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HOW DOES A BOXMAKER WITH 'STANDARD QUALITY' FLEXO PRINTING EQUIPMENT BREAK INTO THE GROWING MARKET FOR 'HIGH QUALITY' FLEXO?

REACHING THAT HIGH



High quality (HQ) flexo post-print is booming throughout the corrugated industry, with report after report describing how boxmakers around the globe are making existing contracts more profitable, are gaining new work, or are exploiting new markets — all by improving the quality of their flexo post-print. As a trend, HQ seems not to be restricted to one part of the world, with the emerging markets of the Middle East, South Asia and the Far East being just as much a part of the change as the Americas and Europe. But what changes do boxmakers need to carry out if they want to start producing high quality print and so tap into this boom? Should they buy new equipment or upgrade existing machines? Do they go

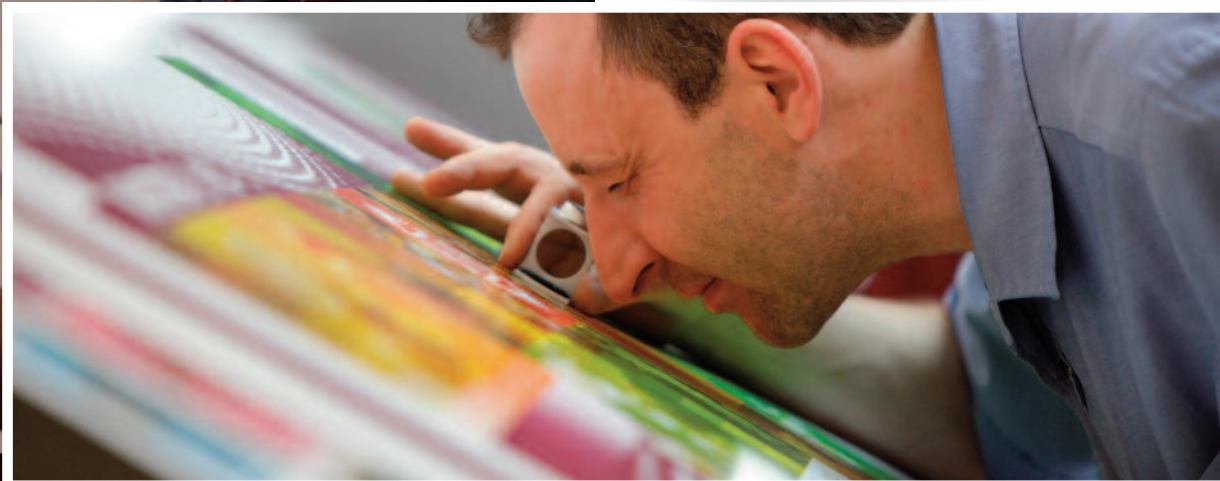
in-line or off-line? And what do they need to consider when it comes to pre-press, inks, and substrates? Here, a group of key suppliers of flexo press equipment and consumables give their views on what to consider when going HQ.

Fertile hunting ground

“Flexo always used to be the ugly step-child of the graphic arts industry,” says Warren Bird, Vice-President of drier and plate technology supplier JB Machinery. “But vastly improved registration, better print reproduction, more colours and glosses that approach film lamination in their look are all factors that, when offered in a single pass operation, make for a very compelling value proposition.” Megastores and supermarkets are now fertile hunting grounds for sales people offering flexo post-print on corrugated, he explains. “Retail and shelf-ready packaging, point of sale and point of purchase displays and pallet wraps are all succeeding as flexo post-print products where folding carton, screen print, and plastic containers used to command the greatest share.”

The key to tapping into this market, if you are new to high quality graphics, is being able to bring together all the players, says Mr Bird. “You need to orchestrate the various elements to get the best

results. That means equipment suppliers, ink manufacturers, pre-press, anilox makers, doctor blade chamber makers, and drier manufacturers.



There are a lot of variables to be considered if you are going to make a success out of HQ print.”

It's a point that strikes a chord with Hakan Pfeiffer, Head of Bobst Group's sheet-fed business, which encompasses both the Bobst and Martin flexo press brands. “It's not just about engineering machines that are capable of high quality graphics. A vital element for press manufacturers like us is that we need to work with the suppliers of other key components to help optimise the flexo printing process and push the boundaries of what can be achieved. HQ printing is a system. Yes, the machine is very much at the heart of it, but it is important that we work with the suppliers of anilox rolls, repro systems, driers, substrates and inks, to make sure that we understand the latest developments in each of their fields. Only in that way can we make the most of the capabilities of our presses.”

Mr Pfeiffer also says that it is important for press manufacturers to work with their customers' local suppliers to help them get the best results. “It's something we do with customers all over the world, on both new and old machines, because we see our job as helping boxmakers achieve the very best quality of print they can, hour after hour, day in day out, when the machine is new and long after.”

Antony Whiteside, Managing Director of doctor blade chamber specialists Absolute Engineering, agrees that succeeding in the high quality post-print market means achieving consistently excellent print, and that it should be on a par with more established processes. “Anyone getting into HQ will be competing against litho printers, screen printers, and increasingly with digital printers, all of who follow recognised colour consistency standards. As a result, a litho printed box on the supermarket shelf made by one manufacturer is impossible to distinguish from one made by a different manufacturer. They will have the same colour consistency, the same colour density and the same quality of print.”

Mr Whiteside says that as an industry, corrugated needs to take such standards on board. “You hear nothing about standards in the flexo world, yet they already exist in the form of ISO 12647:Part 6, the flexo equivalent of the standards that litho, screen print and digital printers are using. This standard tells boxmakers what they need to look at to achieve HQ print, especially in controlling the consistency of the ink in the system, without which you can't get anywhere near HQ.”

Do boxmakers make good printers?

With no widely used standard for flexo printing, what passes for HQ flexo print differs around the globe, says André Göpfert, Managing Director of press maker Göpfert Maschinen GmbH. “Approaching litho quality is a lot more work than just printing in six colours. You might produce a beautiful milk tray with text and lots of colour, but it won't be a high graphics product unless some thought and effort has gone into the repro, the plates and the choice of anilox.”

Mr Göpfert says that repro, in particular, needs to be addressed by anyone moving into this market. “It's not just about the hardware. For me, you can't achieve high graphics unless you are running CMYK with a screen of above 48 lines per centimetre. There is a lot of exciting work being produced in Germany and Europe in this sort of range, but elsewhere in the world the same levels of quality are yet to be reached.”

This difference in standards presents some risks says Mr Göpfert. “It's very dangerous to approach retailers saying you can deliver packaging that is as good as litho if you have not got all the components right. Some boxmakers have done this already and failed. It damages the reputation of flexo post-print for everyone, so it is important that

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boxmakers spend time learning how to print high graphics really well.”

Erik Marjo, Group Managing Director at Pacific Inks, says that the Far East, and in particular

China, is a market where demand is advancing rapidly for the inks that are needed to print high quality graphics on corrugated. “In developed markets, brand owners have more choices — they’ve got litho, screen, and even digital print available to them. It’s not so in China, and we see a lot of work being printed flexo using process because it cuts out production stages such as laminating.”

But to achieve the high quality graphics they aspire to, boxmakers do need to be much more precise than with standard work, explains Mr Marjo. “You can’t just tip and pour the ink, it’s got to be accurately measured and the viscosity checked at every station. For the sort of CMYK work that can challenge litho print quality you need to understand densities and there are four variables to consider, which makes sixteen things that can go wrong if you’re not paying attention.”

M-real Corporation has also seen high growth in Asia as Koen Verplancke, Technical Service Manager at the paper-maker points out. “We’ve seen high demand for the coated papers that are needed for high graphics work from the USA, Europe and particularly from Asia.” This growth in demand for coated papers has prompted the company to set aside €16 million to upgrade its Kemi mill in Finland during the autumn of 2011.

Mr Verplancke says that boxmakers need to be honest with themselves about what they can achieve in terms of high quality print. “It’s relatively easy to produce good quality pre-print these days, but high quality flexo post-print relies on a lot of factors ranging from the machine to the paper. Boxmakers need to accept that if they compromise on any of these factors they may not be able to go as far as they would like.”

New press or old?

The first question most boxmakers will ask if they are considering a move into the market for high graphics flexo post-print is ‘will I need a new press?’

“It depends on your existing equipment,” says Bobst Group’s Hakan Pfeiffer. “We have customers who are very successfully producing high quality graphics, and winning print awards for their work, using older Bobst and Martin presses that we have helped them to upgrade. But there are clear benefits to investing in a new press like a Masterflex or a Martin 924 FP. Firstly there is the accuracy of

register on the latest generation machines which, with direct drives and proactive register systems, means constant register even with warped board. Then you have better ink systems using peristaltic pumps which keep the viscosity of the ink at optimum levels, with minimal waste. It all gives you reproducible quality time and again.”

Starting the job with each print unit in perfect register, and staying there at all speeds, is absolutely vital when printing high graphics, says Mr Pfeiffer. “Something like the ‘Start & Go’ system on our Masterflex-HD presses can be the operator’s best friend during the start up of the job because it sets the registration and skews print elongation automatically if needed, all with only a few sheets. Photocells at the inlet of each print unit keep the registration perfect, while systems like our iQ300 quality device monitor every sheet produced for all sorts of defects. Finally, you can expect the running speed of a new press to be higher than that possible with an upgraded older model.”

André Göpfert agrees that reproducible quality is the main requirement for high quality post-press flexo. “Using servo drives directly on each shaft throughout the machine means you have accurate adjustment of position. A system like the computer controlled ‘Running Register Adjustment’ on our Ovation line uses direct drives to keep register and we also use flat, high friction belts to keep the sheets in position. It is also important to control the ink and to maintain the best temperature to ensure consistency.”

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There is also no doubt in Mr Göpfert's mind that quality inspection is vital when competing with processes such as litho printing. "There is a high demand from users for 100 per cent inspection systems, especially from our high-graphics customers who are competing with litho printers."

JB Machinery's Warren Bird says that the ability to dry the print on the board effectively is one of the keys to improving quality, whether it is on a new press or an upgraded one. "Most new machines purchased today will have driers specified from the very beginning, rather than being added on as an afterthought," he explains. "Equally, we have carried out a lot of projects in recent years to retrofit driers to machines where the customer wanted to run faster and run high graphics work. As long as a machine has vacuum transfer then we can install driers throughout, while a dedicated dwell section or a wide bodied printdown lets us install UV in conjunction with IR."



Beyond the press

Whether the press is a new line or an upgraded one, the choice of ink application system is critical, says Anthony Whiteside of Absolute Engineering. "Firstly, it has to be a chambered doctor blade system. Rubber rollers simply cannot achieve the quality needed today and most boxmakers are already using chambered doctor blades anyway. The critical questions to ask are: Will they deliver consistency of ink? Will they clean up effectively? Will the doctor blade changes be quick? Will they lose a lot of ink?"

Mr Whiteside says that the shape of the doctor blade chamber and the materials it is made from are the keys to achieving high quality print. "You need a chamber that is designed to move the ink in a consistent manner with all of the available ink reaching the anilox; otherwise you get ghosting and patchiness. Also, the ink that has not been applied to the anilox needs to be expelled within one cycle, so again the

design of the chamber is critical here."

The choice of materials for the doctor blade chamber makes a difference to both its effectiveness and the on costs of the printing process, as Mr Whiteside explains. "Using a material like carbon fibre for the doctor blade chamber can really help with the quality of ink delivery because its high surface tension allows the ink to move around more freely. Also, because it repels the ink from itself, a chamber made from carbon fibre won't corrode like metal and can easily last 15 years."

When it comes to the ink itself, Erik Marjo of Pacific Inks says that the rheology needs to be different for high quality print. "Because you are applying it to a coated substrate, and will certainly be drying it as well, you only need to lay down a thin film of ink. That's

very different to standard type flexo printing.”

Pacific Inks has brought technology gained from its successful work in the pre-print market to flexo post-print, says Mr Marjo. “Ink pigments have to be milled really finely if you are going to ensure good entry and exit of the ink on fine anilox rolls. We have to do the same for ink that will go through digital inkjet nozzles. So we’ve invested heavily in high energy mills capable of reducing pigments from ultra fine particles to nano sized. This technology produces strong, brilliant, vivid inks that yield bright colours on lightweight corrugated liners, giving you a thin film of ink that dries quickly at high print speeds.”

But bearing in mind that few boxmakers will be running high quality graphics on every job, and so will need different types of ink, Mr Marjo says that finding a clever ink making system is essential. “It’s important to have the right ink for the right job, especially if you are working with fixed parameters such as the capacity of the anilox rolls. With systems like our Accubatch, boxmakers can pick and choose the type of ink they use. It uses the concentrated ink pigments and then creates the right formula for the type of job in hand, using a range of technical varnishes.”

Hickeys out

Another factor that JB Machinery’s Warren Bird believes is important in achieving high quality flexo print is the continuous removal of hickeys from the printing plates. “It’s a problem the industry has faced for ever. Boxmakers constantly have to wash the plates to remove hickeys. On high quality work, using highly coated papers, there is less dust for sure, but now boxmakers can also have continuous hickey removal with systems like our Kleenplate units which are a valuable tool for every type of flexo print, but particularly for high graphics.”

Koen Verplanke from M-real agrees that coated papers have helped reduce the problems associated with dust and adds that what boxmakers need as much as anything from their paper is consistency. “The papers that the substrate is made of need to be coated of course, but they also need to be consistent in both size and

structure if they are going to be reliable during board making and also later on during printing. Papers like the Kemiart range, which are made using virgin fibres, have that profile. What the boxmaker needs is something that is strong and is almost like a folding boxboard grade so that brand colours can be consistently repeated from one job to another.”

He also points out that when boxmakers are first exploring the high graphics market, usually with an older machine, they may benefit from using an intermediate grade like Kemiart Ultra. “It will give the print a bit of gloss and extra definition while the boxmaker finds customers for high quality work. Then when they upgrade their equipment or buy a new press, they will be ready for something like Kemiart Graph.”

In-line or off-line?

But which configuration is best — an in-line solution or off-line? André Göpfert says that 80 per cent of the machines his company supplies are specified by their customers as off-line. “The machines run faster than when they are in-line with a flat-bed diecutter, and printing can continue even if the flat bed has stopped. It also means that the machine can run in a dust free environment where the operator can concentrate only on the printing. We do supply in-line machines with a

rotary die-cutter where the rotary keeps up with the speed of the printing machine, but we recommend air management for high quality flexo using this.”

Bobst Group’s Hakan Pfeiffer says that the choice depends on the boxmaker’s markets — both the ones they have now and the ones they hope to access. “Off-line is the most widely used configuration among our customers because it means fewer interruptions to production and less dust. But we do have Bobst and Martin customers very successfully

running high quality graphics on flexo presses that are in-line with either a flat bed die-cutter or a rotary unit. We believe that by having various options open to them, the boxmaker has the best possibility to choose a configuration that suits them.” ■

