

Merging Black/White and Color Document Automated Off-line Finisher

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Abstract

We have developed Horizon Books On Demand System in cooperation with Xerox, and launched the system at IGAS'99. Horizon Books On Demand System is in-line finishing system designed for Xerox DocuTech6180. Horizon Books On Demand System is capable for perfect binding as well as saddle stitching. Interest in Horizon Books On Demand System have been increasingly growing in the market. Print On Demand market in Japan is still following the market trend in the U.S.A or Europe. However the market in Japan is turning into a second stage.

In the second stage, one of the important concerns is how to bind B/W (black/white) printed documents together with color printed documents especially in the market of variable data printing application. Post-press finishing system is a solution. Besides in-line finishing system for press, the market also requires an off-line finishing system which is capable to solve problems in binding B/W printed documents together with color printed documents. We strongly feel that it is important to supply such finishing system that can handle merging of B/W(black/white) printed documents and color printed documents.

Introduction

Our corporate headquarters and some production capability still reside in the ancient capital of Kyoto, Japan, but today most Horizon products are manufactured at our state-of-the-art plant in nearby Biwako. Our Biwako factory encompasses over 120,000 square meters, and is equipped with a state-of-the-art, vertically-integrated flexible manufacturing system. Horizon products are now represented in over 50 countries around the world by a well-established and growing network of independent agencies.

With that introduction, let me move on to discuss a little bit about the "Merging Black/White and Color Document Automated Off-line Finisher".

Finishing Importance

It may be helpful to start by looking back a few years, and recognize that finishing as we define it – collating, stitching, folding, cutting and binding – was until recently classified as a completely separate production step in the printing process. The "bindery" existed at the back of the

shop, and usually consisted of older, highly mechanical, and sometimes unsafe equipment that was difficult and time-consuming to set-up and changeover.

It is also true that in some cases, lower-skilled employees were put to work in the bindery, on the theory that the skills required to properly finish the job are lower than those required for professional pre-press or printing. Today, I am very pleased to report that perceptions of the bindery are changing, and finishing equipment is changing as well to catch up with the new demands of today's print markets.

Customers now realize that mistakes made during finishing are more costly than mistakes made during pre-press or press, because you have sunk that much more into the job, and must start over from the beginning. Customers are also catching on to the profit potential in finishing, as everyone looks to distinguish their printed documents. Fast turnaround requirements are also forcing customers to bring finishing in-house, when previously they may have been able to outsource the work. And of course, digital print-on-demand – with personalized and customized documents -- has brought finishing fully into the print production workflow. Today you can have a seamless digital progression from pre-press, to the final finished product – all in-line, with virtually no operator intervention.

In-line v.s. Off-line

One area of great debate in digital printing concerns the relative merits of finishing in-line, off-line, or automated off-line. Each route has its advantages, and the right answer will depend on each printer's unique operation and requirements.

According to the CAP Ventures study mentioned earlier, many customers intend to purchase in-line finishing over the next several years. Horizon has many installations around the globe where the applications are perfectly suited to in-line finishing. Horizon has had considerable success in this area especially in our own Japanese market where we have a strong alliance with Fuji Xerox. We are very pleased to forecast strong growth for in-line finishing equipment sales over the next several years.

The benefits of on-line finishing are obvious and important: You have very high set integrity, as the imaged sheets never leave the system; labors costs are kept low; and you have a streamlined production path.

But, there can be disadvantages: If one element in the system is down, the complete printing and finishing system is stopped. In practice, one finisher is dedicated to just one print engine, even though the finisher may have the capacity to serve multiple engines. And in-line finishers on several print engines can also drive up a printer's capital investment.

Off-line finishing also has some distinct advantages. It lets you print at full-rated speed, and also finish at the full-rated speed of the finisher. Overall up-time is greater, since you can print if your finisher is down, and vice versa. Off-line finishing can also serve multiple print sources within the shop – output from digital printers *and* conventional offset. Capital investment is lower, and you'll enjoy greater utilization from the equipment. On the downside, off-line finishing can have higher labor costs associated with moving imaged sheets to a separate step and manual set-up.

Automated Off-line

As we look to the future of Finishing On Demand, there is a new breakthrough option that helps bridge the gap between in-line and off-line finishing. The new Horizon DigiFinish Automated Off-line System combines the flexibility of off-line finishing with highly automated set-up and end-to-end document integrity.

The system is designed around a dynamic new concept Xerox has developed to create Off-line finishing also has some distinct advantages. It lets you print at full-rated speed, and also finish at the full-rated speed of the finisher. Overall up-time is greater, since you can print if your finisher is down, and vice versa. Off-line finishing can also serve multiple print sources within the shop – output from digital printers *and* conventional offset. Capital investment is lower, and you'll enjoy greater utilization from the equipment. On the downside, off-line finishing can have higher labor costs associated with moving imaged sheets to a separate step and manual set-up and manage highly complex documents – merging digital black-and-white and color. A joint development between Xerox, Horizon, Standard Finishing Systems and Inspectron, the Horizon DigiFinish bookletmaking system is the first in a series of products developed around Xerox's DigiFinish concept.

With DigiFinish, all document finishing instructions are captured upstream, and they flow with the job. The operator simply scans a readable code, and the entire DigiFinish bookletmaking system automatically sets up for the required finishing style and size. The communications also include data on how the different sets or sheets are to be combined in sequence, and

monitors the post-processing system to ensure job integrity.

Actual document construction begins at the Standard DocuFeed 150. Offset stacked sets are placed in the DocuFeed-150 hopper, and delivered downstream set-by-set. The Horizon VAC-100 vacuum collator then feeds a color cover or any of several insert sheets as instructed to complete the document. An Inspectron camera scans each sheet or set as they enter the stitcher area, to verify that document elements are placed in the proper order prior to finishing. A second camera reads the completed document as it exits the system, to provide closed-loop document tracking.

The color sheets could come from conventional offset, a Xerox DocuColor 2060, or any digital color source. The most important benefit is the ability to integrate different print sources to create complex documents, with end-to-end integrity and a high level of system automation. So, the DigiFinish concept is one new area that may represent a new frontier of finishing on demand.

We have mentioned the importance of ease-of-use, to speed set-up and changeover, to make it easier to cross-train employees, and to allow for more accurate set-ups with less spoilage. I would like to share a little of Horizon's philosophy on this point.

Printing has evolved very quickly from a craft, requiring one type of skills, to a digital science that requires a very different set of skills. We have already mentioned the seamless digital progression from desktop to pre-press to press. Some international standards are emerging -- including the German-based CIP3 initiative, of which Horizon is a member -- that seek to extend digital control through to the completed document.

Biography

Mr. Eijiro Hori is President of Horizon International, a leading global provider of high-quality finishing solutions for the graphic arts and print-on-demand markets. Mr. Hori holds an engineering degree in materials science from Himeji Institute of Technology in Japan, and a degree in business administration from Chapman College in California. Mr. Hori has directed Horizon's expansion into international markets, with Horizon now represented in over 50 countries around the world. In addition to leading the development of products targeted at the traditional graphic arts market, Mr. Hori has championed the development of innovative finishing solutions custom-tailored for the digital print-on-demand market.