KEYPOINT INTELLIGENCE | InfoTrends

SERVICE AREA:

Color Digital Label and Packaging

ANALYSIS

KODAK RAMPS UP IN PACKAGING

MARCH 2019

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Introduction

As part of a packaging summit hosted in February in Italy by Uteco, an OEM partner, Kodak announced that ULTRASTREAM, the fourth generation of its continuous inkjet (CIJ) technology, is now available and that Uteco will be among the first OEMs to commercialize it. The overarching message of the event, though, is that Kodak, a giant in inkjet for commercial printing, has increased its participation in the packaging segment, and will use both ULTRASTREAM and PROSPER technology to advance Kodak there. This report is about Kodak's drive to achieve that goal, and its implications for the package printing market.

Key Findings

- Packaging is now a strategic target for Kodak, one it will pursue by partnering with OEMs such as Uteco Converting SpA and by marketing its proprietary CIJ printers under the Kodak brand.
- Kodak now has three entry points into packaging—two Kodak branded (PROSPER 6000S for folding cartons, Prosper Plus imprinting systems), and one OEM branded (Uteco Sapphire EVO for flexible packaging).
- Besides Uteco Sapphire EVO, which is based on Kodak Stream, Uteco Converting SpA will be among the first OEMs to commercialize Kodak ULTRASTREAM.
- Kodak says that ULTRASTREAM, a new generation of Kodak CIJ leveraging many of the advantages of Kodak Stream Technology, has the image quality to compete with even the higher quality and productivity standards of offset printing.
- Uteco will have at least two installations of Sapphire EVO in 2019, one in Italy and one in Japan, meanwhile Kodak placed its own PROSPER 6000S for carton printing in 2017.
- There are more than 250 PROSPER imprinting systems installed in packaging sites around the world. The newly launched PROSPER Plus solutions bring higher quality and faster drying to more applications, especially on flexible films.

Recommendations

- Be alert to the Kodak and Uteco partnership, because both companies are dynamic, with potential to drive high-speed inkjet technology in the packaging segment.
- Kodak will target other high-volume packaging applications with other OEMs and with its own printers, so the ultimate role of Kodak CIJ in packaging will vary.
- Kodak's focus on high volume package printing highlights an opportunity for digital, to go beyond short runs and compete for the big print jobs where analog excels.

Kodak Update

In February 2019, Kodak's Enterprise Inkjet Systems Division (Dayton, OH) and Uteco Converting SpA (Verona, Italy) teamed up to provide prospects and analysts with an overview of print technology based on Kodak continuous inkjet and targeting packaging. Kodak's "CIJ" technology is widely placed to print transactional and other commercial print applications; the message from the packaging summit in Verona, though, was that Kodak EISD is now also aiming that same technology and future versions of it at flexible packaging, folding cartons, and possibly other packaging applications as well.

Figure 1: Kodak Printed Folding Carton Samples

Source: Kodak EISD

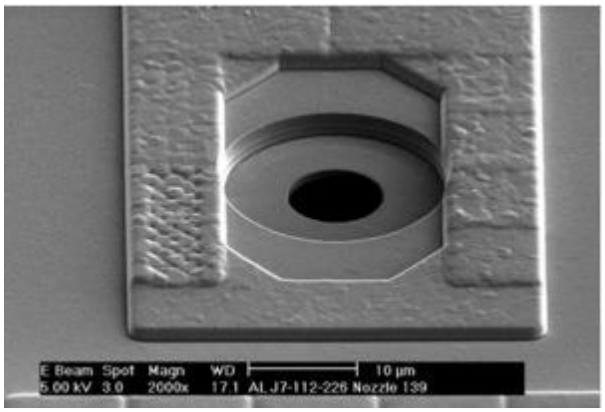
The February summit, which took place at Uteco headquarters near Verona, offered general knowledge about Kodak and its plans in packaging, but it first highlighted two news stories, each related to the Kodak-Uteco partnership:

- Uteco Sapphire EVO (2018), Uteco's 620mm/24.5" high speed web based on Kodak's CIJ Stream Technology, was first sold to Nuova Erreplast of Italylast year and the printer is being readied for delivery in Q2 2019 to the company's plant near Naples. It recently was sold a second Sapphire EVO, to Kinyosha Packaging of Japan, which will install the printer by the end of 2019.

- Kodak EISD announced that ULTRASTREAM, CIJ technology that builds off the established Kodak Stream Technology, is now available for OEM use, and that Uteco will be among the first to work with it. First sighted at drupa 2016, ULTRASTREAM's high rate of droplet generation and <4 pL droplet size give it optical resolution of 1200 x 1200 dpi, with print speed for film up to 150 mpm/500 fpm.

While Kodak will potentially work with other makers of analog presses for packaging, Uteco is the first publicly-announced partner. The Italian company is a longtime manufacturer of a flexographic and rotogravure printing machines as well as coating and laminating technology, all or most of it for use in converting flexible packaging. Uteco, which has over 350 staff, markets its analog equipment globally and has placements in all regions.

Figure 2: Kodak ULTRASTREAM Nozzle and Heater Area, Magnified 2000X

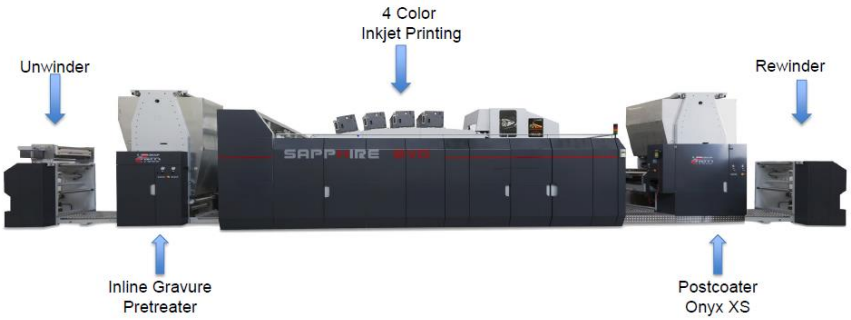


Source: Kodak EISD

Uteco Sapphire EVO, which became commercially available in Q2 2018, is a high-productivity printer, with a gravure-based pre-coater, CMYK print stations, flexo post-coater all in line, and print speed up to 300 mpm/1000fpm on paper, and half that speed on film. It is competitively priced, given its capabilities; pricing is unpublished and will vary according to the order, but it may cost around $3 million depending on configuration. At the same time, its productivity and running costs are compelling. Kodak estimates that Sapphire EVO, though a slightly narrower web than HP Indigo 20000, is four times as productive, with operating costs that are 50% less per square meter. Kodak also estimates that running costs are competitive with flexo up for jobs up to 20,000 square meters, and that Sapphire EVO will be capable of 20 million square meters in annual print volume.

Sapphire EVO's big size, about 19 meters/70 feet in length for the full system pictured in Figure 2, is outwardly its most impressive feature, along with its speed, but its CIJ core is its key differentiator. Unlike the piezo and thermal "drop on demand" inkjet technologies that dominate inkjet label and packaging printing today, CIJ print heads jet droplets continuously, diverting and recirculating any that are not directed to the media; that approach, plus very high rates of ink droplet generation, are what give CIJ technology its high speed. Only rare manufacturers bring CIJ to bear on high graphics commercial printing, but now Kodak is going beyond commercial print and actively steering CIJ into high graphics packaging, with Nuova Erreplast in Italy and Kinyosha Packaging in Japan as two of its first successes.

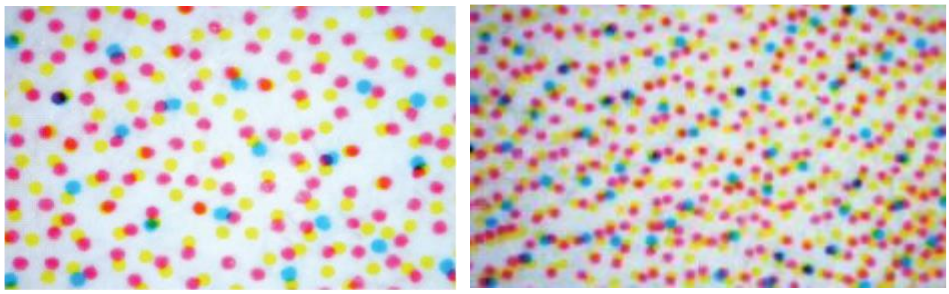
Figure 3: Uteco Sapphire EVO



Source: Kodak

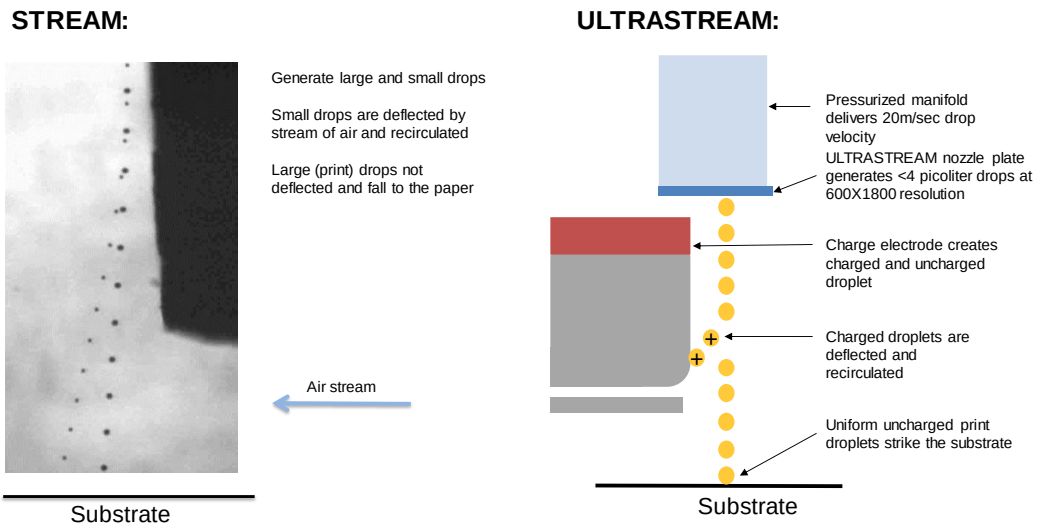
As to Kodak ULTRASTREAM, that version of Kodak CIJ is different from the Kodak Stream technology that is inside Uteco Sapphire EVO. Where Stream uses an air stream to deflect droplets, ULTRASTREAM uses an electrostatic charge; where Stream directs 9 pL droplets to the media, ULTRASTREAM prints with <4 pL droplets. Given that small droplet size and the claimed rate of over 400,000 droplets per second per nozzle, Kodak's specification for ULTRASTREAM includes 600 x 1800 dpi resolution at speeds up to 150 mpm/500 fpm. According to Kodak, that resolution is equivalent to 1200 x 1200 dpi, and will rival offset image quality; meanwhile, ULTRASTREAM's productivity will be enough to compete with analog presses for many long runs.

Figure 4: Kodak Image Samples, Stream (Left) and ULTRASTREAM (Right), Magnified



Source: Kodak

Figure 5: Schematic of Kodak Stream and ULTRSTREAM Print Technologies



Source: Kodak EISD

Other Packaging Technology

Kodak noted at the summit event that Stream technology in Uteco Sapphire EVO will continue, but that ULTRASTREAM for packaging will expand the performance options (print widths, resolution, print speed, etc.) and that Uteco will have access to both technologies. The summit event was also a reminder that Kodak's strategy in packaging will rely on both OEM printers and Kodak-branded printers. The first installation of Kodak CIJ for high production, high graphics packaging was, in fact, Kodak-branded: in 2017, Zumbiel Packaging (Cincinnati, OH) installed Kodak PROSPER 6000S, a simplex web printer based on Stream, to print folding cartons for beverage packaging. That installation was a hybrid, thus it has CMYK Stream stations plus seven in-line flexo towers for pre-coating, PMS colors, backside printing, and overprint varnish. Ed Zumbiel, president of Zumbiel Packaging, presented at the February summit and said the system generated over $450,000 in carton sales in its first year, and that in 2019 it already has an order book worth nearly $2 million in new business.

Figure 6: Beverage Cartons Printed by Kodak Prosper 6000S

Source: Kodak EISD

Kodak also markets its PROSPER 6000S simplex press in a stand-alone model for printing 100% digital for quick turnaround and customized packaging jobs. The stand-alone simplex press can also be used to add process color customization or variable data to pre-printed web rolls of paper-based substrates for labels, food wraps, and cartons; for cartons the printer can work with paperboard up to 405 gsm (24 point) that is polyethylene (PE) coated on one side.

While the February packaging summit focused on Kodak and Uteco printing of color graphics for packaging, the event also highlighted other printers and technology from Kodak, all relevant to its quest to advance Stream CIJ in packaging. Kodak's CIJ is used for monochrome and color imprinting in lottery, mail and other industrial applications by mounting the CIJ head onto an analog press or other high-speed transport. Kodak's Stream CIJ can thus be used to print text, graphics, and codes on packaging, or on products directly such as personal care goods. Kodak reported there are more than 250 PROSPER imprinting systems installed in packaging sites around the world, all powered by Stream CIJ.

Kodak is now offering a new line of printers for packaging, PROSPER Plus, with print widths of 105mm/4.16" or 210mm/8.26", and speeds of 850 fpm and 2,000 fpm. The new PROSPER Plus line is also powered by Stream CIJ and features higher quality and faster drying along with a new streamlined data station controller.

Figure 7: Kodak PROSPER Plus Example

Source: Kodak EISD

A final note on Kodak's technology for packaging is that much of the engineering behind it is based on chemistry, rather than hardware or software. Kodak manufactures its own inks and they are always aqueous, so as to reduce concerns about food safety and the environmental issues; the inks are also engineered to optimize drying, via thermal energy and, on paper media, by absorption. Kodak's primer coatings, formulated and manufactured by Kodak, are also a vital component, in particular to ensure the rapid binding of colorants to the media, enabling wet-on-wet printing on some media at up to 600 mpm/2000 fpm. For 2019, Kodak has announced three new primer coatings ("optimizer agents") to enable print on coated and uncoated paperboard and corrugated, also on plastic films and metallized films, and finally on media that has been pre-printed with flexo or gravure.

opinion

InfoTrends' Opinion

Kodak's CIJ printers are among the most productive digital systems for printing packaging, with low running costs and inks that will work with film and paper media in all the main package print applications. At its summit with Uteco, Kodak showed that it will offer the packaging market a range of digital solutions, both existing and planned, under the Kodak brand and OEM brands. We expect Kodak and its OEMs to be a successful, influential addition to the high-volume digital printing of packaging.

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Robert Leahey has many years of experience in consulting to the peripherals and supplies industries. At InfoTrends, his main work has been to conduct custom research projects, most often on inkjet, thermal, and color laser technologies used for commercial and industrial applications. He is also the main analyst of InfoTrends' Color Digital Label and Package (CDLP) continuous information service.

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