

Will Inkjet Printing Kill Offset?

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If one reads many of the projections being made about the future of printing there is a belief that offset printing is in serious decline and the new high-speed inkjet printing will kill the offset business. Various claims have been made that we could see offset being replaced in almost all areas by inkjet printing by 2020 or earlier. What do I think about that? I think it is a total load of rubbish. No only is it dangerous rubbish being spread by people who ought to know better, but it damages the printing industry in the eyes of potential investors.

So why do I think that inkjet, and other forms of digital printing will not replace offset within the next decade. The principal reason is that digital printing will not be able to handle the tasks handled by offset in many areas of the market in terms of speed, cost and flexibility of format while maintaining offset quality. Let us look at the basic factors of inkjet and offset printing today. In the following I am mainly talking about inkjet printing using aqueous inks rather than UV curable inks.

Format - Modern offset presses in the sheet fed area are available with print widths over two metres (80 inches). The majority of presses are in the 102 cm (40-inch) or 74 cm (30-inch) format. The widest aqueous ink inkjet press is of 30-inch format today and most are of 52 cm (20-inch) format. Increasing the width of an inkjet press is very expensive involving more print heads, more complex ink systems, higher data rates for handling the digital data and larger and increasingly powerful digital front ends controlling the process.

Speed - There is a massive difference in running speed of offset and inkjet presses. Today the highest speed of a continuous feed inkjet press is 200 meters/min and around 3,000 Letter/A4 pages/min, If one looks at the speed of a sheet fed offset press of a 30-inch format this is roughly comparable in terms of both pages/min and linear meters/min, but for a comparable 4/4 color format the offset press price is less than half that of the inkjet and the running costs are far lower. If however one moves up in size then the offset presses show major performance increases. If one takes a high-speed 40-inch press the linear speed is up to 230 meters/min but the number of impressions in a four over four color configuration is approaching 5,000 Letter/A4 pages/min. In terms of page speeds then this can increase significantly as format size increases. For example a 64-inch press will print 8,000 Letter/A4 pages/min. (In these figures I am only talking about sheet fed offset presses and if

I was to take account of web offset presses the number of pages/min that could be produced increases substantially.)

Quality - Quality is another area where inkjet is still in catch up mode against offset. Electrophotographic printing can now match offset for quality but not for flexibility of color handling. Inkjet printing still has a way to go before it is accepted as "offset quality." I know that Kodak is claiming that its Prosper XL5000 press will offer offset quality, however if it does it will lack the color flexibility of handling a wide range of colors and printing more than four colors at a time that comes as standard with offset printing.

Operational Costs - The operational costs of inkjet and offset printing are very different. The running costs of inkjet printing are almost linear with the same running costs from start up to completion of the job. With offset printing there is a heavy start up cost allowing for set up, plate loading and coming up to color, plus high paper wastage until accurate color is achieved. After that the running costs are low. Inkjet has high consumables costs in terms of ink and print heads, whereas offset's consumable costs are low and available from multiple suppliers. Another factor we have to take into account is the substrates that are being used. Digital printing, and inkjet printing in particular is very limited in the substrates it can work with.

The Business Case - The business case for inkjet printing is that it takes away the high start up costs of offset allowing for very short run printing up to a volume at which offset becomes competitive. The second business case for inkjet printing is it is a digital process and thus allows for full variable data on every page that is printed. The cross over point at which time offset becomes more cost effective than inkjet printing varies with the application and with the type of press. For example modern offset presses are incredibly automated and efficient allowing make readies to be completed in under ten minutes or less with reduced amounts of paper wastage. Set up on a web offset press takes longer but again that is improving in the latest presses. Kodak is claiming that its Prosper XL5000 press may be competitive against offset up to 7,000 copies, however I find this figure difficult to accept. Océ and HP are indicating that for book printing their inkjet presses are competitive up to around 4,000 copies. It is interesting however to listen to CPI, the largest book printer in Europe indicating that the sweet spot for the HP T300 press is up to 3,000 copies before offset or letterpress becomes more cost effective.

My assessment is that at present I see the new high-speed inkjet presses challenging offset in many areas such as books, magazines, and direct mail in run lengths up to 4,000 - 5,000 copies and in two years time up to 7,000 copies. However I don't see it becoming competitive above 10,000 copies until beyond

2015. This is because the speed of print head development will not proceed at the high rate it has been going over the past few years in speed increases while at the same time improving imaging quality. I also don't see the inkjet companies dropping their ink prices enough over that time to really change the business equation.

I do however see that with run lengths reducing and inkjet quality increasing that most productions will be of less than 7,000 copies. Offset printing will become predominantly the long run printing process and the process used for more complex types of work. Packaging is one of these and while inkjet printing with UV curable inks will move into this area it will predominantly be for speciality short run work and labels. For packaging offset allows for a wider range of ink colors and more colors in the process of printing, more speciality processes such as coatings, foils, etc. and a wider range of substrate products. Offset will remain the process for newspapers and magazines apart from where there is a specific business case for short run distributed printing or where variable data and personalization can be built into the publishing business model.

So will offset printing die? Far from it. Like many other processes in the past that have been impacted by other technologies it will adapt and confirm its role. The aeroplane did not kill the train (at least in Europe!) The TV did not kill radio or the cinema. The Internet will not kill printing and inkjet printing will not kill offset. While offset largely killed letterpress because it did the same thing better and cheaper and in a wider range of formats, inkjet printing has too many major limitations to overcome before it can kill off offset in the future that I feel is possible to project.