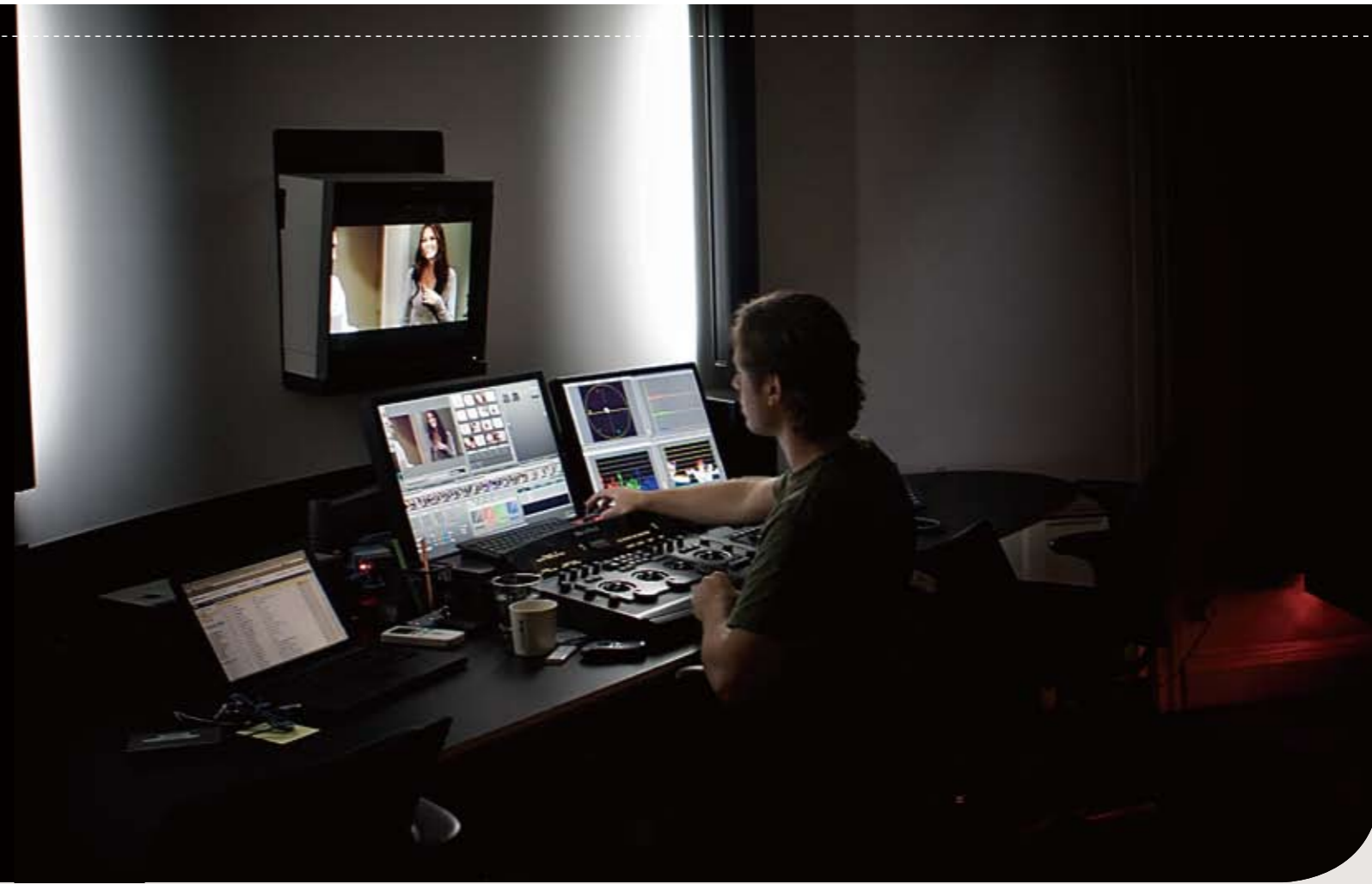


SCANNING NEGATIVE FILM TO HD VIDEO:

Which is the best speed to choose from?

Report from The Swedish Society of Cinematographers' (FSF) meeting at Sto.pp, November 2008

Sweden



Dan Myhrman
FSF, Director of Photography

The purpose of this meeting was to show practical samples of film negatives of varying speed ranges scanned to HD video. Björn Frithiof, scanning operative at Sto.pp, Stockholm Postproduction AB, came to ask me as a cinematographer why he could not get the shadow detail and contrast he expected when scanning some film negatives. He suspected that photographers were choosing unnecessarily fast films.

This led to Sto.pp paying for practical film tests, which we conducted at the premises of rental company Kameraten AB. Both Fujifilm and Kodak came up with all the film we wanted to test and Kameraten AB provided the camera, while Ljud & Bildmedia AB provided the lighting equipment. I should point out that this was not a comparative test of Fujifilm and Kodak films; rather, we simply wanted to see which film speeds produced the best shadow detail and contrasts.

The tests were conducted very simply in artificial light. Regardless of the type of film, I set the iris to T2.8 with normal exposure. Then I moved the lamps to give the correct light value depending on the type of film and exposure. We filmed a girl wearing a black top, in portrait size. I lighted only the girl, and accordingly the extent to which the background was lit varied as the lights were moved depending on the type of film that I had in the camera. This did not bother me, but I heard some other photographers criticized this method. We overexposed and underexposed in increments of one and two stops. We also photographed outdoors in Stockholm city at night using the same lens, a Zeiss HS T1.3, this time with the iris fully open. All tests were shot on both 16mm and 35mm film.

Björn Frithiof ascertained that in the case of 35mm film, it did not make a significant difference if a faster film was chosen, but for 16mm the choice of film was crucial. We concluded that the ideal speed range is around 200/250 ISO, and then the film copes with one stop increment of underexposure while essentially maintaining the quality. Some tungsten films also give better results with an 81EF filter instead of an 85 filter when filming in daylight.

Björn Frithiof has established a "zero position" for setting up the scanner; you could say it is equivalent to 25–25–25 in a film analyser, which

means that you can obtain a value for the film exposure even on a scanner.

FSF members were invited to Sto.pp on November 6, 2008, where everyone had the opportunity to enjoy some refreshments and then to sit down at the scanner while Björn Frithiof corrected the images from this zero value to the optimum light and colour values. I find it is possible to coax a little more detail out of a negative via the digital route than the analogue route, but I am not certain about this. With regard to tests, photographers often carry out their own tests, of course, so this meeting was mainly to clarify the importance of the choice of film.

Since the choice of film can be a financial issue (if you choose a fast film, you may not need powerful lamps, etc.), we then discussed whether we should have a similar meeting with the film producers. ■

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DOP Dan Myhrman, FSF

Dan Myhrman, born in 1946, started as an assistant cameraman in 1971. He has worked as First CA or Operator for Directors of Photography such as Sven Nykvist, Jörgen Persson and Lasse Björne. He began to work as a DOP in the mid-1980s and since then has shot more than 30 features, TV films and fiction shorts.

A Look Behind the Scenes at Sto.pp Pasi Johansson, CEO of Stockholm Postproduction AB

Lately, 16mm film has suffered a number of setbacks. One of these has been the BBC's deliberations about not accepting 16mm film for HD productions. The long and short of it is that 16mm film has more film "noise", which makes it more difficult to compress the material under the conditions required for HD broadcasts, i.e. for the limited bandwidth available for these broadcasts.

This matter of film "noise" (grain) may not have been particularly apparent to cameramen. Sto.pp wanted to start a discussion on the subject and provide information about the problems. Often, we receive material filmed on 500 ISO 16mm, which has the most grainy appearance of all types of 16mm film; this is definitely the most difficult to distribute in a compressed format, whether for TV or for the Internet.

Our aim was to carry out tests to find out if it was possible to use 250 ISO, for example, to minimize film grain size under the same conditions used for 500 ISO film. We concluded that, with today's types of films, it is possible to film without problems under "darker" conditions using 250 ISO, for example.

Personally, I think it is wrong to stop using 16mm film for HD; if you choose the right film, e.g. 125 ISO, you get brilliant results and 250 ISO film also performs well.

Taking 500 ISO 35mm, for example, you can run into the same problems as with 16mm if the film is exposed at the bottom edge of the curve, (underexposed) which gives a grainier result. Thus, it is the actual grain size that is the cause of the problem with compression.

The best thing would have been to have a way of "measuring" grain size/amount; this could then be applied to see whether the material is acceptable or not – instead of deciding on the basis of what it was filmed on.

To many cameramen, this matter of the significance of film speed for 16mm to HD was an entirely new concept, and we are already seeing more material – precisely on 16mm – being taken on 200-250 ISO film and looking extremely good!

We hope this will help people see the benefits of 16mm again, especially now that we are entering a period when budgets are crucial and 16mm film is a good alternative as long as you do your filming right. ■



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