Industrial Inkjet Printing: From the Niche to the Mainstream

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Abstract

The last several years have seen Inkjet printing penetrate and dominate high value added, nicheprinting applications.

As industrial inkjet has proven itself in terms of reliability, quality and productivity, it is now ready to move from the Niche to The Mainstream of industrial printing applications.

Scitex Corporation and more specifically Scitex Vision is and has been for several years in the forefront of this trend**.** We would like to share with the audience our experience in penetrating Industrial markets. Specifically we will relate to the challenges presented by the various markets we address and how we go about addressing them from a product / technology point of view as well as from a marketing / business development perspective.

We will attempt to address the economic trade offs as viewed by the customers and even project the rate of industrial inkjet penetration solutions we expect in various market segments.

Introduction

In the industrial world, new technology seldom penetrates as widely and swiftly as in the consumer world. Established, well proven, processes are difficult to uproot. Heavy former capital expenses, employees well trained in the previous ways of "doing business", short-term economic considerations, all team up to block the new "thing". Consequently new technologies usually start implementation in narrow, well-defined "niche" applications, where the novelty value is very obvious. As time goes by, two things happen. On the one hand, the technology matures and its cost advantages become clearer and on the other hand new applications enabled by the novel technology gain volume at the expense of the traditional products. Both trends widen the applicability of the new technology and enable its penetration into the mainstream.

The printing world is not different in this sense. Though we have seen over the last 10 to 15 years industrial digital printing technologies replacing and complementing analogue technologies in many applications, the transition is still slow. The following presentation will relate to this process of technology migration in our industry, with a specific emphasis on industrial inkjet, Scitex's area of expertise over the last several years.

Some Demographics

Industrial printing spans today a wide range of applications estimated at WW end user value of approximately $800bn. This vast industry can be generally grouped into the following classifications: packaging printing, commercial printing, publishing and documentation, home furnishing and textiles, out of home advertising and specialty industrial products.

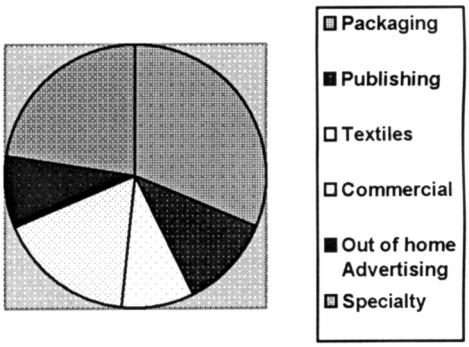

Figure 1. Industrial Printing - Classification per main applications

Digital printing technologies have been strongly active in the industrial printing market for about 15 years now. Following several years of steady penetration, still less then 15% of the industry's output is produced digitally. The penetration rate is expected to grow at a rate of about 1 percentage point a year. But still the penetration is not even. Some applications have seen digital penetration of over 20% while others are still fortresses of analogue printing.

Some Interesting Observations:

- The more fragmented the industry the more penetration of Digital
- The shorter the print runs the more Digital
- The higher the value of the printed product the
- more Digital
- The simpler the workflow and the finishing
- process the more Digital
- And of course the need for variable information

Some of the applications, which have seen a high rate of digital penetration, are:

- Wide format, "out of home advertising"
- Manuals and textbooks
- Business presentations
- And of course direct mail, billing and forms

Advances of Industrial Inkjet Printing

Inkjet printing is a non-contact, high quality, printing technology that is highly reliable and very economical. A number of 'inks' have been developed to work with this delivery mechanism. Numerous application fields can make use of these unique capabilities in ways that were previously impossible. Potential applications include digital textile printing, 3D modeling, manufacturing of new types of digital displays etc.

Traditionally, inkjet has been perceived as a limited reliability process with costly variable costs and low productivity. Advances to date have shown that Industrial inkjet heads can print several billions of drops working for years without the need of being replaced. Systems in the field now show MTBV's of over a year. Quality with inkjet has in the past been an issue for high quality demanding applications. With inkjet systems printing today at resolutions from 400 to 1400 DPI and with a color gamut superior to that of traditional offset, quality as well is no longer an issue.

Today's inkjet systems have been demonstrating printing speeds of 2 to 3 linear meters per second, resulting in printing productivity exceeding 10,000 sqm /hr in fixed array configurations. The only limitation to date is the costs of digital ink. Those as well are rapidly approaching reasonable levels as economies of scale and competitive pressures have seen ink prices in heavy duty full color printing drop from 2$ per square meter a few years ago down to fractions of a $.

What Do You Need to Know Before Designing a Digital Solution?

The first step in specifying and designing an Industrial printing solution is defining the need of the industrial customer. Characterizing an Industrial printing application generally requires answering the following leading questions and more:

What: What is the business purpose of the printing application? Is it a stand-alone product or is it an added value element in the production process of another industrial product? Does the product serve an advertising, documentation / information or publishing purpose? What are the economic parameters and constraints that need to be answered?

Who: Who is the end user specifying the application and its economic value?. Who is the professional, performing the printing as a "for profit" activity or as a dedicated "in house" activity?

When: When are the printed products required to be delivered? What are the lead times and deadlines involved? Is the operating environment a 2 to 3 shift operations 6 to 7 days a week?

Where: Where is the printing performed? Is the environment noisy? Dusty? Vibrating? Are temperatures extreme? Are the operator skill levels beyond basic? Is the printing process a primary dedicated industrial process [for example book printing] or a secondary process integrated into another industrial environment [for example: lot number and expiry date printing in a pharmaceutical product assembly line].

How: How is the process currently performed? How many converting steps are required? How does material flow from step to step? How long is the typical production batch? How does it fluctuate? How many different materials are printed?

How Can You Assist the Penetration of Digital Technology into the Target Market

Penetrating Industrial Printing markets with Inkjet based printing solutions requires dealing in parallel with several aspects all eventually influencing the cost effectiveness of the solutions offered:

The digital workflow: Defining and streamlining a complete digital workflow spanning from the job origination/ design through the file preparation and printing and all the way to the finishing aspects.

The economic equation: Involves changing the mind set from optimizing the production capacity utilization to maximizing the total economic return.

The "right" technology configuration. Ranging from selection of operating parameters such as physical formats and dimensions, resolutions, throughput and quality requirements, through selection of inkjet heads and ink technology and of course the integration with existing or new material and data flows.

The technical training includes the fundamentals of process-color printing to many "kitchen color" environments; Educating on the maintenance intensive nature of digital printing; Interaction between inks and substrates; Digital workflows, etc.

Conclusions

A process similar to the one that occurred in the home and office markets, in which inkjet color print systems eventually dominated the market will take place in the commercial and industrial markets as well. The drivers will be variable cost parity with Flexo, Screen and offset technologies as printing run length become shorter and a clear total cost advantage due to material inventory and handling costs. These two factors make inkjet technology cheaper in terms of cost of printing per page, and therefore more cost effective to the printing house and the print buyer.

Biography

Itai Halevy is the Executive Vice President & Chief Marketing Officer of Scitex Vision.

Itai Halevy, joined Scitex Vision on January 2003. Previously, Mr. Halevy served as Vice President of Business Development at Clal Industries and Investments Ltd., one of the main shareholders of Scitex Vision. Prior to that, he held several product, marketing and business development positions at Scitex Corporation Ltd, which he joined in 1991. His last position within Scitex was as Corporate Vice President, Business Development and Strategic Planning.

Mr. Halevy holds a bachelors degree in industrial engineering from Tel Aviv University and an MBA degree from INSEAD, Fontainebleau, France. He is 44 years old, married and proud father of 3.