



THOUGHT HD WAS TOO EXPENSIVE...? THINK AGAIN

What is HD?

High Definition (HD) is a new acquisition and editing format with greatly superior resolution and 'look'. The system uses tapes which are of the familiar Betacam shape in small and large sizes (40mins/2 hrs). Just because you shoot on HD, does not mean that you need to edit HD. The playback machines are capable of converting images into standard definition (SD) as well as outputting High Definition (HD) to enable a conventional Digi Beta edit. There are 4 basic advantages of High Definition (HD) versus Standard Definition (SD): Enhanced picture quality, better contrast capability, Progressive Scan Mode (film look) and a new interface for transferring signals called HD SDI (similar to SDI but higher bandwidth).

HD will save you money over film

In answer to the question of why shoot HDCAM instead of Film? The simple answer is cost. The production cost of a Cine Alta HDCAM production shot with the HDW-950 is some 30% cheaper than Super 16 at a comparable quality - (source BBC modernisation). Of course, there are more considerations to budget for than just equipment hire and processing costs; Crew costs are the same and it would be imprudent to shoot on a vastly cut-down crew to shoot a quality drama if you do not want your programme quality to be compromised - however the inescapable truth is that shooting on HD can certainly save you money in production. Aesthetically, the same film-look can be achieved; the programme turnaround is quicker; the production process is simpler and shooting HD is more flexible than film since the units are smaller and lighter, so much more is achievable than before.

HDW-750 makes your money go further

VMI are making HD more cost effective by only charging 3 days hire per weeks rental. Shooting with the latest HDCAM Camcorder, the HDW-750 will make your money go still further - estimated to save a further 20% of your budget compared with the Cine Alta 900 unit - (source BBC Modernisation). The reason for this is that the units are cheaper to produce because they are only capable of shooting at 25P or 50i - however, I consider this to be an advantage since it means that you have less decisions to make. Another important consideration is that the unit is more frugal on power and weighs less than the Cine Alta 900 unit thus increasing its portability.

Just How Good Is HDCAM?

We can compare Digi Beta with HDCAM by the number of pixels recorded in each frame. In doing so we find that HDCAM actually records 3 times the quantity of pixels, making HD images more than 4 times better quality than Digi Beta; and that's a fact.

What is Progressive scan mode?

Normally we shoot and display a picture changing 50 times per second (called 50i) whereby 50 fields comprising odd and even lines belong to 25 frames. This 'TV look' has the advantage of being able to shoot rapidly changing pictures and when we pause on a movement shot, the shot shakes'. This is because we are actually recording 50 separate images (fields) per second. Hence the name 50i for the UK and 60i for USA. Films are produced by shooting film running at 24 frames per second and as a result the movement shots look different with a 'shuttered look'. Viewers have become accustomed to watching films and Directors frequently want to achieve this same 'film look'. To achieve this, HDCAM uses a new way of shooting moving images called 'Progressive Scan' whereby only 25 complete frames are recorded. This gives pictures the same 'shuttered look' and gives the illusion of having been shot on film. For film we use 24P, for UK television we have 25P and in the USA where there are 30 frames per second, the format is called 30P.

Film-look 25P vs. TV-look 50i

Shooting only 25 changing images per second (25P) is an art and is not suitable for all applications. Fast moving sports such as motor racing or athletics lose too much if shoot at 25P and are more suitable to being shot at 50i with twice the number of changing images

VMI Soho
19 D'Arblay Street. London.
W1F 8ED
Telephone: +44 (0)870 850 1444
Facsimile: +44 (0)870 850 1445
www.vmi.tv
info@vmi.tv

Author: Barry Basset
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per second. The slow-motion sequences look better and motion shots less juddery. Swish pans and rapidly moving pictures may lend themselves more to 50i and long slow pans and drama production more to 25P but as a Producer you can now exert your choice and shoot at 25p/50i to achieve the look that you desire - the post production process is the same and the benefit is that you can replay your footage immediately after shooting to assess whether you like the look and make the necessary changes immediately - a clear advantage over shooting on film.

Why shoot 25P HDCAM for conventional broadcast?

Simply, it looks better. The look of the HDCAM camcorders simply looks superior to conventional Digi Beta acquisition without grading; the pictures are of a higher quality with improved contrast capability and this is noticeable even after a conventional Digi Beta Edit; The HD acquired footage is future-proof and can be easily mastered in international versions for the film or US market by simple conversion to 24p or 30P - see the edit section for more details. You can even use full film accessory kits with fluid zoom drive, Arri follow focus unit and extension viewfinders to make your cinematographers feel at home - many have told us that they even prefer using HDCAM for the portability and flexibility that it brings.

Viewing HD

Since the picture size of HD is 3 times the size of Digi Beta, it stands to reason that you must use larger monitors to really appreciate it. HD monitors are specially designed for this purpose and you will probably want to use a larger monitor than you usually use on location anyway. There have been examples of fingerprints appearing during the edit which the Director and Camera person were sadly unaware of during shooting due to the small size of their preview monitor. Attention to detail becomes supremely important when shooting High Definition, so ensure that the makeup and sets are perfect, since they will be subject to scrutiny when viewed on a large screen! The quality of the monitor is so important that we insist on supplying HD monitors with HD SDI inputs with all HD camcorders and shooting kits.

Who is using HDCAM?

BBC Bristol, Discovery Channel, National Geographic, ZDF, NHK, Fox, CBS, ABC, TNT, UPN plus an increasing number of feature films including Lucasfilms: Star Wars I & II, Matrix 2: The Matrix Reloaded, Matrix 3: The Matrix Revolutions, Ghosts of the Abyss, Shadowlands, Spy Kids 2: The Island of lost dreams, Spy Kids 3: Bowling for Columbine plus several TV dramas including Judge Deed.

Shooting in 25P

For the first time outside the realms of shooting on film, producers have a choice of what frame rate to shoot at. You may be forgiven for assuming that you should shoot 24P for film, 25P for UK Television and 30P for the US market and that the editing would have to be completed at the same speed to create the master. Whilst you can do this to produce masters of the correct speed, it introduces much more complexity in the post production process, will undoubtedly give you more headaches and is sure to cost you more money - especially if there are any other formats involved such as mini DV which are likely to be shot at a different speed... Fortunately there is a much easier way! Firstly, you may be surprised to consider how it is that we are able to view feature films on UK Television at all - everybody knows that 24 frames per second (fps) can never fit into a 25 fps system, yet this is what happens! In fact, to make 24 fit into 25 in order to be viewed on UK TV, feature films are always sped up by 4% to convert them into 25fps - and nobody has ever noticed! (Note - There is a minor difference in audio pitch, but this can be corrected with a digital pitch change correction after the conversion). The consideration is that a 4% difference in speed is so minor that for virtually all applications, producers are able to shoot at 24 fps and play out at 25 fps without viewers ever noticing. The converse is also true - producers can now play out from a 25P master to 24P by slowing down the playback speed by 4% (with the optional audio pitch correction). This means that they can shoot at 25P and complete a straightforward 25P edit or edit standard def. and still convert to 24P for a film print when they finish the edit. What is more, converting from 24P to 30P (for the US and international markets) is a relatively easy procedure (known as 3:2 pull-down) and which does not change either the speed or the audio pitch - and in doing so your quality is not compromised.

Only one decision to make

To summarise what this actually means - you only have one decision to make at the commencement of shooting: if you want to shoot with a 'shuttered' film-look, shoot at 25P and if not, then you shoot at 50i. That's it! Your edit will complete at 25P and you can still make compatible international masters at all necessary speeds very easily and without compromise. Besides which you can decide about making international versions after post is complete - and you were told that HD was difficult!

Cost savings of Shooting in 25P

Sony realised very soon after producing the first HDCAM camcorders the overwhelming advantage of producing programmes in 25P as opposed to shooting and editing in multiple speeds. As a result, they released a camcorder capable of only shooting in 25P (or 50i for a TV look), the resultant saving in electronics meant that a smaller, lighter unit could be produced which would entail a necessary cost saving. Enter the Sony HDW-750 Camcorder which shoots at 25P (film look) & 50i (TV look) with 10 bit processing and can be hired for £470 per day. We believe that it is totally suitable for HD film and drama applications and the improvement in size, weight and power consumption over the 900 Cine Alta unit means that you save more than just your budget!

HD Lenses - What is the advantage?

HD lenses are specially made to deliver the superior performance required for the larger image size. In order to achieve this, they contain more glass than SD lenses to avoid lens 'breathing' (zooming effect when focussing) and are built to a very fine tolerance to avoid barrel distortion around the perimeter of the picture and which may be noticeable when images are blown-up and displayed on a large screen. However, you may indeed question whether the difference in quality justifies the additional cost, especially if the programme is destined for the small screen. It is not commonly known that High Definition Camcorders can be successfully used with conventional Broadcast (SD) lenses. The universal 2/3" B4 lens mount means that all conventional Broadcast lenses will fit HDCAM camcorders and will save you paying a significant premium for HD lenses. At VMI we give you a choice of using conventional SD lenses with HDCAM to take advantage of the cost saving or to use HDTV lenses for the improved quality - the difficult decision is up to you! In common with film production, VMI offers full film-style accessory kits with Microforce film-style zoom drive, Arri follow focus unit and extension viewfinders as standard on HD shooting kits to make HDCAM look and feel like a film kit and keep your cinematographers happy.

HD in conventional Post Production

The ability to produce a 1920 x 1080 pixel master which can be blown-up to a large screen with amazing quality makes the benefit of shooting and editing HD clear but where does HDCAM fit if you plan a conventional edit? HDCAM VTRs can output both HD (high def) and SD (standard def) versions simultaneously. Providing that you shoot in 25P or 50i, any PAL off-line or on-line suite can be used for a HD edit without any additional equipment or features. To clarify this point, your usual off-line and on-line facility will be completely compatible with HD acquired footage (provided you shoot at 25P or 50i) so that you can cut a beautiful Digi Beta SD master from it. What is more, if you keep the rushes and the EDL (or better still the OMFI project file with FX and colour correction etc), you can re-conform your programme at a later date at full HD resolution ready for international re-versioning. All that you will need to do prior to your SD edit is to dub your HDCAM rushes onto Digi Beta at standard resolution (service available from VMI). A note in passing, because HDCAM processes colour pictures in RGB format instead of YUV (like Digi Beta), grading and colour correction information will not translate perfectly. Should you choose to shoot at speeds other than 25P (e.g. 24P, 24.98P etc), you will need to off-line edit and on-line edit at the same speed, so ensure that your offline and on-line facility are capable of editing at these speeds. This is perfectly acceptable as long as all of the equipment used for the off-line, dub, conform etc also works at these speeds.

HD Editing with AVID |DS HD

For editing a true HD master, VMI is for the first time offering the new AVID |DS Nitris HD edit facilities in-house and for hire for conform, on-line and finishing. This superb system is a long form editing and finishing tool with comprehensive grading and 90 minutes of uncompressed storage and is totally compatible with conventional AVID projects for a total conform. Rates are £160 per hour with editor and from £2000 per week for rental*

HDCAM - Digi Beta dubbing

Did you know that VMI can dub your HD rushes to PAL Digi Beta, DVCAM or Beta SP for a conventional off-line/on-line edit and to save the expense of hiring an HD machine for the edit. Alternatively, VMI can rent you an AVID off-line and pre-digitise your HD rushes onto disk prior to delivery. It's all part of the service.