

Spot on

THE BIG ISSUE

a geometric pattern) like herringbone.

- No screen angles in multi-colour printing means no moiré patterning caused by screen angle clashes.

- There are no rosettes patterns in multi-colour printing, this improves the simulation of the continuous tones and increases the apparent resolution of the printed image.

- No screen angles simplifies the production of duotones or bump plates and the utilisation of more than the three process colours and black (as is the case with HiFi colour for example).

The dots of conventional screening are replaced by a greater number of smaller spots or micro dots, consequently:

- The rendition of detail is greatly improved. The reproduction of jewellery, filagree and similar fine detail subjects obviously benefit from this, but it is also subtle surface textures in materials, fruit, foliage etc which often shows the most dramatic difference between AM and FM screening. On the down side, surfaces that are very smooth like metal may not be enhanced by FM screening, particularly with larger spot sizes.

- There is smoother tonal transition due to the continuous and progressive joining of smaller spots, throughout the tone scale.

- There is improved simulation of the continuous tone in original photographic images, as a result of the absence of a visible dot structure.

- The simulation of special solid colours, which are derived from screened combinations, is improved because of the more homogeneous appearance of the combination.

The placement of spots is not governed by a cell matrix as in AM screening, so:

- For a given output resolution there is no trade off between resolution (screen ruling) and number of reproducible grey levels as there is with AM screening.

- A lower output resolution can be used to achieve comparable or better results than with conventional screening, which allows greater output through the imagesetter. However, the opportunity to take advantage of this is limited if text and line illustrations are output on the same film.

Other benefits are apparent but do not have any obvious link to the attributes of the stochastic screened image:

- Reduced sensitivity of tone values to the

effects of increased inking. Although the dot gain is higher with FM screening the tone values suffer less change when the inking is increased, compared with conventional screening. This allows inking levels to be increased without encountering instability problems. The small spots appear to have a limited capacity to hold ink, even when increased amounts are applied.

- It is claimed that stochastic screened images are less sensitive to register shifts, although we view this with some scepticism. There is possible justification if the claim relates to colour shifts which may occur because of variation in dot overprinting and the effect that this has on our visual integration of the colours. But a process which has the ability to reproduce greater detail is unlikely to be less sensitive to register errors. The claim sometimes appears to originate from an incorrect assumption that the printer registers images by reference to the rosette pattern, and if this is not there the register will be obtained more quickly.

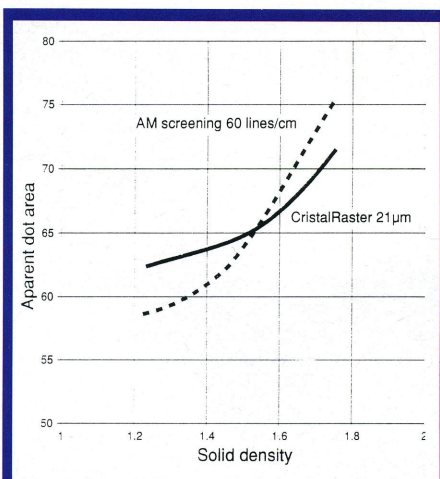


FIGURE 4 The graph shows the change in apparent dot area of a midtone value, with increased inking. It is apparent that the CristalRaster tone changes less than the conventional screened tone value.

LIMITATIONS AND AREAS OF DIFFICULTY

The difficulties associated with using FM screening are not apparent on the printing press, it is in the photomechanical pre-press stages where problems can be encountered, as a consequence of the smaller spots. The small size of the spots is highlighted when compared

USERS' VIEWS

MEL BUSSELL
Managing Director
Emmerson Pre-press
(a division of Emmerson Press)
Coventry

Using Harlequin's Dispersed screening on a Purup Maestro imagesetter.

'We put it in about a year ago, and had a big open day where we printed conventional and stochastic at the same time. That generated significant interest. Our conventional proofing wasn't really satisfactory for the stochastic work, so now we've gone digital and put a 3M Rainbow in which gives a good representation of what the job will look like. We found the plates needed higher vacuum and lower exposure, and we've mastered that by experience. There have been no problems whatsoever with printing stochastic, in fact it's very sympathetic for the printers. We're looking to sell stochastic hard now, offering it as a no-cost option to our customers. Although we wouldn't use it for straight jobbing work, there are some jobs where it's the absolute answer – for example where there are fine lines out of four-colour areas.'

MICHAEL KING
Managing Director
CK Litho
Tunbridge Wells

CK is using Agfa's CristalRaster screening on its Avantra 25 imagesetter.

'We've done a lot of experimentation and calibration of our machines and we are now getting fantastic results. The biggest problem is making sure we don't over sell it – if the originals are no good it highlights it. There are certain markets like fine art and food that we're pushing for, in fact we're running some fine art reproductions at the moment. It's taken a year to get to grips with the marketing strategy for it, and although probably only about 10% of our work is stochastic at present, long term we may find 50% becomes CristalRaster. It's not right for every job, but the results are much better than conventional – we can carry a lot of colour on the sheet. Plate exposure is critical, and we have low dot gain on our presses so that helps. Take more care with the preparation and it works well.'