

New innovation equals new opportunity

Technology in the flexographic field is improving at a tremendous pace for many manufacturers involved in the supply chain. With so much innovation that interacts together in the production process it makes sense for manufacturers to collaborate. The recent IPEX exhibition galvanised five like minded innovative manufacturing companies to work together in order to 'showcase' some of their latest technologies during a live demonstration. David Galton explains

All the companies have a business ethos of innovation, which helps and extends their joint efforts. By working together they can offer practical solutions to flexographic printers to improve effi-

The improved process understanding required to get the best out of digital plates and the implementation of automated pre-press production processes adopted by many repro houses, has generally improved quali-

enhance efficiency by increased press speed)

Waste level (reductions improve profits)

Consistency (getting it right first time improves production efficiency)

New applications (Added value opportunities)

In these cost conscious times, all these parameters are important aspects to control and have been the focus of attention. Whilst the smaller dots in the highlights of digital plates are thought to deliver a perceived quality advantage, their use often results in the printer losing a significant amount of production time and incurring additional expense. The experience of many printers has shown that digital plates do not last as long as conventional plates on repeat print runs. A common complaint is that fine highlight dots of digital plates are easily damaged, causing print inconsistency.

Asahi Photoproducts supplied one of the latest plates in the Asahi portfolio for the 'perfect combination' demonstration print shown in figure 3. The AFP-SG plate has been developed for use in demanding flexographic printing applications such as film packaging, folding carton and UV cationic label printing applications, where aggressive inks containing active solvents are used.

The wide exposure latitude of AFP-SG plate ensures accurate tone value reproduction of screens up to 150lpi with a tone range of 3% to 95% and open sharp contour reproduction of reverse elements. The plate is designed to offer the printer resilience properties to improve efficiency by allowing the press to run faster. The ink release properties are designed to print onto difficult film substrates where the superior ink transfer reduces pin holing. The SG plate also offers superior resistance to



Figure 1: Members of the group viewing work from the Timson T-Flex

ciency and productivity. The team is committed to promoting the very latest techniques and technology across the flexographic industry to develop unique packaging solutions and improve levels of quality and service to the end customer.

Many flexo printers operating in the current market would agree that prices are the driving force with buyers of print. 'Value in use' would be a more intelligent parameter on which to make critical judgements. No one would argue against the constant need to improve efficiency.

ty. However, the IPEX demonstration proved that when the specific techniques are applied to conventional plates, they are now capable of consistently achieving the quality normally associated with digital plates.

The main benefits being promoted by all the companies participating are listed as follows:

Appropriate quality (for the particular market - fit for purpose)

Productivity (make ready times dramatically reduced)

Innovation (innovation can

solvent. These unique features combined with extremely fine printing pressure tolerance settings offered by the T-Flex 508 press, allows sharper printing results and even the possibility of combining solids and tones on the same plate.

The specialist repro house Corniche created the design and original



Figure 2: Films being blown at UCB Films

photographic material specifically for this project. It has devised a unique colour retouching process, which was admirably demonstrated and the results are shown in Figure 3.

Corniche employed its specific colour separation techniques and retouching solutions to maximise the subject quality. The process provides the means of imaging conventional SG plates to achieve lower area ink coverage, particularly in the highlights, this technique ensured that the design ran cleanly and efficiently on the new Timsons' narrow web flexo press. During the live demonstration at IPEX, four six minute job changeovers per day produced consistent print samples from the same set of plates throughout the duration of the ten days show. In these testing and extreme plate conditions the dots on the SG plates were more stable and resisted the dilutants of the UV cationic ink.

Ink supplier, Mirage Inks, designed its inks to deliver high gloss with 100% compliance with the Environmental Protection Act-VOC free. It has developed its cationic UV curing ink to be able to deliver lower volume of shrinkage on curing which contributes to a much better substrate adhesion on a wider range of plastic films and metal surfaces. The

polymerisation reaction once initiated continues to cure to completion in the absence of UV light. Free radical on the other hand ceases immediately after exposure to UV light. Cationic UV curing ink has less risk of residual materials being able to migrate through the substrate, which is especially important. Mirage is continuing to develop this chemistry to meet the requirements of flexographic packaging specifications.

Asahi Photoproducts has taken a system approach to provide the flexographic industry with a solution for printers wishing to adopt a controlled manufacturing concept. The two new products that were used to produce the 'perfect combination' print sample have recently been introduced to the market. It included the new upgraded version of the Fast Frame exposure unit coupled with a new SG grade of photopolymer printing plate which is designed to maximise consistency and predictability and thus make a contribution to waste reduction.

Recent research into the plate making process has highlighted the importance of improved UV distribution and the control of heat during the plate making process to maintain plate to plate consistency. It is a known fact that the polymerisation process is exothermic (heat is generated within the plate during the exposure stage). When combined with the additional heat output of the UV lamps used in conventional exposure frames, significant enlargement of the dot sizes on the finished plate can result. The new Fast Frame technology combined with the SG plate overcomes these plate making problems.

UCB Films has recently developed the Rayoart range of outdoor durable BOPP substrates for the graphic arts market, targeting applications such as point of purchase (POP) advertising, windows and floor graphics, decals and billboard advertising.

The key requirements of such substrates are:

- High speed and high resolution printability

- Excellent dimensional stability

- Relatively high thickness with moderate conformability

The Rayoart substrate printed at IPEX has shown how these characteristics have been combined to provide excellent print results.

Simultaneous developments by members of the team linked to the

Timsons' ongoing press design and research programme has enabled exceptional print quality to be achieved consistently. The T-Flex 508 waist high, user friendly press is built to a high standard, using extremely tight engineering tolerances. This approach provides fine control of printing impression adjustment and accurate colour to colour



Figure 3: Print example produced during IPEX

registration. The Timsons' re-run system adequately demonstrates how a pre-printed job can be passed through the press a second time holding tight register control when subsequent colours are printed. The press is substantially engineered with each print unit weighing one tonne. During the IPEX demonstration, jobs were changed over in six minutes and the print result demonstrated how the combination of developments can enable flexo to compete with the other more accredited print processes such as gravure and litho.

Conclusion

The quality, predictability and consistency of the finished product have given rise to the belief that the combined skill of the participating companies is what sets the team apart. The results produced to date give the confidence to offer jointly, packaging solutions that satisfy the ever-increasing demands being made in today's packaging market. By working closely together it has been shown that collective new ideas have influenced new innovation for the packaging market. It is intended that further articles will be published later in the year to explain some of the technical information in more detail.