COLOUR MANAGED PRINT-AND-CUT CAN REAP DIVIDENDS FOR PACKAGING

The benefits of specialist UV-curable ink-jet production for proofing and prototyping are explained by Brett Newman

Roland DG's 1.37m VersaUV print-and-cut machine

The familiarity of ink-jet with wide-format is now an accepted production method particularly in the display market where short runs are becoming ever more essential for bringing variety and fast turn-round to end applications. However, increasingly there is a move towards the benefits of digital output for proofing and prototyping and its advantages are proving to be significant for many types of final printed output.

Using wide-format ink-jet devices for proofing all types of printed production has been commonplace for many years; no-one can deny its efficiency when it comes to providing lost cost, fast visuals for signing off by clients and pre-press departments. However, there are areas where simply using an aqueous-based device and an approximation in terms of colour and layout simply isn't sufficient. This is particularly true within the sector of the industry in which specialist materials are to be used for the final production run.

For proofing and prototyping within the packaging industry it is becoming increasingly important that accuracy extends not only into the printed element but, also, in the ability to check that cutting, creasing and folding are precisely positioned. This is essential when assessing the finished product which could well be a high volume application, and which requires the manufacture of cutting dies or formes for the main production process. An error in the proofing stage can be an expensive and time consuming mistake during the print run.

GETTING IT RIGHT FIRST TIME

Similarly, early prototypes and visuals can often involve manual cutting and folding which, by its very nature, is prone to error and also a labour intensive, skilled process. Consistency of creasing is vital when working on the final assembled design of a carton or package and, increasingly, there is demand to automate this element of proofing. By getting it right at the early stages of the development of the job, a correct end result should be guaranteed.

Prototyping and proofing for both packaging and labelling isn't just down to the ability to print, cut and crease trial materials in order to produce samples and output for ongoing volume production. With the types of media used in both of these areas, the need to be able to proof either to a final substrate, or an accurate simulation which contains the properties within it, is now possible using ink-jet methods.

When Roland developed its VersaUV LEC UV-curable printer it was clear from the start that the machine and its integrated technology would both benefit the proofing industries. This platform was developed to incorporate flexible ink with both white ink and clear varnish and, whilst it has been successful within the market for short runs of finished products, this solution has also become viable and attractive for the flexo, gravure and offset sectors which need an accurate option for providing proofs and prototypes onto the actual materials being used in the overall print run.

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Cutting and creasing simplify prototyping

High opacity UV-curable white ink is a feature of the VersaUV

Additionally, a colour managed workflow is essential when providing the type of proofing required for the labelling and packaging sectors. The accuracy of corporate and spot colours are vital and must be consistent across all types of media and surface; but, when using a standard aqueous-based printer, whilst specific profiles can be incorporated into proofing, it often isn't possible to emulate the final substrate to the right standards.

COLOUR MANAGEMENT PARTNERSHIPS

Thus, Roland has achieved working partnerships with developers of established colour management software solutions in order to simplify the production of accurate press-ready proofs and mock-ups. Integrating the VersaUV's capabilities with specialist suppliers such as CGS, EFI, FourPees and GMG now means that offset, flexo and gravure print companies can produce precise colour matching across most types of material. This capability can be brought seamlessly into an existing workflow with a resulting visual match, both locally and at remote stations.

Using colour management which is centrally controlled, users of the VersaUV can have a consistency which is optimised to the colour space of the output device. In practice, however, where proofing and prototyping are involved, a matched result cannot emulate the finished print precisely if it can only output onto paper or a limited type of materials. Before committing to high volumes, therefore, print companies whose output is not on standard stock lack the accuracy and 'feel' of the proofed product and have to use a best guess approach when using digital ink-jet means for this purpose.

Finding the correct profile to provide the right appearance on a proofing material and the end substrate without a properly colour-managed workflow is nigh on impossible. Being able to proof via a controlled software option to the end material using the right ink-jet printer removes the margin for error by providing accurate results and the correct finished look and feel of the end material. This method of working involves the creation of specific profiles for a broad range of media and surface coatings but, once defined, these profiles can be saved and re-used for consistency in quality and repeatability, thereby saving man hours and costs.

ESSENTIAL ACCURACY

Because the Roland VersaUV units are able to work with materials with thicknesses of up to 1mm, the ability to proof and prototype typical packaging materials is simplified by using an ink-jet process and flexible UV-curable inks. The ability to output at up to 1440 x 1440 dpi also matches the quality required by offset and gravure printers who need to be able to generate sharp and accurate graphics plus crisp and precise text before committing a job to print.

Many of these applications need to be output to specialist materials, such as metallics and synthetic papers and cards, foils, BOPP, polycarbonates and PE film which, formerly, have been difficult to simulate on an ink-jet printer. Roland's UV-curable technology also makes it possible to output direct to these products, plus traditionally difficult products such as leather and suede, and the LED curing incorporated into the system enables tricky and sensitive surfaces to be handled without damage to the coating or to the media.

Similarly, the inclusion of white ink and clear varnish enables accurate labelling and packaging proofs to be created, with special finishes, textures and effects. The flexible UV-curable ink incorporated into the Roland VersaUV means that it can even be used for tactile finishes; with Braille increasingly being incorporated into packaging and labels, the ability to proof and prototype applications which include this essential element enables touch to be added to visual benefits during proofing.

Tactile elements are created by outputting multiple layers of the clear varnish. Because of the accuracy of the dots produced from the VersaUV's print-head technology, precision droplets result in Braille and other raised elements being clearly identifiable. Other textures can also be generated, and Roland VersaWorks RIP incorporates a comprehensive library of special effects.

Roland's VersaUV ink-jet printer was initially introduced as a 76cm (30 inch) device, incorporating precision contour cutting capabilities and long life LED curing. As the company's first production unit with flexible UV-curable CMYK + white ink and clear varnish, its use as a solution for short-run labels, decals, stickers and specialist signs and displays was quickly augmented by interest from the proofing and packaging sectors. During 2010 the company decided to bring to market a 1.37m (54 inch) model of the machine, designated the LEC-540, which is now attracting companies wanting to create larger prototypes in a single piece, or step-and-repeat and nested jobs, complete with cutting and creasing.

Partnerships with colour management specialists has resulted in a seamless workflow and a subsequent increase in use by printing companies and proofing specialists who want the economics, time savings and ease of use available from an ink-jet device. This is also signifying a move away from conventional proofing method to a more environmentally friendly alternative, with lower levels of energy and waste.

Printers concerned that their proofing options cannot be matched using ink-jet processes can now benefit from colour accurate, precision matched output. Investment levels in this UV-curable technology are modest and overall time savings are complemented by the combination of printing, cutting and creasing in a unit with a small foot-print and low running costs. ■

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