

Videography Feature

Advances in Tapeless Acquisition

By James Careless

Dec 26, 2005, 13:37

It's been 10 years since Ikegami and Avid Technology demonstrated the revolutionary Editcam FieldPak at NAB 1995. A year later, Ikegami showed the FieldPak integrated into its DNR Dockable Disk Recorder, the first non-tape recording unit designed to connect directly to professional video cameras. Soon after came the DNS-101 single-piece camcorder, recalls José Rosado, Ikegami's Editcam product manager. "Although it represented a quantum leap in existing technology and a harbinger of future broadcast engineering trends, the technology needed several more years of refinement before it could be adopted by broadcasters. These units were replaced by the DNS-201W camcorder and the DNR-20 docking recorder."

Ikegami has continued to improve its product line, but it's no longer alone in the tapeless tech field. Companies including Hitachi, Panasonic, and Sony have developed and are now selling their own tapeless recording systems.

These systems are gaining interest from professionals. Bob Ott, vice president of marketing for Sony optical and network products, says the company's XDCAM tapeless solution has already sold more than 8,000 units worldwide. It can be argued that as demand for tapeless solutions increases, the days of videotape supremacy grow shorter. Here's a rundown of how a number of manufacturers are addressing the needs of video professionals with tapeless technologies.

Focus on Hard Disk

Focus Enhancements' first HDD video recording system, the FireStore FS-1, hit the industry in 2001. Since then, Focus Enhancements has expanded its HDD system into a robust line of video recorders. The FireStore FS-2 and FS-2E units are designed for studio use, while the DR-DV5000, FS-3 and FS-4 are built into portable units. The DR-DV5000 docks to JVC camcorders, while the FS-3 docks to camcorders made by Canon, Ikegami, Panasonic and Sony. The FS-4 is a portable unit small enough to wear on a belt and connects to a camera via FireWire. The newest addition to the line is the FS-4 HD for HDV acquisition.

On FS-4, files are recorded to disk as Raw DV, AVI Type 1, AVI Type 2, AVI Type 2 24p, Matrox AVI, Canopus AVI, QuickTime or QuickTime 24p. FireStore FS-4 Pro also includes Pinnacle AVI and Avid DV-OMF support. High-definition support (1080i or 720p MPEG-2 TS from HDV camcorders) was added recently with the introduction of FS-4 HD 40GB.

The core of the FireStore system is the removable HDD, models of which are available in 40GB and 80GB capacities. Depending on the recording format used, storage time can be as long as six hours per 80GB HDD. Users may extend record times by linking two FS-4 units together for as much as 12 hours of recording.

One big feature of FireStore is its "Direct To Edit" capability. Basically, DTE captures the camera's video output and converts it to a pre-selected NLE file format, such as Avid Xpress DV's DV OMF, Apple's QuickTime or Adobe's AVI 2. As a result, video files are available immediately for NLE access.

Grass Valley to Infinity

In a bid to provide videographers two tapeless tech options, Grass Valley's Infinity Series family of digital camcorders and VTR-style decks record to internal Iomega REV PRO removable disks and CompactFlash solid-state memory cards. Infinity products can also connect to a variety of external

recording media via USB 2.0 and FireWire ports. The Infinity Series is equally flexible in digital compression formats. For standard-definition applications, the Infinity line supports DV25, JPEG 2000 and MPEG-2 compression. For high-definition applications, Infinity supports MPEG-2 (I-frame and Long GOP) and JPEG 2000.

"Our goal is nothing less than the death of proprietary recording media," declares Jeff Rosica, Grass Valley's vice president of strategic marketing and business development. "We believe that our open format approach will also put an end to manufacturers dictating future format purchasing decisions for their customers and limiting the kind of recording choices that users have."

Hitachi Goes HDD

"Capitalizing on Hitachi Global Storage's market dominance of HDDs and the ever-advancing Moore's law, Hitachi Denshi sells an affordable tapeless recorder for its line of Z-series professional cameras," says Emilio Aleman, Hitachi's product manager, Broadcast & Professional. "The Z-DR1 digital recorder docks to current models of cameras and uses removable Mediapacs, which house rugged Hitachi Travelstar HDDs."

The Z-DR1 recorder is directly dockable to all current Hitachi Z-series professional cameras. Available in capacities ranging from 20GB to 120GB, the Z-DR1 provides up to 8.9 hours of tapeless recording at 25Mb/s per 120GB removable Mediapac HDD (4.5 minutes per gigabyte). "The unit improves the production workflow by offering connectivity to an NLE PC via FireWire port on its chassis--or, more commonly, by removing the Mediapac HDD and using directly with your editing system, avoiding digitizing, transfers and capturing," Aleman adds. "DV25 AVI or MOV type files can be edited right off the Mediapacs as well as archived on the same due to the low cost of the media."

The Z-DR1 can record in DV25 NTSC and PAL formats, allowing video departments to use this recorder while transitioning from analog to digital.

Ikegami: The Next Generation

Ikegami ignited the tapeless tech revolution with the introduction of the Editcam. Today, Ikegami is up to the third generation with the DNS-33W Editcam3, which can record to removable FieldPak HDDs or solid-state RAMPak flash memory. FieldPaks are available in 40GB, 80GB and 120GB sizes, while RAMPaks come in 4GB, 10GB and 20GB sizes. (A 40GB FieldPak will yield approximately 165 minutes of DV25 compression recording with four-channel audio recording, while an 80GB FieldPak2 can record up to six hours of DV25 digital video.)

The newest addition to Ikegami's tapeless line is the HDN-X10 Editcam HD, which uses three 2/3-inch CMOS sensors to capture its HD images and includes a built-in downconverter for SD monitoring in the field. The camcorder can record HD video in 1080/60i, 1080/50i, 1080/24p, 720/60p and 720/50p HD formats, then save it on FieldPaks or RAMPaks. These storage devices can then be plugged into an Ikegami SAT adaptor, which allows video files to be directly accessed by connected Avid NLE systems.

Panasonic Is in the Cards

Rather than going the HDD route, Panasonic has pioneered the use of solid-state memory cards for video recording. Specifically, Panasonic's 8GB P2 cards can provide up to 160 minutes of DVCPRO (25Mb/s) or 80 minutes of DVCPRO50 (50Mb/s) recording, assuming that the high-end, full-sized AJ-SPX800 camcorder is fitted with its full complement of five P2 cards. Of course, the cards are hot-swappable, so continuous recording is limited only by the number of P2 cards you own.

Panasonic has also brought P2 technology to the low-cost camcorder marketplace--and added DVCPRO HD capability. With its 1/3-inch 3-CCD imager, the AG-HVX200 P2 camcorder provides 1080i/720p/480i digital video recording in a handheld camcorder. It records using the 100Mb/s

DVCPRO HD format, meaning that a single P2 card can capture eight minutes of HD video. There are only two P2 card slots on the unit, however, so plan accordingly. The new camcorder is expected to ship on Dec. 29.

Sony Sticks to Discs

In contrast to the HDD and solid-state recording systems adopted by other manufacturers, Sony's XDCAM Professional Disc System is based on removable Blu-ray (blue laser) optical discs. Capable of recording 85 minutes in DVCAM format or 45 minutes in MPEG IMX, XDCAM discs have a maximum data transfer rate of 144Mb/s when used in a Sony PDW-1500 compact playback deck.

To keep up with HD, Sony plans to release an XDCAM HD camcorder and two decks in early 2006. Each unit will be capable of recording 1080i HD video at 18Mb/s, 25Mb/s and 35Mb/s (with a 24p option). The XDCAM video decks will record HD content using the HD MPEG-2 Long GOP codec.

Conclusion

The current variety of tapeless tech options--HDD, optical disc and solid-state memory--is reminiscent of videotape's early days, when a range of tape formats kept buyers guessing. (Remember the Philips V2000, with its flip-over cassette that could record four hours per side? Didn't think so.) Until the market settled on Beta for broadcast and VHS for consumer use, choosing a tape format was an educated gamble at best and an obsolete dead end at worst.

Time will tell if the same holds true for today's tapeless tech options. By the time a clear leader emerges, however, videotape may also be vanquished.

© Copyright 2003 by United Entertainment Media, Inc.