

## **VidScope in Hollywood**

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One of the challenges of digital cinematography is obtaining the best possible images that a camera system can deliver. In this endeavor, it is important to be able to view, analyze, and interpret many key aspects of the video signal. To this end, I have built my own computer-based, HD engineering station which uses VidScope software from Hamlet at its core. See: <http://vidscope.tv>

VidScope is a surprisingly powerful suite of test and measurement tools, providing an extensive array of waveform and vector displays for both video and audio signals. Most features found in higher-end waveform monitors have been incorporated in VidScope, so it is a sophisticated, professional device.

The Hamlet VidScope software runs on a standard Windows PC computer. To input video (and audio) into the computer, the VidScope software works with most SD/HD capture devices, such as the one I'm using, the Blackmagic Design Multibridge Extreme 1RU unit. Of course, the computer's speed and processing power is a key factor when monitoring uncompressed HD signals, so you need a relatively fast computer to achieve the best results.

The software works with virtually any video signal, including HD-SDI single-link (4:2:2), or dual-link (4:4:4) uncompressed signals, plus analog HD component. DV, HDV and HDMI signals are also supported, as well as all types of digital and analog Standard Definition signals, including SD-SDI, component, and composite.

VidScope can show six different analytical tools simultaneously, so multiple displays can easily be compared side by side without switching. On a large computer monitor, the individual displays are not only bigger than traditional displays, they are also in color. I use a high resolution, 23-inch, LCD display for easy viewing.

A big advantage of Hamlet's VidScope is that it puts all the tools you are likely to need together in the one package, and it does so in a very cost-effective way. Even with the cost of the host computer and capture device, it still costs less for the complete system compared to an equivalent waveform monitor. Not only is it more cost effective, the software approach provides greater versatility, and therefore delivers even greater bang for the buck.

One concern with taking a computer system to digital movie sets where they are recording live sound, is cooling fan noise. Computers are packed with multiple fans. I had to address this issue in designing my own system, and discovered that the careful selection of a computer case to be a key factor in controlling noise (opting for the least number of largest diameter fans). In addition to this, I also use a fan bus controller (for voltage control), and special, super quiet, 120mm fans.

During the early testing phase of my new system, I worked on a commercial featuring Diane Keaton which was shot with the Panasonic HD Varicam camera. On this shoot, I was using a popular waveform monitor often deployed in my sector of the industry, the Leader LV5750. This meant I was able to do a direct, side-by-side comparison of the waveform displays produced by a traditional waveform monitor with those produced by Hamlet's VidScope. The waveforms matched very closely indeed, so I found I can rely on the validity and accuracy of VidScope's software-generated displays.

I also used my system on a TV promo for the National Hockey League, this time monitoring dual-link 4:4:4 from a Thomson Grass Valley Viper camera in its RGB mode. The key elements to be used in this CGI-heavy spot were hockey players skating around a green screen studio. I found the RGB stacked display in VidScope to be particularly useful in making sure the green screen was evenly lit across the whole width of this large studio space.

I'm finding there is an increasing interest in using histograms, especially when capturing the latest log-based video signals. While histograms are commonly used in many parts of digital imaging world, they are not generally found in the traditional broadcast or digital-production spheres. The histogram is a bar chart providing a compact

summarization of the distribution of data (pixel values) in an image. While a histogram provides another way of looking at clipping, it also provides unique information about the tonal balance of a scene. You can see the proportional relationship between shadows, mid-tones and highlights. I can see the use of histograms becoming more and more important in our evolving digital future, and quickly extending to digital-production sets as we become more familiar with using them.

I was the digital imaging technician (DIT) on a Toyota commercial recently, where the DoP shot with the new Sony F23 camera recording a 4:4:4 log signal to HDCAM-SR tape, while viewing a linear signal for monitoring purposes. The camera rental house (Clairmont Camera) recommended that we look at histograms as well as traditional waveforms in order to get the best results. The multi-window display on VidScope meant that I could easily set up a histogram, as well as waveforms and vectors, side by side on the one large screen. I do not know of any other simple way of doing this other than with VidScope, so I see this as a big advantage over conventional waveform monitors.

I believe it is important to be able to offer separate Y/R/G/B-channel histograms in order to get all the information histograms can potentially offer us. Individual Y/R/G/B histograms can differ significantly from each other, depending on the image being analyzed. For example, a luma-based Histogram may not show any clipping at all, while there may be significant clipping occurring in one, or more, of the R G B channels. I am speaking with Hamlet about the possibility of extending the histogram capability in VidScope, and they think they can expand it with additional displays in the next revision of the software coming shortly.

The range of possibilities of the system is only limited by finding suitable, third-party software applications to take it beyond test and measurement. VidScope can also capture stills (frame grabs) and uncompressed HD 4:2:2 and 4:4:4 video streams. I plan to experiment with live green/blue-screen compositing on set. The idea is to quickly generate trial composites at the time of shooting. Such a tool would help the DoP and gaffer correct any problems with lighting their subjects and backgrounds, so they can deliver even better mattes for post. With other software, I can do trial edits of a scene to make sure all the cuts and eye lines work before breaking down the setup, and moving on. The system can also work as a disk-based,

video playback system, but in full High Definition. The versatility of the system is only limited by finding suitable software applications in HD (which are becoming much more prevalent these days). Compared to using traditional broadcast and production hardware systems, the software approach offers great potential, and perhaps especially for those on a budget.

*Australian-born Peter Gray is a multi-award winning director of photography, now based in Los Angeles. These days, he works primarily as a DIT, or Digital Imaging Technician. This is a relatively new union job classification, first established in late 1999 by the International Cinematographers Guild, IATSE Local 600. Peter can be contacted by e-mail at <dit@petergray.org>*