Dot-for-Dot Inkjet Proofing in the All-Digital Workflow

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In the last couple of years the advances in inkjet technology and colour management, along with affordability and low cost of operation, have made inkjet the colour-proofing technology of choice. In an all-digital workflow, proofing is inevitable. The quality and flexibility of the new digital proofing systems triggers the search for new and more accurate applications. A proof is more than a representation of a printed piece. It becomes an important quality control tool for the business, an essential key in the workflow.

Assessing the Need

Proofing basically has one goal: predict and simulate the printed result without using the printing press.

Initially traditional (film based) proofing systems were built to simulate screened images as they were printed on the press. Inkjet printers were built to print images with photographic quality. Advanced software now allows us to recreate halftone dots, including the rosette pattern while on the same machine we can print photographic quality with error diffused image reproduction. No wonder that many users are confused: different proofs from the same printer serve different needs!

Proofs originated from film, were a direct representation of the image that was used to make the plate. A blue-line or imposition proof could be used for content check; colour proofing systems would accurately simulate the result on press, to be used for sign-off with the customer. On a light table one could look at the dots, verify the content, even check for separations and trapping. With CtP, this important piece of information got eliminated: the film. Hence digital workflow steps need to solve the requirements for colour and content control.

At first digital proofing systems (based on thermal ablation) intended to mimic the CtF workflow as closely a possible. They generated proofs that looked like those known from film.

Inkjet proofing systems have not only changed the concept of proofing. Due to the lower system cost and lower cost per proof, also the proof itself is being re-positioned.

- Colour proofs to evaluate image reproduction and colour behaviour. Error diffused imaging methods resulting in a continuous tone print. Mostly used within the printing company, early in the process.
- Screened proofs to evaluate expected press results. Because an inkjet printer will give a printout that is "too good looking" compared to a regular press run, with screened proofs the print buyer is presented a better simulation of the printed sheet.

Both are simulations indeed: the material used, the resolution and the imaging technology, the ink specifications and the look and feel are not the same as the print. The print buyer will learn to cope with that.

The Beauty of the Rosette

There is a trend to believe that only screened proofs have contract quality, although they traditionally have a high cost attached to it. In order to bring contract proofs to the print-buyer, with digital inkjet systems one can go either way: colour proofs or screened proofs. Unless the print buyer argues about the quality of print due to the degrading effect of the screen, an error-diffused proof is widely accepted as a contract proof. But in any case is the cost of a screened proof the same as an error-diffused proof on an inkjet proofing system.

- Some markets indeed request to see the rosette on proof. In case of the packaging industry (especially flexo) where the screen ruling is typically lower than in offset, mock-ups and presentation proofs need to show the (degrading) effect of screening.

The Tyranny of the Rosette

Question is if the screened proof should be a one-to-one reproduction of the screen on the plate. The so-called dot-for-dot proof is definitely not the request of the print buyer – in general he will not envision to double check the exact form of the dot.

The dot-for-dot proof is a technical challenge. Not only is it more difficult to reproduce the exact dot on a proofing device of different resolution and behavior, we also need to start from the "digital film" data. But the digital film does not represent the image on the plate; neither does it represent the image on print. Platesetter writing conditions, plate processing and press dotgain make the image change between every step. What is the benefit of proofing the dot exactly without definition which dot you want to proof?

What you need to ask yourself, therefore, is how critical recreating a halftone at 150 lpi is to your operation.

Halftone Proofing Alternatives

There are other ways to proof a halftone. In many digital workflow systems it is possible to "soft proof" the digital film. Checking for the exact dot configuration, the effect and accuracy of the traps is much more flexible on the screen than on the printed proof.

Another alternative is to print without visible screens altogether. There is indeed a tendency to use more and more high frequency screening (>200 lpi) or stochastic screening technology. So you eliminate most of the problems on press that required a halftone proof in the first place.

Conclusion

When deciding if or when you need halftone proofing, you need to determine at what point in the workflow, is the addressability of the dot critical. Which dot do you really need to see? In each instance, you also have to calculate client demands, cost of output, and the alternative means, such as soft proofing, which will allow you to reach your desired goals.

Biography

Paul Adriaensen is worldwide Product Marketing Manager for Proofing Software, including Colour Management and Quality Management. He has a degree in Computer Electronics and joined Agfa in 1985. He was involved in the engineering team of digital PostScript based systems, scanners and colour management for the DTP and pre-press. He specialized in Agfa's workflow solutions and more particularly in PostScript programming. In 1997 he joined the marketing department for workflow products as product manager for Apogee. Today, Paul's primary focus is on integrated proofing and screening in the workflow.