WHITE PAPER

BUSINESS INKJET VS. LASER

ADVANTAGES OF INKJET TECHNOLOGY

MARCH 2020

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Introduction

Ink is an accepted technology in specialist devices, graphic arts departments, and professional print environments. It is also widely accepted as a technology in consumer-class products. Inkjet technology, however, has traditionally accounted for a relatively small percentage of the office printing market due to some common misconceptions.

In recent years, several new and significant inkjet technology developments have been introduced that Keypoint Intelligence (KPI) believes will change users' perception of inkjet and could potentially disrupt the office environment. A new breed of inkjet technology offering faster print speeds, high-yield ink supplies, and lower costs per page has the potential to address everyday office printing pain points and offer organizations a compelling alternative. Inkjet also offers considerable merits to laser-based technology for general business applications. These advancements and savings can allow many companies with monochrome printing environments to engage with color.

This white paper is designed to provide an overview of the advantages of ink-based print technology for use in the office.
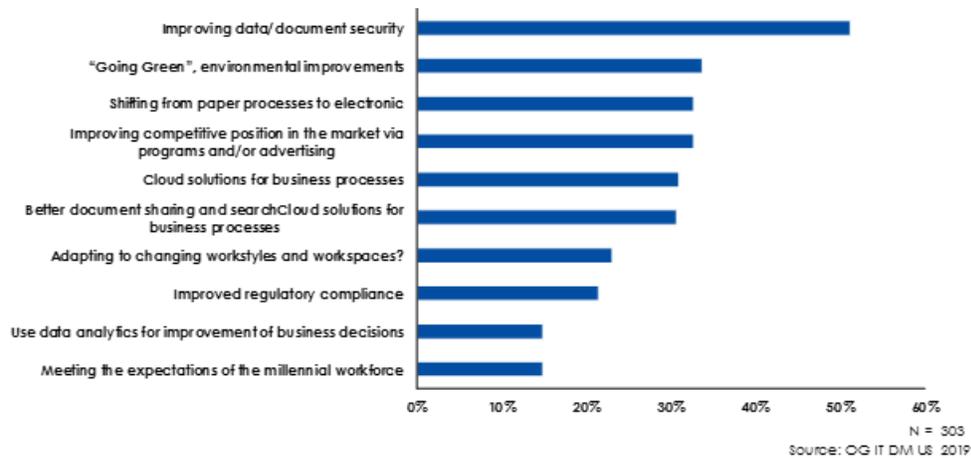
Office Printing Trends

Office print has become a commodity that has reached an extremely high standard. Full color and high image resolution add to the value of the document and are almost prerequisites for office documents. The current trends in office environments are heavily focused on the path to digital transformation, and printers will play an integral part in managing office documents. As Figure 1 shows, IT decision makers recently surveyed by Keypoint Intelligence place a high priority around the security of documents and data, shifting to cloud solutions, and document sharing—all of which fall into the realm of digital transformation.

Environmental improvements, or contributions to sustainability, are also gaining traction by IT decision makers as the world attains a greater appreciation for the impact of humanity on our planet. According to this survey, the number two business priority for IT decision makers in the US has become "going green," which is one of the major merits of Inkjet technology.

Figure 1: Business Priorities as viewed by IT Decision Makers

N = 303
Source: OG IT DM US 2019

 At the same time, those same IT decision makers were asked what improvements they would most like to see in relation to their printing environment; the leading response was total cost of ownership. This is another area where inkjet provides significant merits over laser technology. There is no denying that the focus will often be around price in a mature market like office print. In fact, coupled with the gradual decline of office print volumes as companies gradually transition to digital processes, print manufacturers will do well to provide a cost-effective alternative. If a company is creating initiatives to limit print, it tracks that they would want whatever printing that cannot be eliminated to be as cost effective as possible.

Nevertheless, print is expected to remain a significant contributor to office communications in the coming years. As of the end of 2019, business content on paper is estimated to be at 51% across all industries and forecasts by KPI suggest that this is declining at around 2% per annum. Pockets of persistent print are identified as broadly related to a preference for reviewing or editing on paper, or those required for a business process such as requiring a signature. If we consider how the entire market is shifting, we know that print is still a necessary part of our working lives that will be around for a long time. Customers request that the price to be paid be reduced, and that is exactly the sweet spot for inkjet.

33%
Of IT decision makers identified "going green" as a business priority for the next 3 years.

The Merits of Inkjet Over Laser

## Misconceptions and Myths of Business Inkjet
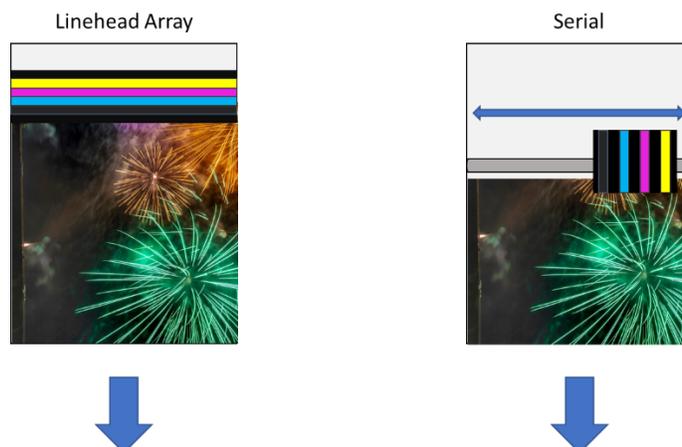
For many years, office users have believed that business inkjet printers are too expensive because of their ink supplies versus laser devices, or that the image quality is not as good as laser. In fact, respondents to a recent KPI survey of IT decision makers cited the number one reason they did not have a business inkjet device was because of the perceived cost of supplies. Furthermore, inkjets are perceived as not being as durable as laser printers for office usage. They are also believed to have limited paper capacities, less document feeder options, lesser networking ability, and slower speeds. In addition, many consumers view ink as non-durable over the long term and prone to smudging or bleeding. Therefore, many businesses prefer laser output because of these perceived myths.

The fact is, in most cases, business inkjet technology is more durable and offers consumers considerable cost savings in terms of overall cost per page (notably for color print), the ability to print on a variety of substrates, and low energy consumptions over laser printers.. In addition, IT Decision makers consistently chose image quality as the second highest motivator to purchase a business inkjet device.

Inkjet Technology Improvements

Serial inkjet printers, which encompass most consumer inkjet devices, have a relatively small moving printhead that requires multiple passes across the page to complete the image. Linehead array inkjet printers, in contrast, have a single, much larger printhead—enabling the printing of an entire page in a single pass. Linehead inkjet printers have been traditionally associated with production printing, but there have been significant announcements in the office market in recent years from HP, Epson, and Canon that have caused considerable disruption. The main benefit of linehead array printers over serial inkjet devices is faster, more constant printing.
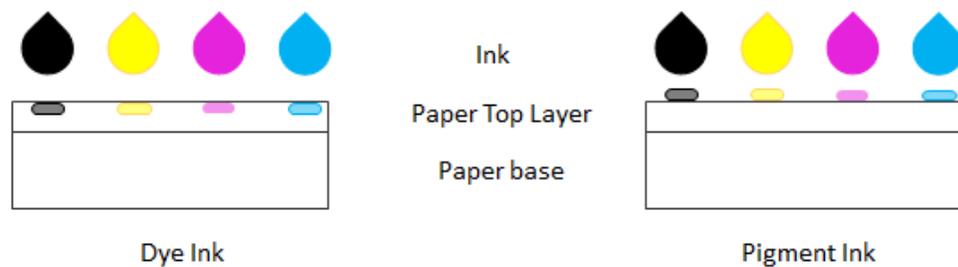
Figure 2: Why Linehead Array Printheads Can Print Faster

Linehead Array

Serial

One of the major inkjet improvements is the greater variety in inks to choose from, including dye-based ink *and* pigment-based ink. In the past, inkjet was generally synonymous with dye-based ink, which had some shortcomings. Dye-based ink could be prone to fading and water smudging, and was perceived as less vibrant than other printing technologies. Nevertheless, they are relatively inexpensive and, for most use cases (especially in the office), they provide more than satisfactory results. The fundamental difference between the two inks is that dye-based ink is entirely liquid, while pigment ink carries solid particles of color. Pigment-based ink rests on the top of paper instead of sinking into the paper like dye. This can create greater durability and more intense color that pops off the page. This advantage is capitalized upon by using correct paper types that will best present the pigment ink.

Figure 3: Dye Versus Pigment Ink

Ink

Paper Top Layer

Paper base

Dye Ink   Pigment Ink

First Print Out

The average office print job is three pages long. While the throughput speed of the device is essential for volume and long run lengths, savings for general office use in terms of time will come from the time to first print out. Here, inkjet is far speedier than laser. This has to do with the technology. Laser requires a fuser to heat up. Inkjet is a "cold technology" and no heating is required, which saves on energy consumption in addition to the faster first print out.

Energy Consumption

New breeds of high-speed business inkjets typically produce less power than traditional laser technology. As they have no fuser unit to heat, this results in significantly less energy consumption—saving consumers energy and money. Additionally, the individual parts of a laser device are typically heavier than inkjet, subsequently requiring more power to move.

Similarly, Epson's precision core heat free technology does not require heat in the ink ejection process. Instead, pressure is applied to the Piezo element, which flexes backwards and forwards—firing the ink from the printhead.

58%

Of office resellers viewed business inkjet as an opportunity to offer more cost-savings via TCO, energy consumption and service costs.
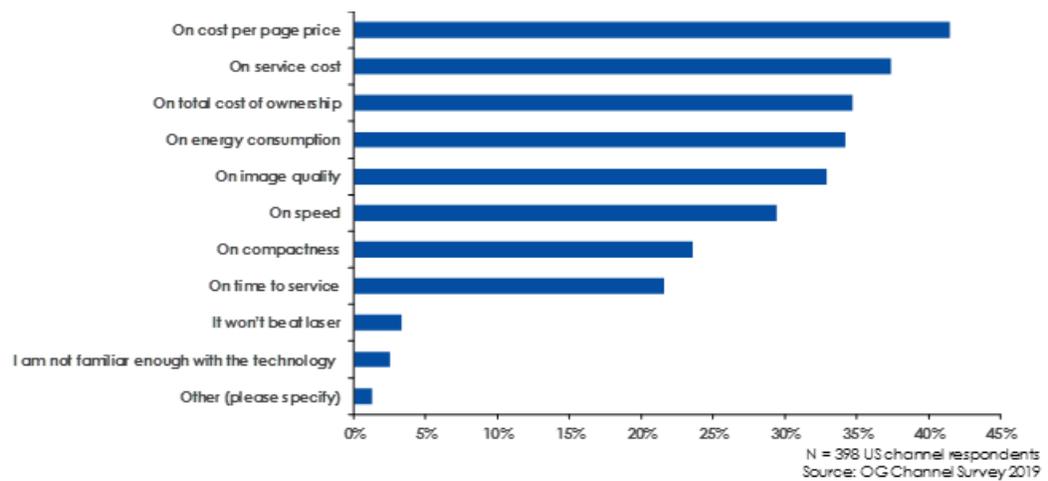
Serviceability

The design of inkjet technology tends to be simpler than laser technology.

◆ Inkjet technology centers on spraying paper with liquid. Laser technology requires that toner (a powder) to be drawn to paper by static electricity and adhered to the paper by the heat of the fuser.

◆ Laser has considerably more moving parts than inkjet devices, which require regular servicing by a trained technician. Inkjet devices have considerably fewer moving parts than laser (i.e., belts, fusers, and drums) that reduce the need and cost for servicing.

The office reseller channel has identified lower service costs as one of the major advantages of inkjet. In a survey of US office resellers in 2019, 58% viewed business-class inkjet as an opportunity to offer more cost-savings via total cost of ownership (TCO), energy consumption, and service costs. This creates benefits for all parties: The customer gets to enjoy more uptime and avoids the frustrations associated with frequent service, while the channel partner does not incur the costs associated with device service.

Figure 3: Where the Channel believes Business Inkjet beats Laser

N = 398 US channel respondents
Source: OG Channel Survey 2019

Waste Reduction and Lower TCO

The ability for ink to be delivered to a printer in larger capacities, via high-yield cartridges or external tanks, has arguably had the most impact on reducing the TCO of ink-based devices in recent years. In addition, higher-yield supplies have a major impact on the environment as the volume of consumable parts and packaging is dramatically reduced over laser.

Figure 4: Volume of waste Inkjet versus Laser

Note: The amount of consumable parts and packaging waste after 1 million pages printed for WF-C20590 (left) vs. competing laser printer (right).

As Figure 4 shows, the amount of consumable parts and packaging waste after printing 1 million pages with the Epson WF-C20590 was less than a third of the volume created by a competing laser printer.

This is a significant merit of inkjet. While fewer consumables are required (e.g., drums, rollers, and fusers), the ink has the capability to be refilled using refillable reservoir systems—eliminating the need for cartridges. The color bottles can also be refilled individually, meaning an entire cartridge does not need to be replaced just because one has run out of black ink or an individual color.
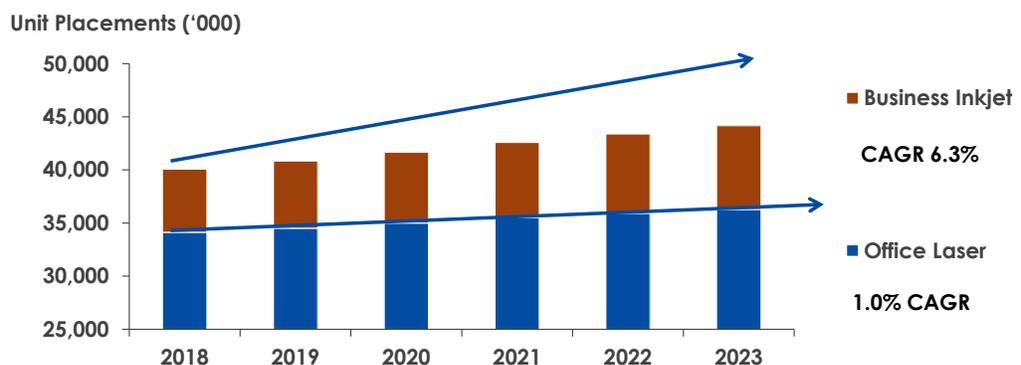
In addition, the reservoir systems significantly reduce the packaging waste that occurs through multiple cartridge deliveries as the reservoir yield can last for up to two years. Evolve Recycling (a program for organizations/business to recycle laser and inkjet cartridges) reports that less than 30% of inkjet cartridges are being recycled despite OEM programs to make this process as easy as possible. Therefore, higher-yield ink reservoirs that live in the device as long as possible can have a huge impact on the environmental footprint of the device. Evolve Recycling also states that eight ink cartridges are thrown away every second in the US. In addition, laser cartridges can take up to 450 years to decompose, so a high-yield cartridge not only creates financial savings, but also helps save the planet. In addition to the environmental impact, the end user has far less hassle associated with the reordering of supplies and TCO is significantly reduced.

The Outlook for Business Inkjet

KPI has seen great uptake of business inkjet in recent years across the world. Figure 5 shows our latest global office market forecast for business inkjet versus laser in device placements terms (excluding inkjets used in consumer/ home/SOHO environments). In this case, business inkjet comprises a combination of technologies; serial and linehead array are both included in this forecast. KPI forecasts that business inkjet has a much higher expected growth rate for office environments. To 2023, we expect business inkjet for use in Small & medium sized companies (SMB) as well as larger companies to grow at 6.3% CAGR while office laser is flat at 1.0% CAGR. The maturity of the office market, as the number of new businesses stagnates and companies look to save cost and resources, means that the potential to place new laser devices has declined. At the same time, the opportunity for business inkjet has emerged through its merits most notably lower total cost of ownership and the fact that the image quality is acceptable for most office applications.

**Figure 5: Global Office Market Forecast: Business Inkjet vs. laser**
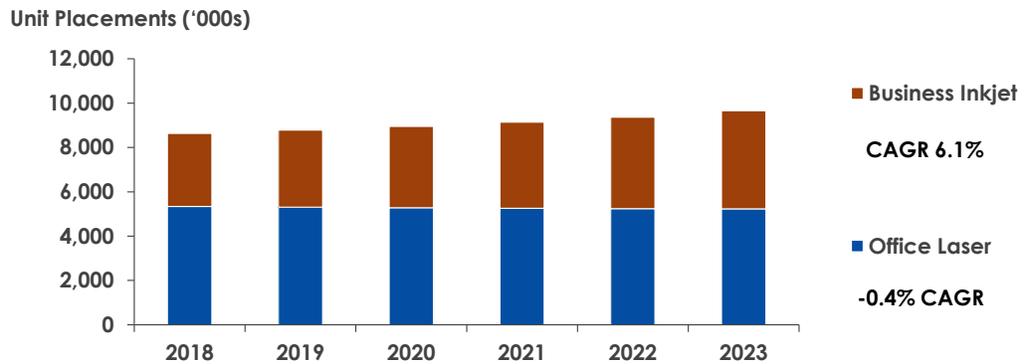
* Laser = Office devices 1-69ppm, A4 & A3. Business Inkjet = segment 3 & 4 for SMB & higher

In some regions, business inkjet will grow and replace laser markets at much faster speed. In the North American market – the biggest office market in the world – KPI forecasts that Business inkjet will grow faster at 6.1% CAGR while laser is declining at -0.4%. **(Figure 6)** Much of that growth prediction comes from the need for knowledge workers to have access to more than one printing device. The ability to work from home, or the need for a printer for both home and office, has driven placements of business inkjet upwards.

Figure 6: North America Office Market Forecast: Business Inkjet vs. laser

Unit Placements ('000s)

* *Laser = Office devices 1-69ppm, A4 & A3. Business Inkjet = segment 3 & 4 for SMB & higher*

73%

Of office resellers expect sales of business class inkjet to increase.

Working from home is a trend that continues to grow, with organizations large and small offering employees the opportunity to spend time in home offices. As more and more workers begin to complete typical business processes at home, print will migrate to small home offices. An inkjet device is a great candidate for this market due to savings and ease of use. In addition, availability via online channels has increased the convenience of purchasing for home and business users.

Business inkjet is also becoming increasingly attractive for channel resellers. In a survey of US office equipment resellers in 2019, 73% of the resellers said that they expect sales of business class inkjet to increase. The clear benefits of inkjet devices combined with the increase in customer interest and the channels engagement and support for selling inkjet leads us to believe inkjet will continue to grow.

InfoTrends' Opinion

The typical office environment is changing, with businesses focusing on digital transformations, "green" initiatives, and cost savings. These changes have a real impact on the tools they need most. The increase in employees working remotely compounds these trends, making inkjet technology a great fit to satisfy these needs for businesses of any size.

Companies may be looking to reduce print, but some print remains essential due to workflow or the need to create visual impact. Thus, they need devices that make sense with for organization and allow for high quality output while remaining aligned with their business goals. The nature of inkjet—being heat-free printing—yields innate energy savings and a subsequent greener choice. High-yield cartridges and ink tanks not only provide a better TCO and savings for users, but can greatly reduce the environmental footprint of print. Inkjet devices check all the boxes for the reigning office trends and goals, and that is

why it is no surprise to see their continued impact in the market. As we look ahead to the coming business years, we expect more companies will begin to see how inkjet is potentially the best fit for their business, and continue to challenge and replace existing laser device environments,

authors
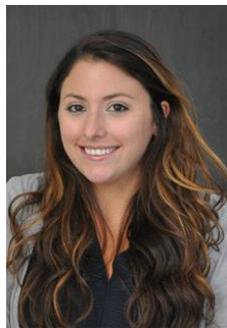
Deborah Hawkins
Associate Director
+ 49 40 4135 5743
✉

Deborah Hawkins is Associate Director within the Office Document Technologies Group. Her responsibilities include conducting primary research and analysis and creating forecasts and market size estimates for the copier and printer hardware, software and solutions markets globally.

Rebecca Schiffenhaus
Consultant
+ 973.797.2103
✉

Rebecca Schiffenhaus is a Consultant for InfoTrends' Office Group. In this role, she also supports the Vertical Market Business Opportunities and Network Document Solutions areas through research, content development, and forecasting.

Comments or Questions?

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