Flexo is dead. Long live Flexo.
Shaping the next decade for packaging printers.

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A few traumatic years and much disruption in the graphics business has seen renovation and renewal in many parts of the industry. But none has enjoyed such dramatic rejuvenation as the flexo sector. Chemical and imaging advances are helping flexographers compete with alternative printing methods, including offset, gravure and digital printing. Flexo has shed its former, slightly dowdy, reputation as these advances create exciting new applications, business opportunities and highly capable manufacturing processes.

Packaging, flexo’s traditional stronghold, gets a lot of attention these days. Digital press manufacturers are eyeing up the sector and packaging producers and brands want new ways to engage with customers. Rob Vermeulen, board member of the European Brand & Packaging Design Association (ePDA), identifies the Z generation millennials who “don’t want to communicate in the conventional way”. Rob’s colleague, Uwe Melichar, President of the European Brand & Packaging Design Association (ePDA), says generation Z “Want It When I Want It Where I Want It” and expect more. “We see a movement from the major brands to the private label. The private label will become more and more strong and change their communications because they’re not bound to the history”.

This is music to the ears of digital printing systems manufacturers working on packaging presses for on demand short run applications. In coming years digital printing will indeed be a bigger part of the services mix, but it will not dominate. Competing with flexo technology’s speed and materials flexibility is tough and flexo technologies such as the KODAK FLEXCEL NX System, celebrating its tenth birthday this year, will ensure flexo’s continued edge.

Looking good
Further improvements to flexo prepress will deliver yet higher output quality and productivity, and at a reasonable cost. The KODAK FLEXCEL NX System
meets growing customer demands for tighter process control and faster job turnarounds. According to Chris Payne, President of Kodak’s Flexographic Packaging Division, “we’re at the beginning of this transition in flexo for packaging”. The print method is both taking share from gravure and offset and seeing organic growth. As it becomes easier to control and results become more predictable, investment risks come down. Payne says “flexo is the most adaptable of all print processes and FLEXCEL NX Plate technology supports the step-change in on-press performance required to implement new and more efficient ways of working, such as a reduction in spot colour inks and the adoption of ECG [Extended Colour Gamut] printing. Ink and coating innovations, as well as new screening developments specifically for packaging print, are helping ECG printing implementations spread as colour becomes simpler for flexo printers to manage in software to guarantee accurate colour appearance on the printing substrate. Flexo changes slowly “and we’re not done with investing”. FLEXCEL NX technology is one key component as we move forward in the standardisation of the process” according to Payne. He adds that “we have other things that will help to drive even greater efficiency and sustainability”.

Advancing onwards
The next ten years are all about materials science and developers working with brands and retailers to drive graphics technology improvements. Digital printing systems produce prints on demand and for very short runs, serving small local producers of goods such as honey or cosmetics, artworks and craft goods. However, for digital printing technology to achieve sufficient scale for Fast Moving Consumer Goods (FMCG) will take time. We can expect to see much more variety and diversity in packaging solutions in the next ten years. Creative digital printing implementation models will not be cost effective compared to flexo presses producing 10,000 packaging impressions an hour, a typical short run for FMCG packages. As brand owners demand increasingly bespoke consumer packages, even for trials across a single city, flexo will remain the preferred option.

Flexo technology keeps improving process reliability and stability, so supply chains are reforming, and workflow systems increasingly support ECG printing and distributed job management. These are key development areas for major digital press manufacturers, keen to provide competitive advantage over flexography. But with over 500 customers using the KODAK FLEXCEL NX System in daily production, the company has the necessary experience and market intimacy to keep it at the leading edge of flexo and packaging production.

There’s more
Over the next ten years in emerging markets where keeping food fresh is difficult, growing cold supply chains will lead to new packaging and labels applications. According to the United Nations Development Programme over 40% of food produced in India is wasted due to factors that include lack of cold supply chains and accessible packaging materials. Even in warm places, plastic wraps on coconuts can extend shelf life from four to twelve weeks. And new formats are emerging as shopping habits change, requiring smaller quantities and trial sizes. Dr John Anderson, responsible for business development at Kodak, says, “we’ve gone from supermarkets holding around 9,000 product lines in the 1970s to over 45,000 in the 2000’s”. Varying sizes and versions plus short turnaround requirements add pressure to complex supply chains, and smaller quantities create more packaging. One package for a loaf of bread becomes multiple packages with fewer slices, more likely to be eaten than discarded. This increases packaging but reduces food waste. Sustainability is about balance, so pressure for environmentally friendly packaging lifecycles will rise in line with changing recycling behaviours.

Sort it
Anderson explains that Europe has one of the highest levels of recycling in the world ... [but] there is a difference between recycling and reuse and recovering components from the product. One of the problems with plastics recycling is getting enough of the material to make it easy and economically viable to recycle. Brands are getting together to develop mechanisms for sorting at recycling plants instead of in the home or at curb side. Apart from the complex politics there are many challenges to achieving this, requiring technology and investment into separation processes, managing mixed components, dealing with contaminants and consumer education. Flexible packaging use will keep rising. We see more and more of this type of package. Instead of a PET bottle we’re seeing flexible pouches with thinner materials. Lightweight materials which stretch on press are not well suited to gravure printing, creating opportunities for flexo printers who have their processes under control.

Flexible flexo
Knowing how to prepare for the next ten years depends fundamentally on an awareness of technological developments and being able to see where current trends are heading. The flexo sector is slow moving but working hard to exploit digital workflow and process automation technologies. With more predictable plate making using technologies such as the KODAK FLEXCEL NX System’s, this gets easier. Laser Ablative Mask System (LAMS) technologies widely used for flexo plate production over the last 20 years are reaching their performance limits and are challenged to match Kodak’s speed and output quality, without using additional products and processes involving time and cost. Kodak employs
a combination of high resolution film-based mask, KODAK SQUARESpot Imaging Technology and a unique lamination process to create extremely sharp flat-topped dots that are a 1:1 faithful reproduction of the digital file and optimized for printing. This technical approach brings a greater degree of precision to the plate making process and offers significant potential for future developments that will further the evolution of standardized, automated print production.

Kodak’s technology allows for the imaging of micro-level, highly engineered patterns on the printing surface of the plate and as Payne explains “the plate’s the thing controlling the ink flow” positively impacting press running speeds. This helps flexo printers move away from outdated practises, to use digital production techniques to reduce prepress process steps. Payne says flexo printing is “still basically a craft industry … where we’re going with production, [it] will be an automated process in future”. But this depends on knowledge within the sector as much as on technology.

Training and knowledge development
Understanding how to get the most out of new technologies helps companies improve services to customers and their bottom line profits. But making a change takes effort. Stefano d’Andrea, a technical consultant with the European Flexo Technology Association reminds flexo printers that “new technologies are useless if you don’t use them in the proper way”. He suggests that flexo printers stop using the press as a proofer because it’s no longer necessary to work that way. d’Andrea has also found that technology, such as the FLEXCEL NX System can make flexo cleaner and greener, for example by reducing environmental impacts using ECG printing which reduces the number of inks required. As well as saving money, ECG printing means less washup on press, predictable colour control, faster make-readies and more reliable file sharing across output processes. Effective implementation of ECG requires an understanding of digital colour management because as d’Andrea says, “you have to demonstrate how good you are in CMYK to reach expanded gamut”. Offset printers print to ISO print control aims extracted from predefined characterization data sets for different printing conditions. CRPC7, (Characterized Reference Printing Conditions)one of several characterisation data sets used in ISO graphic technology standards, characterises CMYK’s widest colour gamut in offset. d’Andrea points out that “we should be able to do that in flexo” and that brand owners and printers can work together to ease conversion of process specific data sets for automatic colour data repurposing because “if you can measure it, you can control it”. Over the next ten years we expect to see many more flexo printers improving colour control and output reliability, because this is what their customers want.

Control freaks
Output control depends as much on the printing plate as it does on software and robust characterisation data sets. Improvements in plate technology are catalysts for wider changes in the industry and have pushed Kodak to keep refining the FLEXCEL NX System. But they are also spurring ink and coating innovations, and Anderson says, “one of the trends we look at is can the print be part of the barrier properties: can we add stuff to ink to create a barrier?”. A quick examination of some leading brand initiatives reinforces the need for technology solutions. The Pepsi 2025 sustainability agenda is working to achieve zero waste to landfill, through collaborations with other big brands for sorting and processing waste. Pepsi aims for 100% of its packaging to be recyclable by 2025 and there are already signs that other big names are following suit. Iceland, a UK retailer of frozen foods has committed to becoming 100% plastic-free by 2025. By then we can expect considerable materials advances. Today’s eco materials are made with plant-based products but taking corn from food chain makes food more expensive. Anderson says the “next generation of products will come from waste products from plant materials”, such as a monolayer instead of multilayer substrates which are hard to recycle. Aluminium oxide (AlOx) is “a coating solution. It’s very thin but when you melt the plastic, the AlOx floats to the surface and can be renewed and recycled … the chemistry is really starting to move”.

Since 2008, flexo technology advances have focused on chemical and imaging innovations and reshaped the sector. By 2028 flexo printing will match offset for stability and predictability and traditional supply chains will collapse and reform. It will be a bumpy ride but as Anderson says, “it’s all of us together … all of us in partnership driving operational efficiency and sustainability together”.
Laurel has been in the graphic arts industry for over 30 years. She started out as an accountant for a printing company in London but got bored and went travelling. She got caught up in the Desktop Publishing revolution working in California for the Seybold organisation, where she was instrumental in the development of the Seybold conferences. Over the years she has worked exclusively in the prepress and publishing industries, with a particular specialisation in digital prepress, digital production and digital printing. She is managing director Digital Dots, which provides international consulting and educational services.

Laurel works with several ISO working groups and is the convenor of ISO’s Working Group 11. This group develops standards relating to the environmental impact of graphics technology, including print media. ISO 16759 for quantifying and calculating the carbon footprint of print media, published in July 2013, provides a framework for carbon calculators for the carbon footprint of print media products. Laurel provides private consulting and editorial services to a wide cross section of publishers, manufacturers and industry associations. Her work regularly appears in publications and on websites around the world. Laurel is a regular speaker at industry events in North and South America, Europe and Asia.

Laurel is also a Visiting Professor at Shenzen Technical University in China and one of a small cohort of Women of Distinction selected by US publishers Output Links. Agfa Graphics has awarded her its Sustainability Award for her work in sustainability and the Indonesian printing industry association, ATGMI, has also recognised her for this work.