

Ghost in the machine

Jim Matlosz has been using high-speed cameras for years, but he has recently been using the Phantom HD recording to the Wafian HR-FI hard disk recorder.

I began working in high-speed photography when I was a camera assistant back in 1993. My goal was to learn every camera available. Along the way, I stumbled on the Photosonics high-speed cameras. Within a few months of meeting Conrad Kiel, the company's rental department vice-president, I was up to speed and going out with these finely tuned behemoths. The cameras, and Photosonics themselves, kept me busy for quite a few years, while I continued to build my reel and career as a working DP.

Quite a few years (and a couple hundred thousand feet of film) later, Photosonics received the first generation of Vision Research's high-speed cameras, the Phantom V5. The Phantom V5 is an ISO 100 1024x1024 camera capable of shooting 1000fps. It was limited in color depth, and the low sensitivity was a killer for lighting, but right away I could see the impact this sort of technology would have, not only on high-speed photography, but on commercials and creative filmmaking.

I quickly took a liking to the progressive capture and crude, but effective, workflow. Personally I was

never thrilled with tape-based HD acquisition. I just refused to get on board. Then in 2003, I began work on an animated film, all captured using digital SLRs, and it dawned on me that this is the way HD should work – a raw workflow that is true progressive. So when I saw that the V5 and that Vision Research had the same philosophy, I was hooked. I began to familiarize myself with the camera, shooting a battery of tests and going out with the camera as a technician. Every job was a new discovery and more and more people began to be impressed as well.

We shot with the camera to the internal 12GB VRAM hard drive, but we could only play back SD video through the SD output on the computer, and the playback wasn't very smooth at all, but it was a start, and I could see that in the not to distant future these issues would be worked out. When working with the V5, once it's confirmed that what you shot was good, you'd sit around for as much as 20 minutes, downloading the file via the Firewire 400 port from camera to computer. Flicker bit us a few times back then, because there was no way to watch the image in real time to see if flicker existed – a common issue when HMI ballasts aren't checked in high-speed photography.

The other issue we confronted, and still do, is with the VRAM that stores the images on the camera. If the power is pulled, the memory is wiped clean, shot lost, game over! Often during downloads there were many moments of silence and limited movement. Now, once we downloaded the shot, we could then go ahead with the next set-up and wipe the VRAM clean, preparing for the next shot-and-

downloading adventure. Once we finished shooting we began converting the Raw proprietary .cin files to an AVI. We had an option to convert to TIFFs, if I recall, but AVI was considered the better choice, because it was a stand alone movie.

Phantom HD

So fast forward to September 2006. In between, Vision research had released some new offerings, with the V7, V9 and V10 – using GiGE rather than Firewire 400 – but what it unveiled in 2006 was a step forward for the company. The Phantom HD was designed for cinema, complete from the factory with a PL-mount. The camera offered a 2048x2048 14-bit color CMOS sensor, offering 1920x1080 HD at 1000fps. On top of all that, the camera had an HD-SDI output, so you could view your shots instantaneously – and smoothly.

I tested it as soon as I could. The beta version of the camera was very impressive – in fact, the footage I shot, which was a test for the show *Slow Dancing*, was turned into a spec spot finished in HD.

The first real job I shot with the Phantom HD was for the MGM city center sales office – what would be a 360 projection approximately 20ft tall. We used both the Phantom HD and the Phantom 65 camera – which has a 65mm 4K chip – and I was very curious how usable the 4:2:2 coming out of the HD-SDI was as a redundant capture system. I made several enquiries about capture directly to Final Cut Pro, but we just didn't have the additional crew that would have been necessary. It's entirely possible to do that, though, using a BlackMagic card – workflow production company,

The Wafian HR-FI recorder.



64

show reel | issue 22 january/february 2008

phantom hd



The Vision Research high-speed Phantom HD camera.

Superficially, he has been using it successfully for a while.

It wasn't until I shot a spot for Fox Sports that I had my first chance to properly see how useful the HD-SDI was. I still had no interest in dumping to any tape format: I wanted to capture from my HD-SDI to hard drive and introduce the least amount of compression and no interlacing, as well as reduce deck rental costs in post.

I tested the Panasonic P2 recorder, the AJ-HPM1000, which has an HD-SDI input and records to P2 cards. The recorder worked very well, and I really liked it, but it did compress the image, capturing and storing it in an MFX wrapper. It was also limited by only having USB 2.0 out to download footage to an external hard drive. Still, at \$12,000, at the time it was my only low-cost option for hard drive recording of the HD-SDI signal.

The Wafian recorder

A few months went by – a few more jobs – and then I was introduced to the Wafian recorder. This unit spoke volumes to me: capable of 4:2:2 input, direct-to-drive recording, no interlacing, and it created QuickTimes in the Cineform codec. I used the unit for the first time at an Able Cine demo of the Phantom camera, and once again I was very pleased. It was exactly how I wanted it all to work: no tape

whatsoever.

Afterwards, I went up to Portland on a shoot for Nike and Wieden and Kennedy. We were shooting golf ball hits at high frame rates, up to 6600fps, as well as some regular 24fps footage – a perfect chance to truly test the HD-SDI and the Wafian recorder. The unit worked well, recording our playback footage as a redundant back-up and recording our normal 24fps footage without readjusting the camera.

If you were shooting a scene at 1000fps, you would need a lot of light. Then, if you changed the frame rate to 24fps, all of sudden you would be grossly overexposed and have to stop down or add ND. Too much work, I think. With the hard drive recorder I wasn't required to change anything on the camera – just say "action" and hit record on the unit, starting and stopping on "action" and "cut", each cut being stored as its own little QuickTime to the onboard RAID.

I used the unit a second time for a water conservation spot for Calwater Crisis. Once again, it became a redundant back up, but also our video assist playback, and when the day was running short, we felt confident enough in the technology to capture only the playback and reset the camera, never downloading or storing the raw data.

So here's the bottom line: I love the idea of having redundant back-up in the digital medium, and as you have guessed

I'm just not a big fan of what tape does to my work. Another plus with recording to hard drive is the ability to open these files virtually anywhere – on your laptop even; no tape decks, no tapes. On top of that, the rental of the tape decks, not only on set, but in post, is money that would be better spent elsewhere. As a DP, I have to create and capture the best images I can; I need to assure my director and producer that I can do that and, in my opinion, brainstorm a solid cost-effective post-production workflow as well. Yes, I do believe that DPs with our fine balance of the technical and creative must also balance the costs of shooting in our heads. In no time at all, solid state will make a huge impact on HD and digital acquisition, Vision Research has already developed a flash mag capable of 256GB and I believe 512GB of raw uncompressed 2K resolution at 14bit; no other camera on the market has that. Panasonic has made serious waves with its P2 technology; the Red camera also records to flash, but in addition to all that, having the redundant back up of usable HD video assist might just make this whole digital thing more palatable to the circumspect producer, director or DP.

Next issue, Jim will report on his use of the GV9000.



Jim Matlosz is a cinematographer who enjoys working in comedy, sports, tabletop and VFX, as well as narrative and documentary shooting. He began his career in VFX, shooting motion control, green screen/blue screen, miniatures, animation and pyrotechnics. He has over 13 years experience in commercials, and spent seven of those also traveling the world making Imax films. Jim has two landmark documentaries to his credit, *Who Killed The Electric Car* and *Better Living Through Circuitry*. He has shot a few shorts films, including the award-winning *Oedipus*. He is currently repped by Leslie Alyson at Montana artists in LA, for commercials and music videos.

www.dpmatlosz.com