THE DECIDING FACTOR FOR YOUR PURCHASE?	Price, performance and compatibility with a variety of cameras	The fact that I could install permanent cables at various city venues	Flexibility to use the camcorders as cameras. Saved us from buying both.	Ease of implementation by field crews. Just roll out a reel of RG-59.

For more information, contact Camplex Corp. at 620-342-7743 or visit www.camplex.com

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14	Burk Technology	www.burk.com
43	Calrec Audio Ltd.	www.calrec.com
46	Camplex Corporation	www.camplex.com
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51	CEA	www.cesweb.org
61	Cobalt Digital	www.cobaltdigital.com
56	Computer Modules - DVEO Division	www.dveo.com
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World Radio History

SGI to Emerge From Bankruptcy

MOUNTAIN VIEW, CALIF.

Silicon Graphics got the go-ahead from a New York bankruptcy court to reorganize. The company said the approval sets the stage for its emergence from Chapter 11 this month.

SGI, maker of high-performance graphics workstations, entered into Chapter 11 protection in May. At a hearing on Sept. 19, the court ruled that all the necessary requirements were met for the reorg, which met with creditor approval, the company said.

"We have eliminated the legacy debt, improved our liquidity and stabilized the business," said Dennis P. McKenna, CEO and chairman of SGI. "We have also taken out significant costs—$150 million on an annualized basis. We have reengineered the company and have a strong leadership team that will be executing this plan."

McKenna said the product portfolio was also "retooled" to better align with the "strategic direction of the company."

SGI received commitments for exit financing; Morgan Stanley Senior Funding Inc. has lent SGI an $85 million term loan, and General Electric Capital Corp. has lent it a $30 million line of credit. The company said it would use the money to pay off the existing DIP financing, make distributions pursuant to the plan, and provide working capital for the company's ongoing operations.

EchoStar Names New Execs

ENGLEWOOD, COLO.

Carl Vogel has returned to Dish fold as the recently appointed president of EchoStar.

In the role, Vogel oversees day-to-day operations for Dish Network, as he continues to serve as vice chairman of EchoStar board of directors. He will retain responsibility for the company's financial and strategic iniatives.

Vogel initially served as EchoStar's president from 1994 to 1997, and was a key member of the executive team that created and launched Dish Network in 1996. He returned to EchoStar in May 2005 after serving as president and CEO of Charter Communications. Before joining Charter, Vogel held various senior executive positions with companies affiliated with Liberty Media Corp. He was also chairman and CEO of Primestar and CEO of StarChoice.

EchoStar also appointed Bernard L. Han as chief financial officer, effective Sept. 28. Han succeeds David J. Rayner who assumes the new role of executive vice president in charge of the company's national installation and service network.

Prior to joining EchoStar, Han was executive vice president and chief financial officer of Northwest Airlines in Minneapolis, Minn. Han has also held the chief financial officer and chief marketing officer roles at America West Airlines. He began his career in the space and communications group of Hughes Aircraft Co. and then at American Airlines.

Motorola Acquires Vertasent

SCHAUMBURG, ILL.

Motorola has beefed up its video network platform with the acquisition of Vertasent LLC. Vertasent, a privately held firm in Colmar, Pa., develops software for content-on-demand and for IPTV to share resources and over a common infrastructure.

Financial terms were not disclosed.

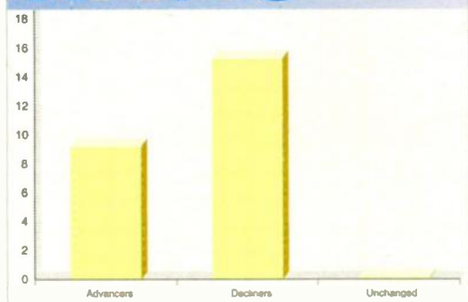
The Vertasent applications manage the elements in a switched digital video network with industry-standard interfaces and protocols, reducing the need for dedicated equipment.

Together with Motorola's existing on-demand hardware, the Vertasent system offers an open platform for expanding a program offering "to potentially include millions of live and on-demand titles," according to Motorola. It also allows migration to an all-digital network and streaming distribution.

"Vertasent will play a critical role in our technology strategy, by providing the software 'glue' that unifies the management of advanced services and the standards-based video components in the network," said Dan Moloney, president of Motorola Connected Home Solutions.

The Vertasent management team and employees are expected to remain based in Colmar and be integrated into the Motorola Connected Home Solutions business.

WIN-LOSE RATIO



TOP ADVANCERS BROADCAST STOCKS
(Sept. 15 - Sept. 29)

Tribune	+5.65%
EW Scripps	+3.39%

TOP DECLINERS BROADCAST STOCKS
(Sept. 15 - Sept. 29)

Young	-12.21%
Ion Media	-10.00%

TOP ADVANCERS TV TECH STOCKS
(Sept. 15 - Sept. 29)

Ciprico	+5.88%
Belden	+5.29%

TOP DECLINERS TV TECH STOCKS
(Sept. 15 - Sept. 29)

Avid	-13.96%
LSI Logic	-3.18%

To have your company listed, contact Melissa Sullivan at msullivan@imaspub.com.

TV Tech STOCKS as of Sept. 29

Company Name	52-Week Range	Sept. 15	Sept. 29	% Change
Avid	32.05 - 59.10	42.33	36.42	-13.96%
Belden	18.65 - 39.83	36.31	38.23	5.29%
Ciprico	3.68 - 6.84	4.25	4.50	5.88%
Harmonic	3.79 - 7.75	7.29	7.36	0.96%
Harris	36.72 - 49.78	44.31	44.49	0.41%
LSI Logic	7.41 - 11.81	8.49	8.22	-3.18%
Scopus	3.05 - 8.35	3.62	3.59	-0.83%
SeaChange	5.44 - 9.89	8.68	8.89	2.42%
Tektronix	22.64 - 36.89	27.75	28.93	4.25%

Broadcast STOCKS as of Sept. 29

Company Name	52-Week Range	Sept. 15	Sept. 29	% Change
Acme	3.50 - 5.75	5.40	5.25	-2.78%
Belo	14.93 - 23.57	16.18	15.81	-2.29%
Entravision	6.59 - 9.18	7.49	7.44	-0.67%
Fisher	38.89 - 49.89	43.76	41.55	-5.05%
Gray	5.15 - 11.00	6.64	6.41	-3.46%
Hearst Argyle	19.97 - 26.27	23.81	22.95	-3.61%
Nexstar	3.80 - 6.20	4.16	3.95	-5.05%
Lin TV	6.12 - 14.18	7.54	7.78	3.18%
Ion Media	0.37 - 1.15	0.90	0.81	-10.00%
Sinclair	7.18 - 10.07	7.90	7.85	-0.63%
Univision	23.52 - 36.67	34.88	34.34	-1.55%
Young	1.70 - 3.91	2.62	2.30	-12.21%
Tribune	27.09 - 34.35	30.97	32.72	5.65%
Meredith	45.04 - 56.83	49.62	49.33	-0.58%
EW Scripps	40.86 - 50.63	46.36	47.93	3.39%

Scripps Sells Shop At Home Stations

CINCINNATI

Media company E.W. Scripps Co. has sold five Shop At Home TV stations to Multicultural Television Broadcasting LLC for $170 million.

The sale was part of a previously announced plan at Scripps to divest the TV shopping business. Scripps sold the Shop At Home network, including the Nashville studios, in June to Jewelry Television for $17 million.

The stations being sold, which carry the network, including WMFP in Boston, WOAC in Cleaveland, WRAY in Raleigh-Durham, N.C.; WSAH in Bridgeport, Conn.; and KCNS in San Francisco.

The transaction is expected to be completed over the next eight months pending FCC approval.

Genesis Networks Receives Second-Round Funding

NEW YORK

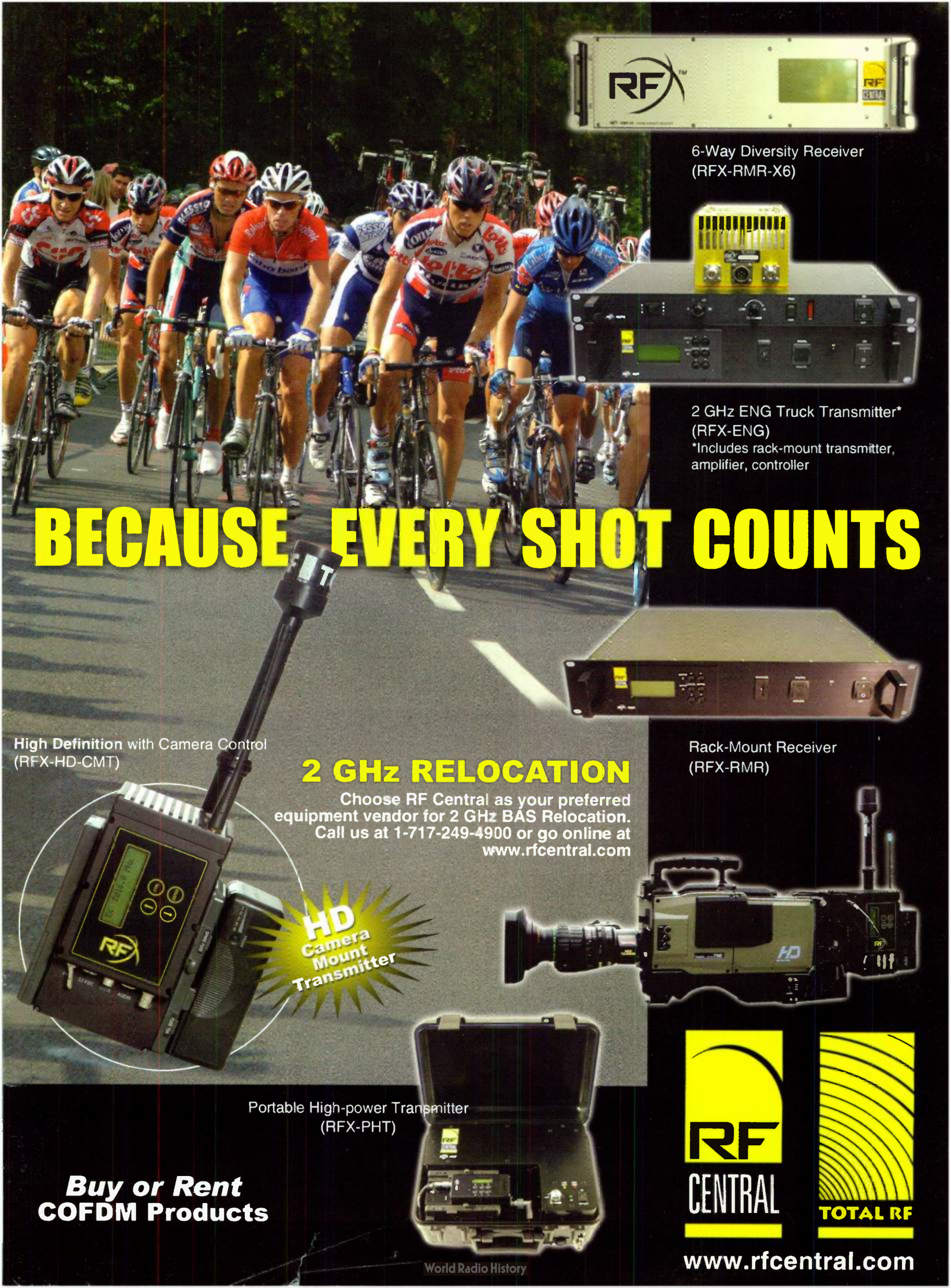
Genesis Networks, a provider of video transmission services over fiber and satellite, said it has secured second-round financing from Longworth Venture Partners and Masthead Venture Partners.

Peter Roberts of Longworth, a Boston firm, and Daniel Flatley of Masthead, located in Cambridge, Mass., join existing investors Dan Carney of Aspen Fiber Optic and Genesis Networks President and CEO Paul Dujardin on the board of directors.

"This new investment from Longworth and Masthead enables Genesis Networks to complete its initial phase of interconnecting the top 80 cities worldwide," Dujardin said. "Adding connection to these cities increases the reach and capabilities for our existing clients to access Europe, the Middle East, the Far East, North America, and South America instantly."

Genesis Networks offers IRIS, proprietary software that enables users to control bandwidth, routing, and scheduling of video transmissions.

World Radio History



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D-12: Compact Enough for OB
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The D-12 Digital Audio Control Surface

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- 5.1 surround sound plus 3 stereo masters
- COMPACT – 32 faders – 53" wide / 32" deep / 9" high
- router based source / destination selection
- paging channel strips – 64 channels on 32 faders
- scalable – up to 64 input faders
- routable mixes
- event storage and recall
- eight stereo subgroup mixes
- eight stereo sends
- eight mix-minus outputs (can be expanded)
- four DCM faders (digitally controlled groups)
- Bus-Minus (w/TB & solo) on every input (direct out)
- pan/bal, blend, mode, EQ/dynamics on every input
- delay inputs or outputs (frames or milliseconds)
- fullscale digital peak and VU metering
- two studios, CR and HDPN/Studio 3 monitors
- talkback communication (programmable)
- mix follows talent / logic follows source
- 12 user-programmable switches (comm, salvos, triggers, etc.)
- automatic failsafe DSP card option
- automatic failsafe CPU card option
- redundant power supply option
- switched meters with system wide access (including all console inputs and outputs)
- dedicated master, group and DCM faders (no fader sharing)
- motorized faders
- pageable fader option
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