

Digital Professional Photography



Digital



Hybrid



Chemical

The advent of filmless photography has created some uncertainty among professional photographers. Many of them fear for their future, others are afraid of making the wrong decisions, and by postponing the decision to invest in new technology are running the risk of missing the boat.

The following comparisons present an objective view of the performance and

differences between chemical, hybrid and digital photography. Depending on your role in the production process, whether you're shooting the image or producing the final printed page, one of these methods will prove to be the best. Generally the quality standards of imaging have risen, because further image processing can produce a qualitatively better final photograph faster and more

economically. This of course is providing that you start with an original of optimum quality. Lenses, cameras and photographic media for all imaging processes have made significant technical advances. These not only simplify handling and cut consumption of materials, they have also led to a leap forward in quality which can satisfy the demands of the new technologies.

Digital



SINAR p2, SINAR/LEAF back, SINARON digital 90 mm, EXPOLUX shutter; original size LEAF CCD 2048 x 2048 pixels, equivalent to linear magnification - 1.7x
Quality very good, produces 5 1/4" x 8 1/2" (DIN A5), 60 line screen



Crop, data - 150% interpolated, sharpened, equivalent to linear magnification - 2.4x
Quality good, produces 8 1/2" x 11" (DIN A4), 80 line screen



Crop, data - 220% interpolated, sharpened, equivalent to linear magnification - 3.3x
Quality satisfactory, produces 11" x 17" (DIN A3), 60 line screen



Crop, data - 300% interpolated, sharpened, equivalent to linear magnification - 4.5x
Quality moderate, produces 17" x 22" (DIN A2), 60 line screen

Digital imaging with the SINAR/LEAF back employs an electronic CCD area chip instead of a sheet of film. The scene can be lit by either electronic flash, continuous light or mixed light. Black and white images are captured with a single exposure, while color photographs are limited to still subjects, as the photograph is composed of three consecutive (red, green, blue) exposures. The image is captured off of the back and stored in the computer, where it can be further processed with suitable software. Finally it is supplied to the lithographer in the format desired (e.g. TIFF file) for further processing and output to offset film. For many photographs the type of perspective (e.g. viewpoint perspective and verticals) and a free choice of the sharpness

plane are essential. The view camera with movements is preferable to a fixed-body camera for this application. Since the recording area of the CCD chip is only 1.2" x 1.2" (3 x 3 cm), with a concentrated density of 4 million pixels, it makes extremely heavy demands on the recording system. These demands are met by the following SINAR modules.

Electronic SINAR e camera

The hardware and software can be built into the same computer system as the LEAF Digital Studio Camera (e.g. Apple Quadra).

Mechanical SINAR p2 camera

The accuracy of focusing is very critical for 4 million pixels on a 1.2" x 1.2" (3 x 3 cm) image area. To determine correct angles of tilt and swing and to select

depth of field is a very demanding task without electronic image setting.

SINAR/LEAF adapter

The carrier for the LEAF electronic studio back, which attaches to a SINAR p/p2/e rear standard. It can be moved precisely in the image plane from viewing position into shooting position.

SINARON digital lenses

These high resolution, auto-aperture mounted lenses are available in focal lengths from 40 mm to 135 mm, and mounted behind the shutter for almost unlimited camera movements.

SINAR EXPOLUX shutter

Used as a before the lens shutter, this vibration-free shutter works automatically with the LEAF color filter wheel and computer for precise exposures.

Hybrid



SINAR e, SINARON se 300 DBM, EXPOLLUX shutter, Polacolor 100 PRO 4" x 5", linear magnification ~ 1.7x. Quality good, produces 5½" x 8½" (DIN A5), 80 line screen



Crop, data ~ 150% interpolated, sharpened, equivalent to linear magnification ~ 2.4x. Quality satisfactory, produces 8½" x 11" (DIN A4), 80 line screen



Crop, data ~ 220% interpolated, sharpened, equivalent to linear magnification ~ 3.3x. Quality moderate, produces 11" x 17" (DIN A3), 60 line screen



Crop, data ~ 300% interpolated, sharpened, equivalent to linear magnification ~ 4.5x. Quality unsatisfactory, produces 17" x 22" (DIN A2), 60 line screen

Hybrid photography makes use of both the tried and true chemical film for the shot, and digital technology for processing the image or for reproduction. This is quite an interesting combination, because too much is often expected of digital photography. Whenever color motion shots or location photography are needed, professional quality filmless photography is just not possible.

For a reproduction size up to 8½" x 11" (European DIN A4) instant photography in the 4" x 5" format is the answer. First the instant print is scanned into the computer. Then further processing takes place in the same manner as for a filmlessly recorded digital image. This system permits entry at a low level of invest-

ment. The instant print eliminates the need for lab processing, and you can work hand in hand with the electronic imaging (EI) equipment. If higher quality is needed, color transparency film is used in the same manner as for chemical photography, but now the image is input with a high-end scanner. This is the starting point of professional imaging systems as used by lithographers. The resulting quality is potentially similar to chemical photography. It is unreasonable to expect the same quality of specialized services from a low-end PC system. In many cases however an in-house system is the right solution:

- when high-quality printing is not required

- when a clear basis of combined individual shots is to be supplied to a high-end processor
- when the production schedule calls for fast turnaround
- when it is not yet time to take the step of investing in a digital system
- when a graphic company already equipped with an EI system wants to do in-house production quickly and economically

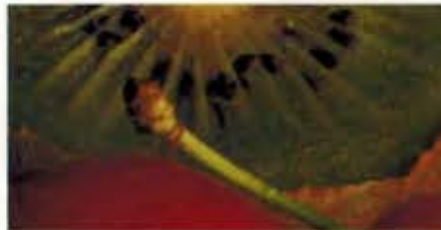
Chemical



SINAR s, SINARON se 300 DBM, EXPOLUX shutter, Ektachrome 100+ 4" x 5", linear magnification - 1.7x, Top Quality, produces 5 1/2" x 8 1/2" (DIN A5), 60 line screen



Crop, linear magnification 4.5x
Quality no problem, with reserves, produces 17" x 22" (DIN A2), 60 line screen



Crop, linear magnification 7x
Quality very good, produces 22" x 34" (DIN A1), 60 line screen



Crop, linear magnification 11x
Quality good, produces 34" x 44" (DIN A0), 60 line screen

Conventional professional chemical photography, in which film material is exposed, processed (usually) in a professional lab, and then transferred to offset film by a lithographer, cannot be surpassed in respect to quality and cost-benefit ratio.

New films with even greater resolving power, higher information density and heightened color fidelity, more precise film holders for roll and sheet films, a new generation of professional lenses, selective exposure monitoring in the film plane, and computer-aided optimized focusing on a view camera have taken the technical quality of chemical photography up to a level which equals that of modern electronic reproduction. Faith in progress is all very well, but silver-halide

photography will not be replaced by a direct digital recording process for a good long time yet. Chemical photography produces images that satisfy all the qualitative needs of electronic imaging, and consequently produce better end results for less time and cost. Whenever possible, the purpose of a projected job should therefore be established at an early stage, so that the most suitable process for an optimum final product can be chosen at the outset, before shooting.

For high-grade professional photography, large format chemical sheet film will be the first choice in the vast majority of cases. But here, too, a state-of-the-art equipment is a prerequisite. Any further processing of the original image is done by specialized service companies, which

in turn can supply professional high-end quality in their own field.

The trouble of producing technically perfect photographs from the beginning is repaid many times over by savings in the time and expense of further processing. In addition, the published results then come closest to the original, even with the advances in present-day image processing.

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BETTER PICTURES

Commercial feasibility

The choice of recording system depends on various factors, and must be integrated in an acceptable financial concept. All your creativity and artistic ambition are usually the second priority after commercial feasibility. The equipment and materials described below are in the form of examples. The prices may only be taken as guides. SINAR AG or the authorized SINAR national agents can give you exact specifications and figures.

Digital system



Investment

Camera e.g. SINAR e 4" x 5"	\$ 28,000.-
Extras (lenses, EXPOLUX shutter, accessories)	\$ 7,100.-
SINAR/LEAF back	\$ 35,000.-
SINAR/LEAF adapter	\$ 2,995.-
Computer (Apple, min. 64 MB) and software	\$ 20,000.-
Dye-sublimation printer	\$ 20,000.-
Total investment	\$ 114,000.-
Cost of investment per year (depreciation 5 years, 6% interest)	\$ 27,000.-
Cost per shot subject (without cost of time)	
1 electronic print	\$ 2.-
Total material cost	\$ 2.-

Hybrid system



Investment

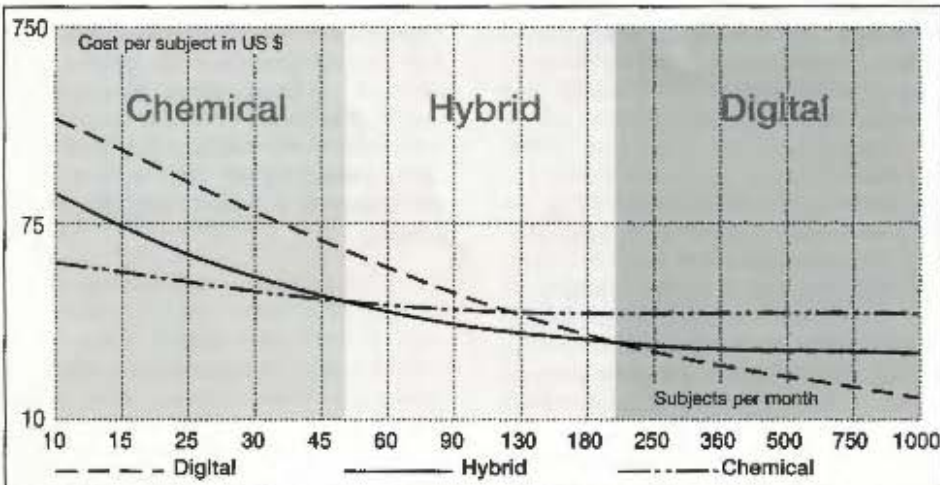
Camera e.g. SINAR e 4" x 5"	\$ 28,000.-
Extras (lenses, EXPOLUX shutter, accessories)	\$ 9,000.-
Computer (Apple, 64 MB) and software	\$ 20,000.-
Scanner	\$ 4,000.-
Printer	\$ 8,300.-
Total investment	\$ 69,300.-
Cost of investment per year (depreciation 5 years, 6% interest)	\$ 16,000.-
Cost per shot subject (without cost of time)	
2 instant prints	\$ 5.-
2 electronic prints	\$ 4.-
Total material cost	\$ 9.-

Chemical system



Investment

Camera e.g. SINAR p2	\$ 6,490.-
Extras (lenses, EXPOLUX shutter, accessories)	\$ 7,500.-
Total investment	\$ 13,990.-
Cost of investment per year (depreciation 5 years, 6% interest)	\$ 3,300.-
Cost per shot subject (without cost of time)	
3 instant prints	\$ 7.50
3 sheet films	\$ 7.50
Processing and expenses	\$ 4.50
Total material cost	\$ 19.50



The graph shows the curves for the cost of amortization and capital for the investment, and the cost of consumables, in relation to the number of subjects shot per month. As you can see, the chemical process is most economical up to 50 subjects per month, the hybrid process from 50 to 200, and the digital process from 200 upwards. Here too the figures are only guides. The cost of the time and staff involved have been ignored. These vary individually and must be determined from case to case for inclusion in a feasibility study.

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BETTER PICTURES

When is a particular photographic system suitable?

The sample application shows that professional photography is possible with any system. The shooting of the scene, from composition through lighting arrangement, camera settings up to exposure metering with tonal appraisal, is similar for all methods. This means that the basic camera outfit and the purely photographic work do not vary. The example is based on professional standards and the required level of further processing. The weighting given to each of the requirements in the adjacent table provides a reliable basis for a decision on what type of photography is most suitable in a particular case. SINAR also offers workshops, in which practical examples of each photographic method permit live testing with the relevant equipment.

For most photographers the chemical film will remain the ideal recording medium for a long time to come. But if you intend to be ready for future trends up to the turn of the century and beyond, you have to stay alert. You not only need technical knowledge and skills, you need equipment which is upgradable for the shape of things to come. For quality-conscious photographers this means: a SINAR e for studio photography, and a SINAR p2, perhaps with the EXPOLUX system, for outside the studio.

In today's market investing in a SINAR camera system of the latest type means you keep all your options open for tomorrow.

Requirements		Professional photography		
		Digital	Hybrid	Chemical
Photographic volume	very great			
	normal or slight			
Time available from shot to end product	very short			
	short			
	long			
Connection between shot and EI	direct and necessary			
	indirect or unnecessary			
Types of subject	dynamic color and b/w			
	dynamic b/w			
	static color and b/w			
Resolution requirements	very high >= 8 1/2" x 11" (A4) 80 line screen			
	limited up to 8 1/2" x 11" (A4) 60 line screen			
Willingness to invest	>= \$ 114,000			
	approx. \$ 88,000			
	<= \$ 14,000			
SINAR large-format camera *				
* For all around use: perspective and focus design, setting precision, and for photographic quality and speed of work				
		Mainly suitable	Suitable	Unsuitable

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