Replicate the original artwork. Lay down a controlled thickness of ink. That is what we do. Screen printing enables us to achieve a degree of flexibility that is unavailable to other printing processes. Film thickness from points of a micron to 300 microns, image areas from a few microns to several square metres. The ranges of materials that can be used as the printing medium are enormous. If it is a fluid or can be held in suspension in a fluid it can be screen printed. The limiting factor is that it has to be able to pass through a commercially available mesh.

With the increasing effect of Digital Printing on the Screen Printing Process it would be easy for companies to be seduced into simply ditching all the Screen Printing technology and expertise. Then turn to the squeeze and squirt process as the way to future prosperity. To do so can make a company very vulnerable. As digital technology advances the level of skill required to operate a digital press reduces opening the market up to increasing numbers of producers. Those wonderful margins of three to four years ago are being eroded, keeping at the technological edge is very expensive and you need the sales and profits to pay for this. A five-year-old digital printing machine is nearly obsolete whereas a five-year-old screen printing machine is still in its prime. Yes screen printing has taken a caning on profits but that is more due to the downturn in the market and excess capacity rather than advances in technology.

Let us not kid ourselves Digital Printing is a process for now and the future this technology is highly competitive and dynamic, with some 200 patents being filed every month! It has however reached a technological plateau and major equipment manufacturers are going to face enormous threats from machines made in China within the next few months and years. Information is now available about machinery, both wide format and grand format, that will be sold at half the price of existing market leaders. Such offerings are bound to bring a response from the main players. It may force them into some re-badging exercises or cause them to move manufacturing to China. Or even, heaven forefend, reduce their prices! In a conventional market place after a period of investment in R&D and product development when the plateau is reached manufacturers can consolidate their resources and prepare for the next series of advances. With the impact of Chinese equipment this consolidation period is no more and those who were expecting such will be in a precarious position. From the users point of view do they buy now or wait for the much cheaper equipment? If they by now will their supplier still be in business once the lower cost machines hit the UK market? When the Chinese machines are readily available will the technical and service backup be as good as previously? Could we be seeing the “Melt Down” of the Digital Printing equipment market that was forecast for Screen Printing in 1995? Of course both assertions are and were incorrect not decisions about the direction of your business have to be given even more careful consideration.

Getting away from worries of the market and back to the technology. Traditionally, the colorants used for making digital inks have been dyes. They are soluble in a liquid carrier, water or solvent; they offer high colour saturation and bright colours, however they are not completely light-stable. On the other hand, pigments can be light-stable but not soluble in the liquid carrier. This means they have to be ground to a size matched to the nozzle diameters of the inkjet heads. These are typically between 20 and 80

microns, depending on the technology and application. The required pigment particle size is typically below 1 micron for industrial applications and below 200 nanometres for office applications. With screen printing the pigment size is only limited by the mesh opening and that can be changed in minutes for the cost of a stencil.

Screen printing is apparently not as sexy as digital but by using digital technology within screen printing the advantages can be tremendous. Add this to the inherent adaptability of screen printing and you have a very powerful profit producer. Rather than abandoning screen printing consider maximising its profit generation capability. Judge what you can do with screen printing that is not possible with digital printing and do it as well as you possibly can. What is not practical with the squeeze and squirt process? (You must stop using that term. We are a combined journal now. Ed.) Simply changes in ink type through the same nozzle delivery system and the use of any ink type that is not designed specifically for the delivery system are its main restrictions. The screen printing industry is built on an ability to be extremely flexible as to the inks or mediums used and the variety of substrate. Digital printing has had a key influence on screen printing graphics, in that the client demands much more from screen process. No longer acceptable are golf ball sized dots and flesh tones that range from fevered to jaundiced in the same print run. The client wants the vibrancy and consistency that is characteristic of top quality screen printing.

Incorporating digital technology in screen printing through the use of direct to screen imaging is now a well accepted practice. Please Father Christmas this year will you bring me a flat bed laser based stencil imaging system? If so I promise not to say squeeze and squirt ever again. The hot wax stencil imaging devices along with direct projection have taken over from large photopositives in Point of Sale producers. Which is best is a matter of opinion. Probably direct projection for speed and production cost and hot wax for quality and flexibility. As with all systems it is down to the application of best practice. Bad practice can screw up the best technologies. Those who are fortunate have both systems and they run very well side by side. As with all such techniques talk to a current user about their performance. Salesmen have an unfortunate habit of saying “All you do is…..” You have to consider the impact on the chosen technique on your operation. Direct projection will require a controlled environment, humidity being crucial. The range of fast emulsions available inhibits the use of water based inks. The photopositives, though, small have to be spotless and fault free. At 40 lpi a tonal range from 2% to 98% is now attainable by the finer exponents of direct projection. Hot wax stencil imaging devices are increasing in speed. Regular maintenance of the heads out maintains imaging quality. With both systems stable screen frames are crucial. A warped frame will throw the image on direct projection out of focus and in the hot wax system even though the current models will follow the profile of a bowed mesh making corrections slows the system.

Where the marriage of screen and digital printing has its greatest potential for success is in proofing of screen printed jobs with a digital printer. Traditionally we have used wet proofs produced on press at considerable cost, alternatively digital or Chromalin proofs which are produced in a method, which means obtaining a true representation of the finished screen print is virtually impossible. Refinements in Digital Proofing however are

giving the opportunity to produce simulations of screen printed images that are much closer to reality. The RIP outputs actual dot patterns at the specified angles that duplicate the density and hue characteristics of the supplier's process colour inks for screen printing. The system can also apply calibration curves for individual screen-press/substrate combinations to bring the proof even closer to the colour characteristics of the screen-printed image. Further developments feed print characteristics of individual screen presses back into the system. Of course this only works if the printer and stencil technician control the process. Accurate proofing provides a discipline for production that is inescapable. This discipline is equally applicable to the origination department who can see the results of their efforts before the first squeegee stroke.

As screen printers become more efficient using digital tools costs can reduce and profits increase. The likelihood of "Meltdown" will diminish still further and provide an even greater challenge for digital printing. The overall result will be to expand the market for graphics display where printers provide solutions rather than either screen printing or digital printing. The happy marriage we are all seeking.