

The Economics of Color Proofing

By Scott Levy

When most people think about the art of color proofing they tend to think about the final output – a contract proof – and evaluate a system or prepress shop based on this ultimate deliverable. However, to truly assess the value that a system provides, we must consider all the benefits that a proofing system brings. For most creative professionals this does (or should) extend beyond simply having a color standard for a specific printing project.

Enabling Designers to Set Color Expectations from the Very Start

The purpose of proofing is to show how color in a production file will be rendered when it is reproduced so that all parties have a common expectation for the final results. With the rise of digital asset management systems, the importance of ensuring that the assets themselves are properly color managed is increased because these files will be reused more frequently. Therefore, color proofing ought to begin at the point at which artwork is supplied for inclusion in a piece.

Once the assets are combined into a production-ready file, another round of proofing ought to occur. Why? To ensure that all the elements of the graphic design work together, and that the colors used are correct. For example, if a designer wanted a headline to match or complement a color from a product shot, a final color proof is required. Too many times creative professionals will work on an uncalibrated monitor or printer and will create artwork that simply cannot be reliably matched on press.

Having a proper proofing system in place not only ensures high quality reproduction but promotes creativity as well. When the graphic designer feels confident that a piece was proofed using a reproducible standard, they can be aggressive with ‘risky’ colors and still rest assured that the piece will come out as expected. Additionally, the designer can share materials with their customers. Getting all parties on the same page before a project is sent to the printer reduces the chance of a disappointed client due to improperly set color expectations.

Now that all internal stakeholders share a vision for how the color on a job should be printed, the production file is ready to be sent to the print shop. Using a proofing system that runs to a set of widely accepted specs (like GRACoL or SWOP) greatly increases the likelihood that the printer will be able to match the proof without significant difficulty by “running to the numbers”. Some printers will want to make their own proofs or will ask for a copy of your proofs so that they can provide color guidance for the pressman doing your work. Many publishers and printers accept proofs produced on a GRACoL or SWOP certified system as a contract proof. In any case, the risk of last minute surprises greatly diminishes.

Because creating the ultimate deliverable often involves many people (artist, designer, marketing dept, printer, etc), getting color right from the very start saves time and money and limits rework.

The Main Options for Proofing Today

Creative professionals can choose to use a monitor based proofing system, a traditional proofing system, or an outsourced service. So which one should you use? It depends on the volume of proofs needed, the color management experience of your staff, whether proofs will need to be shared, and the how important it is for your organization to have an immediate proof (rather than waiting for overnight shipments).

Monitor based (also called virtual) systems require the user to have a professional grade monitor and a calibration device. Entry level systems cost a little over \$1,000 and require a certain level of color management expertise to properly profile the monitor and calibrate it to ensure accuracy. Monitor based systems don't use consumables (paper, ink, etc) and therefore have the advantage of having exceptionally low variable costs, although the initial proof file creation or software licensing usually isn't free. These systems are an excellent choice for those who are selecting color based on a consistent print condition, like the SWOP standard used by magazine publishers. It also looks like an attractive alternative for very heavy consumers of proofs, like commercial printers. However, a major drawback to monitor based systems is the difficulty in sharing proofs and the lack of portability of these proofs. To share proofs virtually, each person would need to be set up with a calibrated monitor and may need to run additional software (such as Remote Director from ICS). Still, even with this added time and expense, it's not typically possible to take a proof with you to a meeting for review.

Despite the relatively low variable costs for virtual proofing, over 90 percent of the proofing market uses hardcopy proofs [1]. Traditional proofing systems vary significantly in terms of upfront cost and cost of consumables. They require a printer and software RIP and usually require a dedicated computer to run the software along with a calibration device to work correctly. Almost all complete traditional proofing systems cost at least \$2,000 and many cost significantly more. One notable exception is Veroproof, a remote proofing system with a free open source RIP that delivers visually accurate results right out of the box (no calibration needed) and costs around \$1,000. The additional time and expense associated with profiling / calibration should also be included in the cost estimates. Unlike monitor based proofing systems, traditional proofing systems require consumables. Therefore, the cost of paper and, to a lesser extent, ink ought to be considered when comparing systems. In this realm, the majority of certified proofing paper will cost around \$2 per 13" x 19" sheet. However, Veroproof's paper will average around \$4 per sheet.

Outsourced proofing is only the most cost efficient option for extremely light volume users. With highly discounted prices for 12" x 18" sheets starting at \$21.99 (expressproofs.com) before shipping charges and increasing to well over \$50, designers who need more than one or two proofs a month should own a proofing system.

The Other Considerations

Existing materials, in-house expertise and personal preference should certainly play a role in deciding which proofing option to choose. For example, a high volume producer of proofs who has an existing Epson 9880 as well as in-house color expertise would benefit from selecting a number of supported RIPs. Conversely, a graphic design shop without a color management expert on staff or calibration equipment and with only older model printers would likely be better off selecting either an entry level monitor based system or the Veroproof system. Below we've outlined some key considerations.

Upfront cost – with the cost of many proofing systems approaching five digits once calibration is taken into account, it makes a lot of sense to invest a smaller amount if the system is capable of producing what is needed.

Size Requirements – While Veroproof may be one of the simplest certified proofing systems available today, the Veroproof R2880 combo is limited to producing a maximum 13" x 19" sheet. Even though the software can scale images, a wider format printer like the 4880 or 9880 may be a more appropriate solution. Additionally, Epson R3880/4880/9880 printers can accommodate paper rolls and therefore are a better choice for proofing banners and other jobs that have a page size larger than 12" x 18".

Usage – With heavier usage, the cost of each piece of proofing paper increases in importance. Since proofing paper is the most significant variable cost, the quantity of proofs produced, and the price per piece of proofing paper will cause the optimal economic choice to vary dramatically based on volume. For users printing 1 proof or less per month an outsourced model should work fine. Those requiring between 2 and 52 proofs each month benefit more greatly from saving shipping and per proof creation charges and should consider a system such as Veroproof. Heavier users than this will begin to feel the benefits from saving on consumables and therefore should consider the EPSON 3880 with Colorburst or similar models. Finally, the very heavy users who require in excess of 200 or so proofs per month can economically benefit from a monitor based solution with quality sharing software, like ICS, Dalim, or Kodak.

Color Expertise – While having a certified proofing system ensures color accuracy and predictability, it is usually only effective if it is well maintained. Maintenance includes the regular checking of the calibration of the proofing equipment using a spectrophotometer. Best practice suggests that this should be done at least every other week as well as whenever the box/roll of paper or ink cartridge is replaced. Doing this ensures that the color consistency of the produced proofs is good. Unfortunately, most proofing systems do not have an integrated color quality verification system.

In this realm Veroproof truly excels. Not only does it work well right out of the box, it rarely drifts significantly – even during ink replacement. And the paper, which has a ‘known-good’ GRACoL or SWOP pre-printed color bar, serves as an easy reference point to see if color is truly being rendered accurately without instrumentation. Furthermore, each box of Veroproof paper comes with a free profiling service, should the color quality of the system require attention.

The Economic Analysis

Not surprisingly, options that have zero or low upfront costs outperform those with high upfront costs at low monthly proofing volumes. Conversely, high volume producers, such as prepress shops, generate the greatest economic advantage by keeping their variable costs as low as possible. We have selected systems that are GRACoL and/or SWOP certified by the IDEAlliance, have used street pricing (as opposed to MSRP) whenever possible, and have made several assumption outlined below. The intention was to try to make it as easy as possible to compare each system’s capability to produce visually accurate proofs with the least possible cost investment in each situation. Therefore, whenever we could substitute a device that we believe works for a more expensive one, we have done so. The resulting table and chart should be used to compare the minimum costs required to make visually accurate proofs per system for various quantities.

The Assumptions Made

- A three year lifespan for each proofing system or service
- The outsourced service has no upfront cost and average shipping cost of \$13 per proof
- For all systems that can send proofs remotely, we have eliminated shipping costs
- We estimated the average street price of each piece of hardware and software required
- Whenever possible, we selected the least expensive piece of equipment that could handle the basic functionality required
- For all systems requiring calibration to ensure accuracy, we conservatively estimated one initial profiling and quarterly calibrations. Estimated cost: \$400 for initial and \$75 per additional calibration for three years = total cost of \$1,600

- Contract proofing paper was priced individually using recommended material from each system’s published Application Data Sheets [2]. To simplify matters we ignored the time-value of money. Had we considered the time value of money, less expensive systems would be more economically attractive than our study suggests.

Figure 1 – Proofing system comparison based on volume of proofs

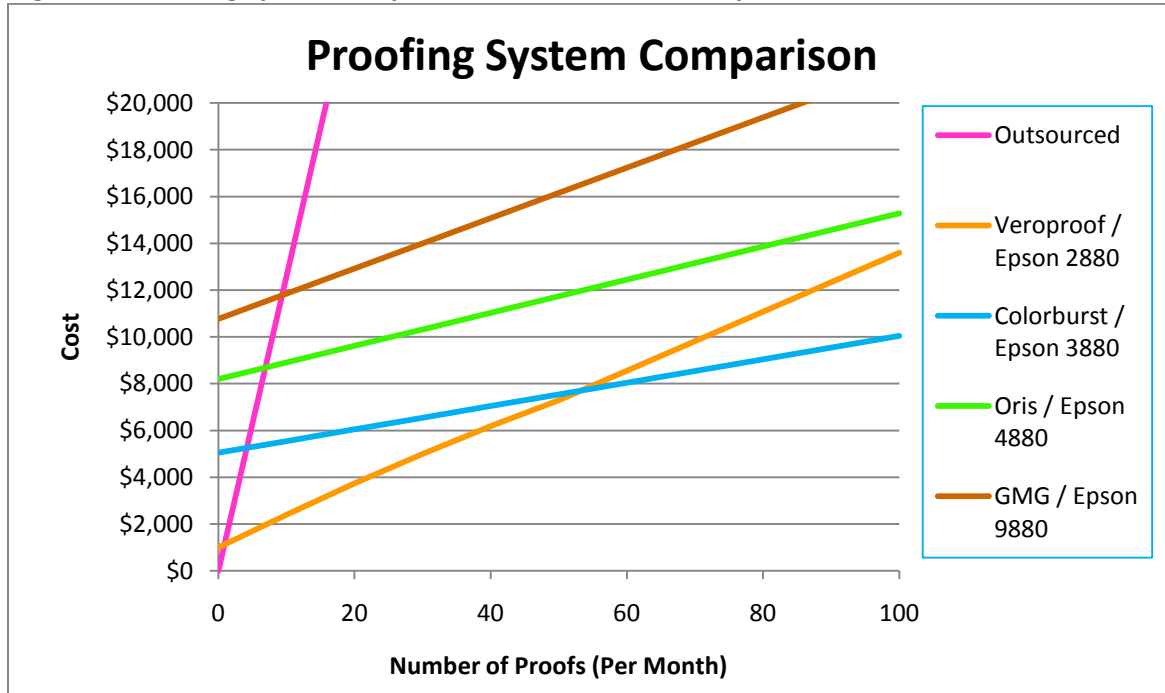


Figure 2 – Fixed and variable cost analysis for 10 proofs per month

System	Equipment Cost	Variable Cost	Proofs per Month	Calibration Cost	Lifetime Cost
Outsourced	\$ -	\$ 35.00	10	\$ -	\$ 12,600
Veroproof / Epson 2880	\$ 995	\$ 4.00	10	\$ -	\$ 2,435
ColorBurst / Epson 3880	\$ 1,895	\$ 1.39	10	\$ 3,149	\$ 5,544
Oris / Epson 4880	\$ 5,045	\$ 1.97	10	\$ 3,149	\$ 8,903
GMG / Epson 9880	\$ 7,625	\$ 2.99	10	\$ 3,149	\$ 11,850

Figure 3 – Fixed and variable cost analysis for 50 proofs per month

System	Equipment Cost	Variable Cost	Proofs per Month	Calibration Cost	Lifetime Cost
Outsourced	\$ -	\$ 35.00	50	\$ -	\$ 63,000
Veroproof / Epson 2880	\$ 995	\$ 3.50	50	\$ -	\$ 7,295
ColorBurst / Epson 3880	\$ 1,895	\$ 1.39	50	\$ 3,149	\$ 7,546
Oris / Epson 4880	\$ 5,045	\$ 1.97	50	\$ 3,149	\$ 11,740
GMG / Epson 9880	\$ 7,625	\$ 2.99	50	\$ 3,149	\$ 16,156

Figure 4 – Fixed and variable cost analysis for 100 proofs per month

System	Equipment Cost	Variable Cost	Proofs per Month	Calibration Cost	Lifetime Cost
Outsourced	\$ -	\$ 35.00	100	\$ -	\$ 126,000
Veroproof / Epson 2880	\$ 995	\$ 4.00	100	\$ -	\$ 4,870
ColorBurst / Epson 3880	\$ 1,895	\$ 1.39	100	\$ 3,149	\$ 13,593
Oris / Epson 4880	\$ 5,045	\$ 1.97	100	\$ 3,149	\$ 24,838
GMG / Epson 9880	\$ 7,625	\$ 2.99	100	\$ 3,149	\$ 37,524

	Cost	Cost	Month	Cost	Cost
Outsourced	\$ -	\$ 35.00	100	\$ -	\$ 126,000
Veroproof / Epson 2880	\$ 995	\$ 3.50	100	\$ -	\$ 13,595
ColorBurst / Epson 3880	\$ 1,895	\$ 1.39	100	\$ 3,149	\$ 10,048
Oris / Epson 4880	\$ 5,045	\$ 1.97	100	\$ 3,149	\$ 15,286
GMG / Epson 9880	\$ 7,625	\$ 2.99	100	\$ 3,149	\$ 21,538

Figure 5 – Specific Equipment and Material Estimates per Proofing System

Outsourced – No equipment or materials needed

Veroproof / Epson 2880 – Epson R2880 (\$595), average dual core CPU (\$400), Veroproof RIP (free), Veroproof contract proofing paper (\$4.00, \$3.50 in large quantities). Note: Since Veroproof has a visual verification system and also offers free profiling with paper purchase, we did not include instrumentation or calibration costs, as nothing is likely to be spent.

Colorburst / Epson 3880 – Epson R3880 Graphic Arts Edition (\$1,495), average dual core CPU (\$400), Colorburst RIP (included in Graphic Arts edition), X-Rite Eye-One iO (\$1,849), Epson Standard Proofing Paper (\$1.39).

Oris / Epson 4880 – Epson R4880 (\$1,895), average dual core CPU (\$400), Oris Color Tuner Pro (\$2,750), X-Rite Eye-One iO (\$1,849), Oris PearlPROOF Paper (\$1.97).

GMG / Epson 9880 – Epson R9880 (\$4,475), average dual core CPU (\$400), GMG RIP (\$2,750), X-Rite Eye-One iO (\$1,849), GMG Proofing Media Satin Low Gloss Paper (\$2.99).

Conclusion – Selecting the Right Color Proofing System

Like most business decisions, selecting the right color proofing system comes down to weighing the costs and benefits for each system and making a selection that has the best future value and that best fits the skills and needs of your organization. Outsourcing proofing is a very reasonable option for those producing one or less proofs per month. Any user producing more than a single proof per month should consider bringing a proofing system in-house to save time and money during print jobs. While Veroproof has the lowest upfront cost and is the simplest system to set up of the four certified systems analyzed, it is constrained to 13" x 19" sheet-fed papers, whereas all other RIPs can handle wider sheets and rolls. The Colorburst Epson R3880 system excels at volumes over 60 proofs per month due to its low variable proof costs. Heavy users, generating over 100 proofs per month will likely need to carefully consider the RIP's support features needed and may find that their customer requirements demand a purchase of an ORIS, GMG or other RIP.

Footnotes

[1] Printing News September 2009, based on infotrends information

[2] Application Data Sheets are submitted to and published by the IDEAlliance

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