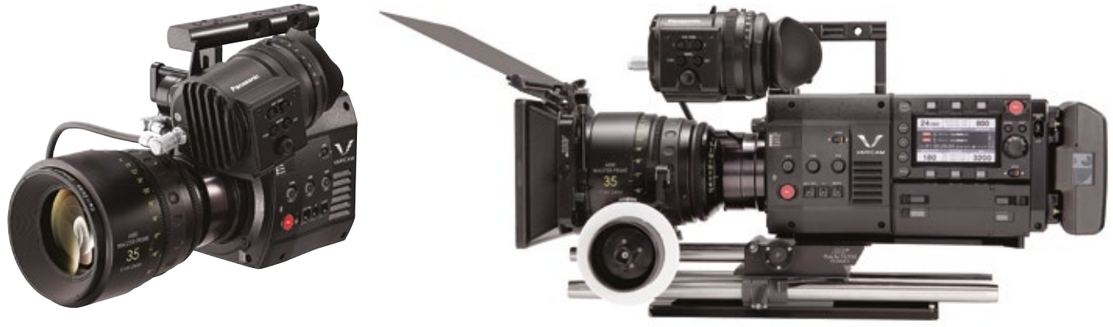
A Variety of Options

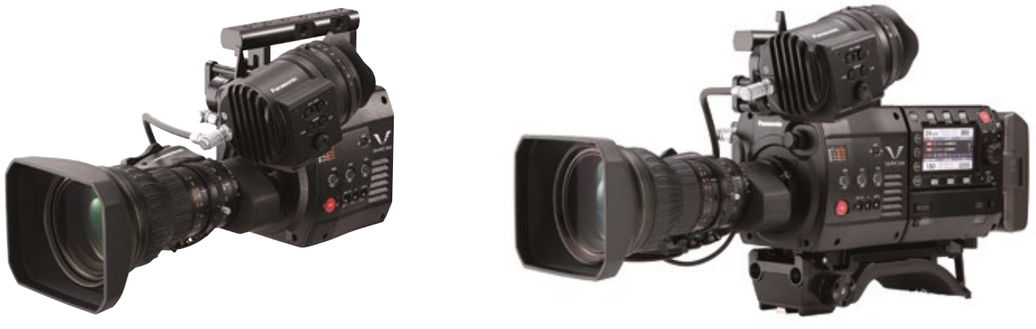
from the new VariCam

It's been a long time coming and perhaps it's a little 'late to the table' but it looks as if the wait for the recently launched third-generation VariCam from GTC sponsors Panasonic has been well worth it. Sometimes holding back a while and observing the learning curve of others can be a smart move and in this case Panasonic seems to have done just that, resulting in a system that addresses many of the production niggles that have been issues with the current crop of top-end 4K cameras.

Panasonic VariCam 35mm



Panasonic VariCam HS



Unfortunately at the time of writing, cameras were in hot demand and so we were not able to get our hands on one for a proper 'Zerb road test' so, for now (and we're sure we'll be hearing much more about this camera system in future issues of Zerb), a brief overview of what the new VariCam offers will have to suffice. Much of the information is gathered from a useful set of videos from the Digital Cinema Society (DCS) in California, at which both cinematographers and post technicians gave the camera a broadly enthusiastic reception. The videos can be viewed at: *http://vimeo.com/digitalcinemasociety/videos*.

It is perhaps no surprise to see initial reactions emanating from Hollywood since, with the 4K VariCam, Panasonic is looking to pitch for top-end productions, measuring the new camera up against the likes of the ALEXA, AMIRA, F55 and RED. When the first generation VariCam was the hot new camera, over 10 years ago, one of its biggest selling points was its 'filmic look', at the time leapt upon by the wildlife fraternity; now, the new iteration not only retains those aspirations to beautiful cinematographic images but also offers an impressive array of workflow options required by productions, extending right through from image capture to post.

Varicam 4K and HS

The first thing to note is that there are two front-end forms of the new VariCam: the VariCam 35 (native 4096 x 2160 sensor with PL mount allowing the use of 35mm lenses) and VariCam HS (1920 x 1080 high-speed version with a 2/3" mount). The main difference, apart from the resolution and lens mounts, is that while the 35 has a top speed of 120 frames per second (fps) in full 4K, the HS will record up to 240fps.

Both versions record to the same splittable modular back end, so not only can either the 35 or the HS be separated from the record module (up to a distance of 100 feet) to make it lighter and smaller, for instance when used on a jib or in a tight space, but it will also be possible to take advantage of both sets of features on the same production without having two whole cameras – for example, using the 4K PL version for shallow depth of field 'beauty shots' and then swapping to the HD front end for slow-motion sequences.

Chips and codecs

The new super 35mm MOS sensor has been developed and built in-house by Panasonic and records internally to the AVC-Ultra codec which, as Michael Cioni, CEO of post-production and workflow specialists Light Iron explains, offers significant advantages over other leading codecs.

Firstly, it offers two flavours in the VariCam: 10-bit 4:2:2 and 12-bit 4:4:4. Cioni goes on to make comparisons with ProRes 4:4:4 1080p, which as he puts it "pretty much rules the world", whether it be for features, commercials or TV productions. When it comes to data transfer and storage though AVC-Ultra is about 45–50% more efficient than ProRes, meaning important cost savings in both storage and processing time. That said, an option to record to ProRes is promised for a future firmware upgrade.

Multiple formats

One area in which the new system really is unique is the ability to output several file formats and quality standards simultaneously. While 3D may not have taken off in the way that some of the camera manufacturers, Panasonic included, might have hoped, all that research was not completely in vain as it produced a sensor called the 'DYNA chip', which allows the two stereoscopic streams to be simultaneously recorded. This chip has been incorporated into the new VariCam allowing dual recording, meaning the camera can capture a full-quality 4K 4:4:4 'digital negative', a 2K (conformed to 1920 x 1080) 'daily' with Rec.709 colour space, plus proxy video files on SD card, all at the same time. DoP Theo Van De Sande ASC, who shot the first project on an early prototype of the camera, sees definite advantages to this multiformat output and expects to regularly use all three: "The 4K can be the negative and never touched; the 2K will be used for editing as it's fast to work with; and the SD cards will be very accessible on set – you can quickly check back a shot for continuity, for instance. The proxy feature is a good cinematographer's tool while the 4K is an asset for the production to fall back on in the future."

> The new VariCam not only retains the traditional VariCam cinematographic images but also offers an impressive array of workflow options required by productions, extending right through from image capture to post.

The camera provides for various card sizes: P2 (including a very sophisticated and powerful new expressP2 card offering 72 minutes of recording at transfer speeds up to 2.4Gbps), Micro-P2 and SD card. As mentioned in our article on pages 44-47, Panasonic has also collaborated with RAW experts Codex to create a bolt-on (cable-free) VRAW recording unit, allowing data-heavy RAW images (up to 120fps at 4K) to be recorded straight to a hard drive, effectively offering a fourth capture option.

The VariCam 35 on set for the demo reel

Wireless in-camera LUTS

Like most modern cameras, the VariCam has the ability to apply a LUT (look up table) in camera to one or more of the video streams without affecting the high resolution 'negative'. This graded video file remains alongside the 'negative' and can be used as a reference on set or later on in the edit. What is unique about the VariCam is the ability to wirelessly transmit full HD video via the optional AJ-WM30 wireless

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DoP Suny Behar shooting for the demo reel with the VariCam 35

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module complete with LUT applied, so the director, cinematographer, gaffer etc can instantly view high-quality images and make necessary adjustments without the need for long cable runs and conversion boxes on set. The ‘negative’, whether it’s recorded as Log or RAW, is not affected.

Whereas in other systems the camera negative and its associated LUT are essentially created and stored on separate systems until they are later combined in post (allowing the possibility of the wrong LUT getting attached to an image), in this case all the files are stored together – not only making it harder to mix them up but also opening the possibility of creating and attaching different LUT options for each shot.

American DoP Suny Behar has been closely involved with the development and assessment of the new camera. He explains: “What the VariCam has done is given the ability to paint the camera wirelessly but, more importantly, to associate that LUT directly with the file, in the file structure, so that LUT goes all the way from set to post. The fact that the camera will make all your deliverables for editorial with all the timecode burn-ins with the LUT management in one pass is a huge time-saver.”

5000 ISO

Another exciting feature is the ability to change the baseline ISO. Along with many other cameras on the market, the normal working ISO of the VariCam is around 800 – fine for everyday exteriors and lit sets, but not enough when attempting to shoot in darker environments. Of course, the ISO can be pushed, but when getting up to ISO 4000 noise creeps in to the extent that the image is visibly degraded. This camera, however, offers the option to ‘recalibrate’ the baseline ISO and simply switch to an impressive 5000 ISO allowing noise-free exposure at very low light levels. When this was demonstrated recently at the Digital Cinema Society it was met with enthusiastic applause.

Usability

Because of the critical focus required for 4K, special attention has been paid to the newly developed OLED viewfinder, with a handy focus-check feature that allows the cameraman to zoom into the viewed image on the fly. This viewfinder can be flipped to the other side of the camera if required.

The camera also has an in-built ND filter wheel with 0.6, 1.2, 1.8 densities.

The VariCam look

Summing up, Suny Behar remarks that it is exciting that Panasonic has managed “to keep the VariCam look, keep the film idea but take it to higher bit depth, more colour definition and more spatial resolution. It’s a huge improvement because we’re talking about being able to shoot very high contrast scenes and resolve the shadows and the highlights… The ability to record onboard 12-bit 4:4:4 is enormous – that’s a ton of colour resolution the camera never had before.”

Fact File

For more information about VariCam and other Panasonic professional camera solutions visit:
business.panasonic.co.uk/professional-camera

To watch the Digital Cinema Society videos:
http://vimeo.com/digitalcinemasociety/videos